Janata Shikshan Mandal's

Smt. Indirabai G. Kulkarni Arts College, J. B. Sawant Science College and Sau. Janakibai D. Kunte Commerce College, Alibag – Raigad.

Academic Year: 2021-22

SYLLABUS

Sr. No.	Name of the Department
1.	English
2.	Marathi
3.	Hindi
4.	Political Science
5.	Economics
6.	Geography
7.	Chemistry
8.	Physics
9.	Botany
10.	Zoology
11.	Commerce
12.	Mathematics
13.	Computer Science
14.	Information Technology
15.	Business Management Studies

PRINCIPAL
Smt. Indirabai G.Kulkarni Arts,
J. B. Sawant Science and
Sau.Janakibai Dhondo Kunte Commerce
College, Alibag-402 201, Dist. Raigad

Place :- Alibag

AC – 17/05/2022
Item No. – 5.1(R)

UNIVERSITY OF MUMBAI

Revised Syllabus for S.Y.B.A. (English) (Ancillary) and

(Applied Component)

Semester - Sem V and VI

(Choice Based Credit System)

(With effect from the academic year 2022-23)

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	**S.Y.B.A. (English) (Ancillary) and (Applied Component)**
2	Eligibility for Admission	F.Y.B.A.
3	Passing Marks	40%
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	02 years & 04 semesters
6	Level	~~P.G.~~ / U.G./ ~~Diploma / Certificate~~ (Strike out which is not applicable)
7	Pattern	~~Yearly~~ / Semester (Strike out which is not applicable)
8	Status	~~New~~ / Revised (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year **2022-2023**

Date: 25/10/2021

Signature :

Name of BOS Chairperson / Dean : **Dr. Sudhir Nikam**

University of Mumbai

Revised Syllabus for S.Y.B.A. (English)

(Ancillary) & (Applied Component)

Semester- III / IV

(Choice Based Credit System)

With effect from the academic year 2022-23

Board of Studies in English

Dr. Sudhir Nikam (Chairperson)

Dr. Rajesh Karankal (Member)

Dr. Bhagyashree Varma (Member)

Dr. B. N. Gaikwad (Member)

Dr. Satyawan Hanegave (Member)

Dr. Santosh Rathod (Member)

Dr. Deepa Mishra (Member)

Dr. Dattaguru Joshi (Member)

Dr. Deepa Murdeshwar-Katre (Member)

University of Mumbai

Syllabus for S.Y.B.A. (English) (Ancillary)

Program: B.A.

Course: Optional English: Introduction to Drama

Paper II

(Choice Based Credit System with effect from the Academic Year 2022- 2023)

1. Syllabus as per Choice Based Credit System (CBCS):

i)	**Name of the Program**	**:** S.Y.B.A. English (Ancillary)
ii)	**Course Code**	**:** Semester III UAENG301 & Semester IV UAENG401
iii)	**Course Title**	**: Optional English: Introduction to Drama Paper II**
iv)	**Semester wise Course Contents**	**:** Enclosed the copy of the syllabus
v)	**References and Additional References:** Enclosed in the Syllabus	
vi)	**Credit Structure**	03
vii)	**No. of lectures per Unit**	15
viii)	**No. of lectures per week**	03
2.	**Scheme of Examination**	**:** 5 Questions of 20 marks each
3.	**Special notes, if any**	**:** No
4.	**Eligibility, if any**	**:** No
5.	**Fee Structure**	**:** As per University Structure

6. Special Ordinances / Resolutions if any: No.

SYBA English (Ancillary) Course Title

Optional English: Introduction to Drama

Paper II

(100 Marks Examination Pattern)

Objectives of the Course:

- To create interest and develop passion amongst learners towards drama (and theatre)
- To familiarize learners with the salient elements and characteristics of drama
- To introduce learners to different forms and types of drama
- To introduce learners to the trends and characteristics of significant dramatic movements through representative dramas
- To equip the learners with the tools and techniques to critically appreciate drama
- To inculcate and propagate human values reflected in the plays among learners
- To demonstrate that drama is reflection / representation of life
- To Develop analytical skills and critical thinking through close reading of drama

Course Outcomes:
By the end of the course, a learner will:

- develop interest and passion for drama (and theatre).
- be familiarized with the salient elements and characteristics of drama.
- be able to identify the different forms and types of drama.
- be capable to identify the various trends and characteristics of significant dramatic movements through the representative dramas.
- be equipped with the tools and techniques to critically appreciate drama.
- imbibe human values reflected in the selected plays.
- justify that drama is reflection / representation of life.
- develop analytical skills and critical thinking through close reading of the represnttative dramas.

Semester III:	Paper II	Total Credits: 03
Course Title: Optional English: Introduction to Drama		

Total Lectures: 45

Course Content

Unit 1: **No. of lectures: 15**

Definition, Concept and Significance of Drama

Origin and Development of Drama

Terms and Concepts associated with Drama:

Plot (Main Plot, Sub-plot, Simple, Complex, Peripeteia and Anagnorisis, Exposition, Complication, Resolution, Denouement, Climax, Anti-climax)

Character (Hero, Villain, Confidante, Foil)

Act and Scene,

Soliloquy and Aside,

Music, Chorus Lights, Masks, Proscenium Arch, Play within Play, Subtext, Catharsis, Hamartia, Comic relief, Unity of action, time and place, Narrator and Sutradhar, etc.

Unit 2: **No. of lectures: 15**

Sophocles : *Oedipus Rex / Oedipus, The King*

OR

John Galsworthy : *Strife*

Unit 3: **No. of lectures: 15**

Girish Karnad : *Flowers*

OR

Mohan Rakesh : *Half-way House (Adhe Adhure)*

Evaluation: First Semester End Examination Pattern 100 Marks: 3 Hours

Question 1	:	Short Notes on Unit 1 (4 out of 6)	:	20 Marks
Question 2	:	Essay on Unit 2 (1 out of 2)	:	20 Marks
Question 3	:	Essay on Unit 3 (1 out of 2)	:	20 Marks
Question 4	:	Short Notes on Unit 2 (2 out of 4)	:	20 Marks
Question 5	:	Short Notes on Unit 3 (2 out of 4)	:	20 Marks

Semester IV:	Paper II	Total Credits: 03
Course Title: Optional English: Introduction to Drama		

Total Lectures: 45

Course Content

Unit 1: **No. of lectures: 15**

Types of Drama (based on form, content, function, theme, style, etc.):

Interlude, Chronicle Plays, Mystery Plays, Miracle Plays, Morality Plays, Romantic Comedy, Comedy of Humours, Restoration Comedy of Manners, Sentimental Comedy, Senecan Plays or Revenge Plays, History Plays, Heroic Drama, Blank Verse Drama, Poetic Drama / Verse Drama, Drama of Ideas / Problem Play, Expressionist Plays, Epic Theatre, Absurd Plays, Plays by Angry Young Men, Kitchen Sink Drama, Theatre of Cruelty, Comedy of Menace, etc.

Unit 2: **No. of lectures: 15**

Eugene O'Neil : *The Hairy Ape*

OR

Lorraine Hansberry : *A Raisin in the Sun*

Unit 3: **No. of lectures: 15**

Wole Soyinka : *The Lion and the Jewel*

OR

David Williamson : *The Removalists*

Evaluation: Second Semester End Examination Pattern 100 Marks: 3 Hours

Question 1	:	Short Notes on Unit 1 (4 out of 6)	:	20 Marks
Question 2	:	Essay on Unit 2 (1 out of 2)	:	20 Marks
Question 3	:	Essay on Unit 3 (1 out of 2)	:	20 Marks
Question 4	:	Short Notes on Unit 2 (2 out of 4)	:	20 Marks
Question 5	:	Short Notes on Unit 3 (2 out of 4)	:	20 Marks

References:

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Ackerman, Alan Louis, editor. *Reading Modern Drama*. University of Toronto Press, 2012.

Albert, Edward. *History of English Literature.* Oxford UP, 2009.

Andermahr, Sonya. et al. *A Glossary of Feminist Theory.* Arnold, 2000.

Athenian Society. *Drama, Its History.* Nabu Press, 2012.

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Birch, Dinah, editor. *The Oxford Companion to English Literature*. Oxford UP, 2009.
Boulton, Marjorie. *The Anatomy of Drama*. Routledge, 2015.
Brandon, James R. *Theatre in Southeast Asia.* Harvard UP, 2009.
Brooks, Cleanth and Heilman, Robert B. - *Understanding Drama.* Creative Media Partners, 2018.
Cavanagh, Dermot Alan Gillis et.al., editors. *The Edinburgh Introduction to Studying Literature.* Edinburgh UP, 2010.
Chakrabarti, Piyas. *Anthem Dictionary of Literary Terms and Theory.* Anthem Press, 2006.
Chakraborty, Kaustav. *Indian Drama in English*. PHI Learning Pvt. Ltd., 2014.
Chatterji, Suniti Kumar. *Indian* Drama. The Publications Division, Ministry of Information and Broadcasting, Government of India, National Printing Works, 1956.
Childs, Peter. *The Routledge Dictionary of Literary Terms*. Routledge, 2006.
Chowdhury, Aditi and Rita Goswami. *A History of English Literature: Traversing the Centuries.* Orient BlackSwan, 2014.
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Ford, Boris. *The Pelican Guide to English Literature.* Volume I to X. Penguin Books,1991.
Galsworthy, John. *Strife.* Books Way, 2021.
Gibson, Arthur. *What is Literature.* Peter Lang Pub Inc, 2007.
Hansberry, Lorraine. *A Raisin in the Sun.* Vintage, 2004.
Hudson, W. H. *An Introduction to the Study of English Literature.* G. K. Publishers Pvt. Ltd., 2011.
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Karnad, Girish. *Collected Plays Vol. II.* edited by Aparna Bhargava Dharwadker, Oxford UP, 2011.
Keith, A. Berriedale, *The Sanskrit Drama: In its Origin, Development Theory & Practice*. Oxford UP, 1998.
Kennedy X. J. and Dana *Gioia. An Introduction to Fiction, Poetry, and Drama.* HarperCollins College Publishers Inc., 1995.
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Krasner, David. *A History of Modern Drama*. Volume I, Wiley-Blackwell, 2012.
Krasner, David. *A History of Modern Drama*. Volume II 1960-2000, Wiley-Blackwell, 2016.
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Naik, M. K. *A History of Indian English Literature*. Sahitya Akademi, 2009.
Nicoll, Allardyce. *The Theory of Drama*. Doaba Publications, 1998.
O'Neil, Eugene. *The Hairy Ape.* Good Press, 2019.
Prasad, Birjadish. *Background of the Study of English Literature*. Macmillan, 1999.
Pritner, Cal, and Scott E. Walters. *Introduction to Play Analysis*. Waveland Press, 2017.
Quinn, Edward. *A Dictionary of Literary and Thematic Terms.* Facts on File Inc., 2006.
Rakesh, Mohan. *Halfway House.* Translated by Bindu Batra. Worldview Publications, 1999.
Rees, R. J. *English Literature: An Introduction to Foreign Readers*. Macmillan, 1982.
Rush, David. *A Student Guide to Play Analysis*. Carbondale, IL: Southern Illinois UP, 2005.
Salgado, Gamini. *English Drama: A Critical Introduction.* St. Martin's Press, 1980.

Sanders, Andrew. *The Short Oxford History of English Literature*. Oxford UP, 2004.
Shepherd-Barr, Kirsten. *Modern Drama: A Very Short Introduction*. Oxford UP, 2016.
Sophocles. *Oedipus Rex*. edited by R. D. Dawe, Cambridge UP, 2006.
Soyinka, Wole. *The Lion and the Jewel*. Oxford UP, 1974.
Styan, J. L. *Elements of Drama.* Cambridge UP, 2001.
Styan, J. L. *Modern Drama in Theory and Practice.* Cambridge UP, 1980.
Turco, Lewis. *The Book of Literary Terms.* UP of New England, 1999.
Walsh William, *Commonwealth Literature.* Oxford UP, 1973.
Widdowson, Peter. *The Palgrave Guide to English Literature and its Contexts 1500-2000*. Palgrave Macmillan, 2004.
Williamson, David. *The Removalists*. Currency Press, 1980.

Activity: Students should be encouraged to perform any scene or act from any play.

MOOCs:

Merin Simi Raj. Twentieth Century American Drama. IIT Madras.
https://nptel.ac.in/noc/courses/noc21/SEM2/noc21-hs75/

Prof. Aysha Iqbal. American Literature and Culture. IIT Madras.
https://nptel.ac.in/noc/courses/noc21/SEM2/noc21-hs63/

Chattopadhyay, Sayan. 'Introduction to Literary Theory.' IIT Kanpur.
https://onlinecourses.nptel.ac.in/noc20_hs82/preview

Perui, Avishek . 'Gender and Literature'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs59/preview

Raj, Merin Simi. 'History of English Language and Literature'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs52/preview

Perui. Avishek. 'Feminists Writings'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs58/preview

Web Resources:

1. https://youtu.be/2CVO9Vd067U (Greek Theatre Explained)
2. https://youtu.be/4_XPcAwmuLg (Ancient Greek Theatre and Machinery)
3. https://ingilizedebiyati.net/wp-content/uploads/ABSURD_DRAMA.pdf
   The Theatre Of The Absurd: The Basics
4. https://asianethnology.org/downloads/ae/pdf/a430.pdf
   Indian Folk Traditions and the Modern Theatre
5. https://www.mansworldindia.com/currentedition/from-the-magazine/drama-mahesh-dattanis-life/
6. https://en.wikipedia.org/wiki/Indian_classical_drama#:~:text=The%20term%20Indian%20classical%20drama,highest%20achievement%20of%20Sanskrit%20literature. (Indian Classical Drama)
7. http://www.unishivaji.ac.in/uploads/distedu/Home/SIM%202015/B.%20A.%20III%20Understanding%20Drama%20Paper-9.PDF
   Understanding Drama

8. http://notedesk.blogspot.com/2017/05/allied-i-background-to-study-of-english.html
Elements of Drama

9. http://notedesk.blogspot.com/2017/05/allied-paper-ii-background-to-study-of.html
Drama

10. https://web.archive.org/web/20051107010423/http://www.hccy.cg.catholic.edu.au/home/pamela_cohen/removalists/removalistindex.htm
The Removalists: A Study Guide

Syllabus Drafting Committee

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Dr. Panchshiela Mahale: Assistant Professor, Department of English, Sathaye College, Mumbai.

Dr. Anil Sonawane: Assistant Professor, Head Department of English, St. Gonsalo Garcia College of Arts and Commerce, Near Chimaji Appa Ground, Vasai Gaon, Vasai West, District Palghar, Marashtra-401201.

Dr. Shitalkumar G. Gaikawad: Assistant Professor, Department of English, Elphinstone College Mumbai, 156, M.G.Road, Fort, Mumbai 3

Shankar Pandurang Khobare: Assistant Professor, Department of English, S. K. Patil Sindhudurg Mahavidyalaya, Malvan, Dist. Sindhudurg, – 416606.

Surendra Athawale: Assistant Professor, Department of English, Vikas College Of Arts, Science & Commerce, Vikas High School Marg, Kannamwar Nagar–2, Vikhroli (East), Mumbai – 400083.

University of Mumbai

Syllabus for S.Y.B.A. (English) (Ancillary)

Course: Optional English: Introduction to Poetry

Paper III

(Choice Based Credit System with effect from the Academic Year 2022-2023)

1. Syllabus as per Choice Based Credit System (CBCS):

i) Name of the Program **:** S.Y.B.A. English (Ancillary)

ii)	**Course Code**	**:** Semester III UAENG302 & Semester IV UAENG402
iii)	**Course Title**	**: Optional English: Introduction to Poetry Paper III**
iv)	**Semesterwise Course Contents**	**:** Enclosed the copy of the syllabus
v)	**References and Additional References:** Enclosed in the Syllabus	
vi)	**Credit Structure**	03
vii)	**No. of lectures per Unit**	15
viii)	**No. of lectures per week**	03
2.	**Scheme of Examination**	**:** 5 Questions of 20 marks each
3.	**Special notes , if any**	**:** No
4.	**Eligibility, if any**	**:** No
5.	**Fee Structure**	**:** As per University Structure

6. Special Ordinances / Resolutions if any: No.

SYBA English (Ancillary) Course Title:

Optional English: Introduction to Poetry

Paper III

(100 Marks Examination Pattern)

Objectives of the Course:

- To introduce students to different genres and forms of poetry
- To sensitize them to the rhythmical and formal properties of poetry by introducing key elements of poetry
- To provide them with basic poetic devices for analyzing poems
- To introduce them to the trends and characteristics of significant poetic movements through representative poems
- To develop their skills in reading, writing and to critically appreciate poetry
- To introduce students to poetry produced in various social and cultural context

Course Outcome: By the end of the course, a student should develop the ability to:

- Identify different genres and forms of poetry
- Identify poetic technique, style and rhetorical devices used in poetry
- Critically appreciate poems by separating various component parts and investigating the relationship of the parts to the whole
- Demonstrate understanding of wide range of poems from different historical periods, written in a wide range of forms, styles and subject matter
- Identify the major poets of world literature and define the importance of their works
- Enhance their cultural sensitivity through reading of representative poems from diverse cultural context

Semester III:	Paper III	Total Credits: 03
Course Title: Optional English: Introduction to Poetry		

Total Lectures: 45

Unit I **15 Lectures**

A) **Elements of Poetry:** Turns of Speech: Voice and persona, tone, mood, attitude; Diction: Denotation and connotation; Imagery; Symbol; Allegory; Figurative Language; Music: Rhyme and Rhythm, Scansion (scansion to be taught and practiced; not for evaluation)

B) **Types of Verse:** Nature, characteristics and functions: Epic, lyric, sonnet, elegy, ode, ballad, dramatic monologue and free verse

Unit II **15 Lectures**

John Milton :'Invocation' (from *Paradise Lost*), Book 1, Lines 1-26

Robert Frost :'The Road Not Taken'

Edmund Spenser : 'Men Call you Fayre…'(*Amoretti* LXXIX)

William Shakespeare : Sonnet 19, 'Devouring Time, blunt thou the Lion's paws'

Walt Whitman :'O Captain! My Captain!'

Ralph Waldo Emerson: 'Ode to Beauty'

W. B. Yeats : 'The Song of Wandering Aengus'

Unit III **15 Lectures**

John Keats : 'La Belle Dame sans Merci'

Alfred Lord Tennyson: 'Ulysses'

Rabindranath Tagore : 'Freedom'

Sarojini Naidu : 'Indian Weavers'

Wole Soyinka : 'To My First White Hairs'

Pablo Neruda : 'You Start Dying Slowly'

Nissim Ezekiel : 'Enterprise'

Evaluation Pattern:

Third Semester End Examination Pattern	Duration: 3 Hours	Marks: 100

Question 1(A): Short notes on Unit I (A)	(2 out of 4)	:10 Marks
and		
Question 1 (B): Short notes on Unit I (B)	(2 out of 4)	:10 Marks
Question 2: Essay on Unit II	(1out of 3)	:20 Marks
Question 3: Essay on Unit III	(1 out of 3)	:20 Marks
Question 4: Short Notes on Unit II	(2 out of 4)	:20 Marks
Question 5: Short Notes on Unit III	(2 out of 4)	:20 marks

Semester IV:	Paper III	Total Credits:03
	Course Title: Introduction to Poetry	

Total Lectures: 45

Unit I: Trends and Movements in Poetry: Modernism and after **15 Lectures**

Modernism, War Poetry, Harlem Renaissance, Imagism, Symbolism, Surrealism, Confessional Poetry, Beat poetry, Modernism in Indian English Poetry

Unit II **15 Lectures**

T.S. Eliot :'The Love Song of J. Alfred Prufrock'

Wilfred Owen :'Anthem for Doomed Youth'

Claude McKay :'If We Must Die'

William Carlos Williams :'The Red Wheelbarrow'

Wallace Stevens :'Sunday Morning'

Kamala Das :'An Introduction'

Arun Kolatkar :'The Bus'

Unit III **15 Lectures**

Phillip Larkin :'Church Going'

Robert Creeley : 'I Know a Man'

Meena Kandasamy :'Touch'

Gabriel Okara: : 'The Mystic Drum'

Chinua Achebe : 'Refugee Mother and Child'

Margaret Atwood : 'This is a Photograph of Me'

Derek Walcott : 'A Far Cry from Africa'

Evaluation Pattern:

Fourth Semester End Examination Pattern **Duration: 3 Hours** **Marks: 100**

Question 1: Short notes on Unit I	(4 out of 6)	:20Marks
Question 2: Essay on Unit II	(1out of 3)	:20 Marks
Question 3: Essay on Unit III	(1 out of 3)	:20 Marks
Question 4: Short Notes on Unit II	(2 out of 4)	:20 Marks
Question 5: Short Notes on Unit III	(2 out of 4)	:20 marks

References:

Abrams, M.H. *Glossary of Literary Terms*. Macmillan Publishers, 2000.

Adams, Stephen J. *poetic designs: an introduction to meters, verse forms and figures of speech.* Broadview Press Ltd., 2003.

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Altieri, Charles. *The Art of Twentieth-Century American Poetry: Modernism and After,* Blackwell Publishing Professional, 2006.

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Edmond Gore and Alexander Holmes. *What is Poetry*? Nabu Press, 2010.

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Ferry, Anne. *Milton's Epic Voice: The Narrator in Paradise Lost,* University of Chicago Press, 1963.

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Friedlander, Benjamin. (ed.) *Robert Creeley: Selected Poems 1945-2005.*University of California Press,2008.

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Gross, Harvey and Robert McDowell. *Sound and Form in Modern Poetry*. U of Michigan Press1996.

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Leech, Geoffrey, N. *A Linguistic Guide to English Poetry.* Longman,1996.

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-----. *An Anthology of New Indian English Poetry*. Rupa Publications, 1994.
Perloff, Marjorie. *21st – Century Modernism: The "New" Poetics*, Wiley-Blackwell, 2002.
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Roberts, Neil (ed.), *A Companion to Twentieth Century Poetry*. Blackwell, 2003.
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Thiong'o, Ngugi wa. *Homecoming: Essays on African and Caribbean Literature, Culture and Politics.* Educational Books, 1972.
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Walsh William, *Commonwealth Literature*, Oxford University Press, 1973.
Widdowson, Peter. *The Palgrave Guide to English Literature and its Contexts 1500-2000.* Palgrave Macmillan, 2004

MOOCs:

Dhanwal, S. P. 'Poetry'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs64/preview
Chattopadhyay, Sayan. 'Introduction to Literary Theory.' IIT Kanpur.
https://onlinecourses.nptel.ac.in/noc20_hs82/preview
Perui, Avishek . 'Gender and Literature'.IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs59/preview
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Perui. Avishek. 'Feminists Writings'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs58/preview

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University of Mumbai

Syllabus for S.Y.B.A. (Applied Component)

Course: Business Communication

Paper I & II

(Choice Based Credit System with effect from the Academic Year 2022-2023)

1. Syllabus as per Choice Based Credit System (CBCS):

i.	**Name of the Program**	**:** S.Y.B.A. (Applied Component)
ii.	**Course Code**	**:** Semester III (UABC301) Semester IV (UABC401)
iii.	**Course Title**	**: Business Communication Papers I and II**
iv.	**Semester wise Course Contents**	**:** Enclosed in the Copy of the Syllabus
v.	**References & Additional References**	**:** Enclosed in the Syllabus
vi.	**Credit Structure**	**:** Number of credits per Semester – 02
vii.	**No. of lectures per Unit**	**:** As mentioned in the syllabus
viii.	**No. of lectures per week**	04

2.	**Scheme of Examination**	**: 05 Questions** of 20 Marks each
3.	**Special notes, if any**	**:** No
4.	**Eligibility, if any**	**:** No
5.	**Fee Structure**	**:** As per University Fee Structure
6.	**Special Ordinances / Resolutions if any**	**:** No

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Business Communication

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course: This course aims to introduce students with

- To build up comprehensive understanding of business correspondence and conditions.
- To create influential oral, written and practical skills among students.
- To develop the powerful utilization of communication technologies.
- To equip students with the career skills such as collaborative working at workplace, interviews, etc.

Course Outcome: At end of the course learners will develop

- Theoretical understanding of both business and communication
- The business correspondence techniques.
- Competency in effective use of media and electronic devices in business.
- Interpersonal skills, presentation skills, oral, written and listening skills.

Semester III:	**Applied Component:**	**Paper-I**	**Total Credits: 02**
	Course Title: Business Communication		

Total Lectures: 60

Unit I : Theory of Communication (05)

- Concept of Communication
- Meaning
- Definition
- Process
- Need
- Feedback
- Emergence of Communication as a key concept in the Corporate and Global world

Unit II : Communication at the Workplace

i. Channels of Communication (03)

Formal and Informal – Vertical, Horizontal, Diagonal and Grapevine

ii. Methods of Communication (05)

Verbal, Non-Verbal and Visual (including Kinesics, Para-Language, Proxemics, Silence, Sign, Signal and Symbol)

iii. Business Etiquette **(04)**

Office Etiquette, Internet Etiquette / Netiquette, Business Card Etiquette, Handshake Etiquette, Mobile Phone Etiquette

iv. Barriers to Communication and Ways to Overcome Them **(06)**

Physical or Environmental, Semantic or Language, Psychological and Cross-Cultural Barriers

Ways to Overcome these Barriers

v. Listening **(04)**

What is Listening?

The Listening Process

Importance of Good Listening

How to Develop Effective Listening Skills

Obstacles to Listening

vi. Business Ethics **(07)**

What is Ethics? Business Ethics?

Importance of Business Ethics at Workplace

Digital Ethics

Environmental Ethics

Ethics in International Business

Corporate Social Responsibility

Unit III: New Media in Communication **(07)**

- Impact of Technology Enabled Communication
- Video Conference: Skype, Google Meet, Go-To-Meeting and Jio-Meet
- Social Media: WhatsApp, Twitter, Facebook, Instagram, Telegram and Blogs

Unit IV: Business Correspondence

i. Theory of Business Letter Writing **(05)**

- Principles of Effective Letter Writing
- Parts of a Business Letter
- Layout of a Business Letter (Full Block)

ii. Personnel Correspondence **(09)**

Job Application Letter and Resume

Letter of Recommendation

Letter of Appointment

Letter of Acceptance of Job Offer

Letter of Appreciation

Letter of Resignation

Unit V : Paragraph Writing and Book Review

i. **Paragraph Writing** **(02)**
Developing an idea, using appropriate linking devices, etc.
Cohesion and Coherence, etc.

ii. **Book Review** **(03)**
Steps in writing a book review: Introduction, Summary, Opinion and Conclusion
Recommended Books are: *The Wings of Fire* by Dr. APJ Abdul Kalam,
Bhujia Barons: *The Untold Story of How Haldiram Built a 5000 Crore Empire* by Pavitra Kumar and
The 7 Habits of Highly Effective People by Stephen Covey

Evaluation Pattern:

Third Semester	**End Examination Pattern**	**Duration: 3 Hours**	**Marks: 100**

Question 1. **:20 Marks (10+05+05)**

A. Explain the terms in 2 to 3 sentences (five out of eight) (from all Units)

B. Objective type questions (From all Units)

C. True or False (From all Units)

Question 2. Short Notes (four out of six) (From Unit – I and III) **:20 Marks**

Question 3. Essay Type Questions (two out of three (From Unit – II) **:20 Marks**

Question 4. Personnel Letters (four out of five) **:20 Marks**

Letter of Recommendation

Letter of Appointment

Letter of Acceptance of Job Offer

Letter of Appreciation

Letter of Resignation

Question 5. **20 Marks (10+05+05)**

A. Job Application Letter with Resume (05+05)

B. Book Review

C. Paragraph Writing

Semester IV:	Title of the paper:	Paper- II	Total Credits:03
	Course Title: Business Communication		

Total Lectures: 60

Unit I : Group Communication

i. Group Discussion and Interview **(08)**

- Group Discussion

What is GD? Effective Participation in GD, Role of Participants in GD and Role of Evaluators

- Interview, Definition

Preparing for an interview: the Interviewer and the Interviewee

Types of interview: Selection Interview, Appraisal Interview, Stress Interview, Exit Interview and Online Interview

- Soft Skills - Emotional Quotient (EQ), Conflict Management

ii. Meetings **(10)**

- Need and Importance of Meetings
- Types of Meetings: Formal and Informal Meetings
- Preparation and Conduct of Formal Meetings and Group Dynamics
- Role of the Chairperson
- Role of the Participants
- Drafting of Notice, Agenda and Resolutions
- Secretary: Types of Secretaries- Company Secretary/Private Secretary, Functions of Secretaries.

iii. Committees and Conferences **(08)**

- Committee

Definition of Committee

Types of Committees

Advantages and Disadvantages of Committee

- Conference

Definition of Conference

Organizing a Conference

Advantages and Disadvantages of organizing a conference

Unit II: Public Relations **(10)**

- Meaning
- Functions of the PR Department of an Organization
- Qualification of a PRO
- External and Internal Measures of Promoting PR
- Crisis Management
- Definition
- Causes of Crisis
- Types of Crisis
- Stages for Crisis Management

- Role of Crisis Manager

Unit III: Business Correspondence **(10)**

- Letters of Inquiry
- Letters of Reply to Inquiry
- Letters of Complaint, Claim and Adjustments
- Sales Letters
- Consumer Grievance Redressal Letters

Unit III : Report Writing **(06)**

- Parts of a Business Report
- Drafting Feasibility Reports
- Drafting Investigative Reports

Unit V : Language and Writing Skills **(08)**

i. Presentation Skills

- Principles of Effective Presentation
- Use of PPT
- How to make effective Power-Point Presentation

ii. Interactive Sessions (Not to be assessed in exam)

- Group Discussion
- Mock Interview

Evaluation Pattern:

Fourth Semester End Examination Pattern	**Duration: 3 Hours**	**Marks: 100**

Question 1. Short Notes (four out of six) **:20 Marks**
(From Unit – I Group Discussion, Interviews, Meetings)

Question 2. Essay Type Questions (two out of three) **:20 Marks**
(Based on Committees, Conferences and Public Relations)

Question 3. Trade Letters (four out of five) **:20 Marks**
Letters of Inquiry
Letters of Reply to Inquiry
Letters of Complaint, Claim and Adjustments
Sales Letters
Consumer Grievance Redressal Letters

Question 4. Answer the following questions **:20 Marks (10+10)**

A. Drafting Notice, Agenda and Two Resolutions (03+03+04)
B. Report Writing (One out of two) (10)

Question 5. Answer the following questions. **:20 Marks (10+05+05)**

A. Explain the terms in 2 to 3 sentences (five out of eight) (from all Units)
B. Multiple Choice Questions (From all Units)
C. Short Notes (From Unit-V (i) Presentation Skills)

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Web Resources:

1. http://lifehacker.com/top-10-ways-to-improve-your-communication-skills- 1590488550
2. https://www.thebalance.com/verbal-communication-skills-list-2059698
3. https://bemycareercoach.com/soft-skills/list-soft-skills.html
4. https://www.thebalance.com/verbal-communication-skills-list-2059698
5. https://bemycareercoach.com/soft-skills/list-soft-skills.html
6. https://www.sitepoint.com/social-networking-sites-for-business

Suggested List of YouTube Videos:

1. https://www.youtube.com/watch?v=K15ca0n0ois
2. https://www.youtube.com/watch?v=ixSUB11WNxk
3. https://www.youtube.com/watch?v=K15ca0n0ois

MOOCs:

1. https://www.mooc-list.com/tags/communication-skills
2. https://www.mooc-list.com/tags/effective-communication
3. http://www.about.com/Communication+Skills+List

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UNIVERSITY OF MUMBAI

Syllabus for

S.Y.B.A. (Applied Component)

Course Title: Mass Communication

Paper I & II

(Choice Based Credit System with effect from the Academic Year 2022-2023)

7. Syllabus as per Choice Based Credit System (CBCS):

ix.	**Name of the Program**	**:** S.Y.B.A. (Applied Component)
x.	**Course Code**	**:** Semester III (UAMASSCOM301) Semester IV (UAMASSCOM401)
xi.	**Course Title**	**: Mass Communication** **Papers I and II**
xii.	**Semester wise Course Contents**	**:** Enclosed in the Copy of the Syllabus
xiii.	**References & Additional References**	**:** Enclosed in the Syllabus
xiv.	**Credit Structure**	**:** Number of credits per Semester – 02
xv.	**No. of lectures per Unit**	**:** As mentioned in the syllabus
xvi.	**No. of lectures per week**	04

8. **Scheme of Examination** **: 05 Questions** of 20 Marks each

9. **Special notes, if any** **:** No

10. **Eligibility, if any** **:** No

11. **Fee Structure** **:** As per University Fee Structure

12. **Special Ordinances / Resolutions if any** **:** No

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Mass Communication

Paper I & II

(100 Marks Examination Pattern)

Learning Objectives:

1. To introduce some major aspects of communication, mass communication processes, crucial mass media theories and mass communication industries
2. To develop a broad perspective of the past and the present status of mass media in India
3. To comprehend different types of Mass Media and gain a critical understanding of the impact of mass media on Indian history, society and culture
4. To develop critical awareness of the ethics and ideologies in mass media products
5. To understand the mass media laws in India, and how these laws shape the media practices
6. To introduce students to the application of social media
7. To identify various careers opportunities in media industry.

Course Outcome:

By the end of the course the students should be able to

1. understand the importance, scope, and function of communication and media
2. understand the strengths and limitations of basic theories of mass communication
3. demonstrate knowledge of growth and development of various mass media
4. throw light on the present status of various mass media
5. gain knowledge about various media laws and ethics
6. critically understand and analyse various mass media products and explore various career opportunities in media industry.

Semester III – Paper I

Credits: 02

Lectures per week: 04 **Total lectures: 60 per semester**

Unit 1- Nature of Mass Communication (20 lectures)

A) Scope, need, and elements of communication

B) Meaning, definition, and features of Mass Communication

C) Mass media theories like Cultivation theory, Gatekeeping theory, Magic bullet/hypodermic needle theory

D) Functions of Mass Communication: entertainment, surveillance, education, interpretation, persuasion, socialization, opinion building

E) Mass audience & opinion leaders: concept, sociology and psychology

Unit II- Traditional media, Print Media and Radio (15 lectures)

A) Folk media

B) The making of a newspaper: major formats of newspaper items

C) Partisan Journalism/Yellow Journalism/Objective Reporting

D) Major types of magazines

E) Radio as a patron of music

F) Radio News, Radio Drama, Community Radio and Campus Radio

Unit III- Films/ Cinema (15 lectures)

A) History of Indian cinema and major milestones

B) Major types of films/cinema: Documentaries, Art films, Animations, Short films, and Biopics

C) Some aspects of film making (scripting, directing, sounds)

D) The impact of films/cinema on society

E) Ethics of cinema

Unit IV- Trends in New media or Digital media (10 lectures)

A) Online news websites

B) Social media and social networking sites

C) Special issues regarding social media: mass campaigns; fake news; fact-checkers

D) Film streaming services (Netflix, Amazon Prime)

E) Web series

Evaluation Pattern:

Third Semester End Examination

Duration: 3 Hours **100 Marks**

Q.1. Objective Type:

a) Explain the following in 2/3 sentences (5 terms from all the 4 units): 10 marks

b) Multiple choice questions (5 questions on all the 4 units): 05 marks

c) State whether the statements are true or false (5 statements on all the 4 units): 05 marks

Question No. 2 to 5 on Unit No. 1 to 4 respectively:

Q.2 a) 1 Full length essay type question: 20 marks

OR

b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.3 a) 1 Full length essay type question: 20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Q.4 a) 1 Full length essay type question: 20 marks

OR

b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.5 a) 1 Full length essay type question: 20 marks

OR

b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Semester IV – Paper II

Credits: 2

Lectures per week: 04 **Total lectures: 60 per semester**

Course Title: Mass Communication

Unit I- Evolution of Different Media and the Contemporary Context (10 Lectures)

A) Beginnings of mass media in India

B) Technological milestones and changing trends from conventional to digital media

C) Role of media in national development

D) Reach of media (regional and demographic coverage)

Unit II - Television (15 lectures)

A) Major formats of TV programmes

B) Television and its impact on Indian families

C) Television and consumerism

D) Television and surveillance

E) Reality Television

Unit III- Media-related Issues and Laws in India (20 lectures)

A) Freedom of expression and Censorship

B) Relationship between media and government

C) Media objectivity, media bias, and political leanings

D) Trial by media and media ethics (Television and Print)

E) Objectionable advertising

F) Information technology (IT) Acts related to media

G) Major laws in India related to media

Unit IV- Functions of Media Personnel and Careers in Media (15 lectures)

A) Cyber Journalism

B) Editors

C) Translators

D) Copywriters

E) Role of Radio Jockey/Video Jockey

F) Blogging

G) Writing jingles

H) Voice-over Artists

I) Public Relations specialists

J) Advertising/marketing specialists

K) Script-writers

L) Newsreaders

M) Researchers/Writers

N) Music specialists

O) Social media specialist

Evaluation Pattern:

Fourth Semester End Examination

Duration: 3 Hours **100 Marks**

Q.1 Objective Type:

a) Explain the following in 2/3 sentences (5 terms from all the 4 units) :10 marks
b) Multiple choice questions (5 questions on all the 4 units) :05 marks
c) State whether the statements are true or false (5 statements on all the 4 units):05 marks.

Question No. 2 to 5 on Unit No. 1 to 4 respectively:

Q.2 a) 1 Full length essay type question :20 marks
OR
b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.3 a) 1 Full length essay type question :20 marks
OR
b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.4 a) 1 Full length essay type question :20 marks
OR
b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.5 a) 1 Full length essay type question : 20 marks
OR
b) 2 Short essay type questions (a and b): (10+10) = 20 marks

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UNIVERSITY OF MUMBAI

Syllabus for S.Y.B.A. (English)
(Applied Component)
Program: B.A.

Course: Introduction to Journalism

(Choice Based Credit System with effect from the academic year 2022-2023)

1. Syllabus as per Choice Based Credit System with effect from the academic year 2021-2022

i)	**Name of the Program**	**: B.A.**
ii)	**Course Code**	**: Semester III UAJOUR301**
		Semester IV UAJOUR401
iii)	**Course Title**	**: S.Y.B.A. Introduction to Journalism**
		(Applied Component)
		SEM III: Fundamentals of Journalism and Reporting
		SEM IV: Editing, Feature Writing and Layout
iv)	**Semester wise Course Contents**	**: Enclosed the copy of syllabus**
v)	**References and Additional References:**	**Enclosed in the Syllabus**
vi)	**Credit Structure**	**: No. of Credits per Semester – 02**
vii)	**No. of lectures per week**	**04**
2.	**Scheme of Examination**	**: 5 Questions of 20 marks each**
3.	**Special notes , if any**	**: No**
4.	**Eligibility, if any**	**: No**
5.	**Fee Structure**	**: As per University Structure**
6.	**Special Ordinances / Resolutions if any**	**: No**

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Introduction to Journalism

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course

1) To acquaint the learners with the basic concepts of journalism and to familiarize them with the content of a newspaper and departments of the newspaper publishing house.
2) To sensitize them to the styles of journalistic prose
3) To inculcate in them the skills of reporting, editing and feature writing in print medium
4) To enable the students to have a career perspective in journalism

Course Outcomes: By the end of the course, a student should develop the ability:

- To write in various journalistic formats effectively
- To write and edit reports and features
- To develop a career perspective in journalism

Semester III: Fundamentals of Journalism and Reporting (Applied Component) Paper I	
Course code-UAJOUR301	**Credits 2**

Total: 60 Lectures

Unit 1: Introduction: **12 lectures**

(i) What is news (ii) Origin and development of the Indian Press (iii) Major Press Laws in India: Adam's Regulations, Vernacular Press Act (iv) Press and Socio-Political issues in pre- and post-Independence India (v) Journalism during Freedom Movement (vi) Press during the Emergency (vii) Photo-journalism

Unit 2: Agencies, Electronic Journalism, Ethics: **12 lectures**

(i) News Agencies, (ii) Press Syndicate (iii) Electronic Journalism (iv) Ethics in Journalism

Unit 3: Organization and Structure of a Newspaper House: **12 lectures**

Circulation, Advertising, Editorial and Mechanical Departments

Unit 4: Basics of Reporting: **12 lectures**

News Value, News Gathering, Readers' interest, Qualities and aptitude necessary for a reporter, Types of reports

Unit 5: **Writing of Reports:** **12 lectures**

Basic principles: objectivity, accuracy, speed, clarity and integrity; Parts of a news report; 5Ws; Headline writing; Types of Leads; and Report writing

Evaluation:	**Third Semester End Examination Pattern**	**100 Marks**	**3 Hours**

Question 1: Essay (1/2) or Short Notes (2/4) on Unit 1 :20 Marks

Question 2: Essay (1/2) or Short Notes (2/4) on Unit 2 : 20 Marks

Question 3: Essay (1/2) or Short Notes (2/4) on Unit 3 : 20 Marks

Question 4: Essay (1/2) or Short Notes (2/4) on Unit 4 : 20 Marks

Question 5: Students to write a news report with clear headlines and lead on a given topic or essay (1/2) on the basics of reporting on Unit :20 Marks

Semester IV: Editing, Feature Writing and Layout (Applied Component)	**Paper 2**
Course code-UAJOUR401	**Credits 2**

Total: 60 Lectures

Unit 1: Basics of Editing: **8 lectures**

Principles of editing, Editorial policy, Role of the Editor, Role of the News Editor, Role of Chief Sub-editor, Role of Sub-editors

Unit 2: Process of Editing: **16 lectures**

Compiling of data, Editing for language and style, Editing for space, Editing for correctness, Editing for clarity

Unit 3: Editing an Article: **12 lectures**

Students are expected to learn how to edit an article for newsworthiness, length and suitable expression.

Unit 4: Basics of Feature Writing: **12 lectures**

Types of features: Obits, Reviews, Columns, Trend Stories.

Students are expected to learn how to write a feature on a contemporary topic.

Unit 5: Design and Make up: **12 lectures**

Make up and its functions, Types of Layout: Horizontal, Vertical Make up, Circus Make up, Modular layout, Broadsheet layout, Tabloid layout, Fonts and Typography

Evaluation:	**Fourth Semester End Examination Pattern**	**100 Marks**	**3 Hours**

Question 1: Essay (1/2) or Short Notes (2/4) on Unit 1	:20 Marks
Question 2: Essay (1/2) or Short Notes (2/4) on Unit 2	:20 Marks
Question 3: Edit an article or report.	: 20 Marks
Question 4: Write a feature on a contemporary topic (1/2)	:20 Marks
Question 5: Essay (1/2) or Short Notes (2/4) Unit 5	: 20 Marks

References

Kamath. M V. *Professional Journalism*. New Delhi: Vikas Publishing House, 1980.

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Menon, P. K. *Practical Journalism*. Jaipur: Avishkar Publishers, 2005.

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Prasad, Sharada, Rukun Advani (et al) *Editors on Editing*. New Delhi: National Book Trust, 2004.

Selvaraj, Madhur. *News Editing and Reporting*. New Delhi: Dominant Publishers, 2005.

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Syllabus for S.Y.B.A. (Public Relations)

(Applied Component)

Program: B.A.

Course: Public Relations

(Choice Based Credit System with effect from the academic year 2022-2023)

1. Syllabus as per Choice Based Credit System:

i) Name of the Program	**: S.Y.B.A. (Applied Component)**
	Semester III and IV
ii) Course Code	**: UAPR3A1 & UAPR4A1**
iii) Course Title	**: Public Relations Papers I & II**
iv) Semester wise Course Contents	**: Enclosed the copy of syllabus**
v) References and Additional References	**: Enclosed in the Syllabus**
vi) Credit Structure	**: No. of Credits per Semester – 02**
vii) No. of lectures per week	**04**
viii) No. of lectures per unit	**15**
2. Scheme of Examination	**: 5 Questions of 20 marks each**
3. Special notes, if any	**: No**
4. Eligibility, if any	**: No**
5. Fee Structure	**: As per University Structure**
6.Special Ordinances / Resolutions if any	**: No**

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Public Relations

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course:

- To introduce learners to the origin, basic concepts and activities of Public Relations.
- To motivate learners to practice various basic skills required for successful career in the field of Public Relations
- To give learners an insight about the significance, uses and functions of Public Relations.
- To explain the learners importance of ethics and professional code for PR practitioners.
- To explicate the learners the role and function of Public Relations for Corporate field, education institutions, local self-government, government and NGOs
- To create awareness among students about various career opportunities available in the field of public relations and also to motivate them to pursue the same

Course Outcomes: By the end of the course,

- Students will be able to understand and explain the basic components and aspects of the Public Relations
- Students will comprehend and recognise the importance of Public Relations for achieving success in the various fields like business, education, works carried out by various government, local government bodies as well as non-government organisations
- Students will be able to practice various communication skills required in the field of Public Relations as well as in other fields
- Students will opt for various careers like PR officer as well as attempt to pursue other career opportunities in the field of Public Relations

Semester Three: Public Relations: Paper 1 - 2 Credits

Lectures: 60

Unit 1: Introduction to Public Relations

- The concept of Public Relations: Origin, definitions, activities, and role of PR
- Objectives of Public Relations
- Evolution and the development of modern Public Relations
- Development of Public Relations in India, Pre and post-independence period.

Unit 2: Principles, Components and importance of Public Relations for various sectors

- Principles of Public Relations
- Components of PR-Employees Relations, Industrial Relations, Community Relations, Customer Relations, Financial Relations, Press Relations, Government Relations and Liaison, Special Events, Counseling Research, Publicity, Fundraising/Launches
- Importance of Public Relations in business, industry, and for governmental, Public, nonprofit, nongovernmental organizations such as cultural, sports, educational organizations like trusts, clubs, schools, colleges etc.
- Misconceptions about PR –Propaganda, Fine Appearance, Free Gifts, Annual Parties, Protocol, Goodwill

.

Unit 3 : Process of Public Relations

- Defining the model, planning, execution and evaluation of the Action Plan of PR process
- Importance of communication in the process of PR, including theory, objectives, types, barriers, art of listening and communication skills required for successful process of PR
- Process and activities of Internal PR
- Process and activities of External PR

Unit 4 : Functions and tools of PR

- Functions and uses of Public Relations
- Media tools for PR- Press Release, Press Conference, Special Issue, News Clippings, Photo Gallery, Meetings
- Specific tools for PR- Family get together and outing, cultural programme for employees, Celebration of foundation day, week for specific purpose, camp, competition, lecture series, exhibition, open day, sponsorship, newsletter, in- house Journal etc.
- Crisis Management as PR function-types, guiding principles, preparation and role of PR in the Crisis management, services provided by PR during the crisis, the review of Crisis Management, Crisis communication in the times of Industrial disaster, consumer pressures, image problems, quality issues

Evaluation Pattern:
Third Semester End Examination
Duration:3 Hours 100 Marks

Question1. Objective type questions: (based on all units)

a) Explain the following concepts in three to five sentences each. (**Any five**) :**10 Marks**

(**7 Short answer Questions should be framed**)

b) Match the following pairs. :**05 marks**

c) State whether the following statements are true or false. **:05 marks**

Question 2. Based on Unit 1

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 3. Based on Unit 2

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 4. Based on Unit 3

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Question 5. Based on Unit 4

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Semester Four: Public Relations :Paper 2 - 2 Credits

Lectures: 60

Unit 1: Public Relations in Corporate Business

- Image Building of the brand, company and constituents of Image Building
- Corporate Social Responsibility and Public Relations
- New trends in corporate Public Relations-Benchmarking, Consultancy, Team Building, Branding and Image Building, Public Opinion, ICT technology and Digital Social Media like Facebook, twitter, linkedin, blogs etc.
- Corporate Citizenship and Public Relations
- Professional nature of Public Relations, reasons and factors responsible for the development of professional nature of public relations in business world, Research and training in the Public Relations

Unit 2: Ethics and Code of Conduct in PR

- Principles of Public Relations Practice
- Code of Ethics prescribed by PR Society of India
- IPRA Code of Conduct
- Purpose of Professional Bodies
- Code of AIR and T.V. Channels
- Code of commercial advertising on T.V. Channels
- Advertising and PR ethics.
- Impact of PR on the society

Unit 3: Public Relations in Practice

- Qualities of a PR Practitioner
- Areas of Work (Functions) of Public Relations Practitioners—Writing, Editing, Media Relations, Special Events, Mass Media Production ,Corporate Counseling, Crisis Communication, Managing News and Features
- Effective Oral Communication skill
- Skills for PR -Effective Public Speaking, Writing Skills, Debating Skills, Group Interaction.
- Written Communication and Audio-Visual Aids for PR

Unit 4: Public Relations and other related areas

- PR and Marketing, PR and Journalism, PR and Business Communication, PR and Psychology
- PR and advertising, types, creativity, message through entertainment, correlation and differences between PR and advertising
- PR Campaign
- Relations with Shareholders, Relations with Dealer – Distributor, Relations with Financial Institutions, Relations with other Business Groups Community Relations, Consumer Relations.

Evaluation Pattern:

Fourth Semester End Examination

Duration:3 Hours 100 Marks

Question1. Objective type questions: (based on all units)
a) Explain the following concepts in three to five sentences each. (**Any five**) :**10 Marks**
(7 Short answer Questions should be framed)
b) Match the following pairs. :**05 marks**
c) State whether the following statements are true or false. **:05 marks**

Question 2. Based on Unit 1

a) 1 Full length essay type question :20 marks
OR
b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 3. Based on Unit 2
a) 1 Full length essay type question :20 marks
OR
b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 4. Based on Unit 3
a) 1 Full length essay type question :20 marks
OR
b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Question 5. Based on Unit 4
a) 1 Full length essay type question :20 marks
OR
b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Suggested Readings :-

Ahuja, B. N., (2006) *Public Relations,* Ed. 5th,New Delhi:Surjeet Publication.
Alison, Theaker., (2008) *The Public Relations Handbook,:*Routledge.
Banks Stephen P., (2003) Multicultural Public Relations, New Delhi: Surjeet Publications.
Block, Caroline. ,(2003*) The PR Practitioner's : A Handbook* ,Vivabooks Pvt Ltd.
Butterick,Keith. ,(2010) *Introducing Public Relations: Theory and Practice,* New Delhi: Sage Publications.
Cutlip & Centre.,(2005) *Effective Public Relations*.,New Delhi : Pearson.
David, Meerman Scot, (2008) *The New rules of Marketing and Public Relations,* New Delhi: Prentice Hall.
James E. Grunig, David M. Dozier, William P. Ehling, Larissa A. Grunig, Fred C. Repper,
Jon White., (1992) *Excellence in Public Relations and Communication,*Management., Lawrence Erlbaum Associates.
Jethwaney,Jaishri., (2018) *Corporate Communication-Principles and Practice*, New Delhi: Sage Publication.
Krishnamurthy, Sriramesh., (2004) *Public Relations in Asia: An Anthology*,Thomson.

Nayyar, Deepak., (2006) *Public Relations and Communication*, Jaipur :ABD Publishers.
Parvati, (2005),*Text Book of Public Relations and Communications*, New Delhi : Dominant Publishers .
Raucher, Alan R., (1968) *Public Relations and Business (1900- 1921),* Baltimore:The Jehn Hopkins Press.
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Silvia,Cambie and Yang-May, Ooi.,(2009)*International Communications Strategy – Developments in Cross-Cultural Communications, PRand Social Media,* Kogan Page.
Shelburne, Merry.,(2003) ,*Effective Public Relations: A Practical Approach*, New Delhi: Biztantra.
Sharma, Diwakar., *(i*2004) *Public Relations.*,Delhi: Deep and Deep Publications.
Tomar,Dinesh., (2008) *Public Relations Management*, New Delhi: Vista International Publishing House.
Vachani, Jagdish., (2007) *Public Relations Management in Media and Journalism*, New Delhi: Kanishka Publications.
Wragg, David, W.,(1992) *An introduction to Public- Relations* :U.K, Oxford.
प्रा डॉ कप्तान, संजय.,प्रा फुले,ककशोर,. (2009) जनसंपक, पुणे :डायमंड पब्लिके शन्स . प्रा पुरी,सुरेश. (2013)जनसंपक : संकल्पना एवं कसद्ांत,औरंगाबाद :साद प्रकाशन.

Web Resources

The Era of Corporate Social Responsibility is Ending | Rachel Hutchisson | TEDxWilmington, @ https://www.youtube.com/watch?v=N8dXNzCIVxg accessed on 10th July 2020

The social responsibility of business | Alex Edmans | TEDxLondonBusinessSchool, @ https://www.youtube.com/watch?v=Z5KZhm19EO0 accessed on 12th July 2020

Re-thinking corporate social responsibility: Andy Le Seelluer at TEDxStHelier,@ https://www.youtube.com/watch?v=jga4s0Ei7Zs accessed on 15th July 2020

Book Review on "Corporate Communication", @https://www.youtube.com/watch?v=iu1I_zkq444 accessed on 25th July 2020

Career in Public Relations, @ https://www.youtube.com/watch?v=zdiNCOixLBA accessed on 25th July 2020

About PR in general: https://apps.prsa.org/AboutPRSA/PublicRelationsDefined/ accessed on 26th July 2020
Readings on Global PR: http://www.instituteforpr.org/global-public-relations/ accessed on 5th August 2020
Anderson, F., & Hadley, L. (1999). Guidelines for setting measurable public relations objectives. Institute for Public Relations, retrieved February 6, 2010, from http://www.instituteforpr.org/ipr_info/measureable_public_objectives accessed on 7th August 2020.

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UNIVERSITY OF MUMBAI

Syllabus for S.Y.B.A.
(Women's Studies) (Applied Component)
Program: B.A.

Course: Women's Studies

(Choice Based Credit System with effect from the academic year 2022-2023)

1. Syllabus as per Choice Based Credit System:

i)	**Name of the Program**	**: B.A.**
ii)	**Course Code**	**: Semester III (UAWS3A1) and Semester IV (UAWS4A1)**
iii)	**Course Title**	**: Women's Studies (Applied Component)**
iv)	**Semester wise Course Contents**	**: Enclosed the copy of syllabus**
v)	**References and Additional References: Enclosed in the Syllabus**	
vi)	**Credit Structure**	**: No. of Credits per Semester – 02**
vii)	**No. of lectures per week**	**04**

2.	**Scheme of Examination**	**: 5 Questions of 20 marks each**
3.	**Special notes , if any**	**: No**
4.	**Eligibility, if any**	**: No**
5.	**Fee Structure**	**: As per University Structure**

6. Special Ordinances / Resolutions if any : No

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Women's Studies

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course:

i. To enable an understanding of concepts such as sex and gender, patriarchy
ii. To enable an understanding of the construction of gender
iii. To provide insight into the workings of patriarchy and its oppressive nature
iv. To familiarize students with an understanding of feminist theory and the schools of feminist thought
v. To empower students with a knowledge of women's rights and legal safeguards
vi. To provide an understanding of major historical developments and feminist movements in feminist history
vii. To engender a critical understanding of literary and media texts dealing with women's issues

Course Outcome: By the end of the course, a student should develop the ability:

i. To articulate concepts linked to gender and feminism
ii. To have an understanding of patriarchy
iii. To have an awareness of crimes against women, and the constitutional and legal safeguards protecting / empowering women
iv. To have knowledge and understanding of feminist theory
v. To have a knowledge of feminist history
vi. To analyze and critically evaluate literary and media texts dealing with women's issues
vii. To be gender-sensitive, have a feminist outlook, and combat stereotypes and gender biases prevalent in society

Semester Three: Women's Studies :
Paper 1 (Applied Component) 2 Credits

Lectures: 60

Unit 1: An Introduction to Concepts, and the Scope and Practice of Women's Studies

a) Women's Studies: Relevance, Prospects and the Indian Context
b) Sex, Gender and Biological Determinism
c) Patriarchy as an oppressive ideology
d) Three Waves: Feminine, Feminist and Female

Unit 2: Schools of Feminism and Feminist Theory

a) Liberal Feminism
b) Marxist Feminism
c) Psychoanalytical Feminism
d) Radical Feminism

Unit 3: Combatting Crimes and Discrimination - Constitutional and Legal Safeguards for Women

a) Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)
b) National Policy on Empowerment of Women
c) Laws and safeguards against Rape and Sexual Harassment: Indian Penal Code; the Indecent Representation of Women Prohibition Act, 1987; the Vishakha Guidelines; the 'Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013'; the Internal Complaints Committee in organizations; the Zero FIR
d) Laws related to Women and Pregnancy: Maternity Benefit Act, 1961; Medical Termination of Pregnancy Act, 1971; The Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 2003; the Surrogacy (Regulation) Bill, 2016

Unit 4: Feminist historiography and Feminist Movements in India

a) Locating Women in History: The need for Feminist historiography
b) The Brahmo Samaj in India
c) The White Revolution, Amul and Women's Empowerment
d) The Nirbhaya case and combatting 'rape culture'

Unit 5: **Literary Texts**

a) Charlotte Perkins Gilman: "The Yellow Wallpaper"
b) James Joyce: "Eveline"
c) Fay Weldon: "Weekend"
d) Mahasweta Devi: "The Breast Giver"

Evaluation:	**Third Semester End Examination Pattern**	**100 Marks : 3 Hours**

Question 1:	One Essay or Two Short Notes	:20 Marks
Question 2:	One Essay or Two Short Notes	:20 Marks
Question 3:	One Essay or Two Short Notes	:20 Marks
Question 4:	One Essay or Two Short Notes	:20 Marks
Question 5:	One Essay or Two Short Notes	:20 Marks

Each question corresponds to the respective unit in the syllabus. In each question, there will be 2 essay type questions in options A and B respectively, and option C will have four short notes, with two to be attempted. There will be a choice of 3 questions: A (essay) or B (essay) or C (short notes).

Semester Four: Women's Studies (Applied Component)	2 Credits

Lectures: 60

Unit 1: Feminist History and Global Movements

a) The Seneca Falls Convention and Women's Suffrage Movement
b) Women Scientists and women in science
c) Women, Self-help Groups and Entrepreneurship
d) The #MeToo Movement

Unit 2: Schools of Feminism and Feminist Theory

a) Gynocriticism
b) Postmodern Feminism
c) Postcolonial Feminism
d) Intersectional Feminism

Unit 3: Women and Work

a) The Public-Private Dichotomy, sexual division of work and perceptions of jobs as gender-specific
b) Concepts of visible and invisible work, paid and unpaid labour
c) The Glass Ceiling, Sticky Floor and Glass Escalator Effects
d) Issues of working mothers and single working women

Unit 4: Women and the Media: Sexuality, Body Politics and Media Representations

a) Women and the Beauty Industry: Ageism, beauty standards, racism, cosmetic surgery, the Male gaze, and the casting couch phenomenon
b) Pregnancy related issues: Family Planning, Contraception, Abortion, Sex-determination, mental health and post-partum depression
c) Women on social media platforms, body shaming, cyber-bullying, cat-phishing, online stalking and harassment
d) The Representation of Women in the Media: Ads, Films, Music Videos and in the news

Unit 5: Literary and Media Texts

a) Sylvia Plath: "The Mirror"
b) Maya Angelou: "Still I Rise"
c) Short Films: *Juice* (directed by Neeraj Ghaywan), *Going Dutch* (Tittar Lodge Productions); *Ahalya* (directed by Sujoy Ghosh) and *Devi* (directed by Priyanka Banerjee)
d) Dove ads focusing on the campaign of 'real beauty'

Evaluation:	Fourth Semester End Examination Pattern	100 Marks: 3 Hours

Question 1:	One Essay or Two Short Notes	:20 Marks
Question 2:	One Essay or Two Short Notes	:20 Marks
Question 3:	One Essay or Two Short Notes	:20 Marks
Question 4:	One Essay or Two Short Notes	:20 Marks
Question 5:	One Essay or Two Short Notes	:20 Marks

Each question corresponds to the respective unit in the syllabus. In each question, there will be 2 essay type questions in options A and B respectively, and option C will have four short notes, with two to be attempted. There will be a choice of 3 questions: A (essay) or B (essay) or C (short notes).

References

- Anderson, Ellen and Willett, Cynthia. (2020). Feminist Perspectives on the Self. Retrieved from URL: https://plato.stanford.edu/entries/feminism-self/
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Links to Films:

1. Juice:
   https://www.youtube.com/watch?v=R-Sk7fQGIjE
2. Going Dutch:
   https://www.youtube.com/watch?v=iFFYF-fykaU
3. Devi
   https://youtu.be/2KP0aDTVtFI
4. Ahalya
   https://youtu.be/Ff82XtV78xo

MOOC

Andrea Walsh, and Elizabeth Fox. *WGS.101 Introduction to Women's and Gender Studies.* Fall 2014. Massachusetts Institute of Technology: MIT OpenCourseWare, https://ocw.mit.edu. License: Creative Commons BY-NC-SA.

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University of Mumbai

Syllabus for S.Y.B.A. (Applied Component)

Program: B.A.

Course: Introduction to Advertising

(Choice Based Credit System with effect from the Academic Year 2022-23)

1. Syllabus as per Choice-Based Credit System:

a) Name of the Program : S. Y. B.A. (Applied Component) Semester III and IV

b) Course Code : Semester III (UAIA3A1) Semester IV (UAIA4A1)

c) Course Title : Introduction to Advertising Semester III: Paper I,

(Basic Concepts of Advertising)

Semester IV: Paper II, (Creativity and Research in Advertising)

d) Semester wise Course Contents : Enclosed the copy of syllabus

e) References and Additional References: Enclosed in the Syllabus

f) Credit Structure : No. of Credits per Semester – 02

g) No. of lectures per Unit 12

h) No. of lectures per week 04

2. Scheme of Examination : 5 Questions of 20 marks each

3. Special notes, if any : No

4. Eligibility, if any : No

5. Fee Structure : As per University Structure

6. Special Ordinances /: No Resolutions if any: No

S.Y. B.A. (Applied Component)

Course Title: Introduction to Advertising

Paper I & II

(100 Marks Examination Pattern)

- **Objectives:**

i) To introduce learners to the main subfields and basic modern concepts/ideas, theoretical models, empirical instruments and data sources in advertising.
ii) To encourage learners for further interest in advertising studies
iii) To develop professional communicative competence
iv) To introduce learners to different tools of communication for corporate identity /brand building through various advertising techniques

- **Course Outcomes:**

By the end of the course, learners should develop the following abilities:
i) To demonstrate a working knowledge of the following areas associated with the advertising industry: Target marketing, Ad agency organizations and operations, media strategies, use of electronic media, outdoor media, print media, sales promotions, etc.
ii) To write clearly, coherently and effectively about various concepts in advertising
iii) To define the economic and social impact of advertising on society
iv) To understand the communication process of advertising, marketing research, campaign strategies, concepts, budgets, creative process, and ethics in advertising.

Semester-III	**Applied Component**	**Paper – I**	**Total Credits – 2**
Course Title: Introduction to Advertising - Basic Concepts of Advertising			

Total Lectures: 60

Unit- I Introduction to Advertising **12 Lectures**

a) Advertising: Evolution of Advertising, Features of Advertising, Active participants, Role of Advertising in Marketing Mix, Role of Advertising in society.
b) Classification of Advertising: Social Advertising, Political Advertising, Advocacy Advertising, Retail Advertising, Financial Advertising, Corporate Image Advertising, Print Media Advertising, Electronic or Broadcast Media Advertising, National Advertising, International Advertising, Advertising on Social media

Unit- II Advertising and Media for Marketing and Communication **12 Lectures**

a) Introduction to Integrated Marketing Communication, Advertising and Publicity, Public Relation, Sales promotion, Different Forms of Displays - Window Display, Showcases, Showrooms , Exhibitions, Trade Fairs,

Traveling Displays, Car Cards, Sky Writing or Sky Balloons, Word of Mouth Influence (WOM), Packaging,

b) Advertising and Brand Management, A History of Branding and Advertising, Psychology of Advertising, Media Ecology, Consumer Behaviour, Environmental Marketing Communications

Unit- III The impact of Media in Advertising **12 Lectures**

a) Factors influencing Media selection and Media Planning Strategies, Importance of Advertising in Marketing , Role of Celebrity Endorsers in Advertising,
b) Media options for advertising – Television, Radio , Internet, Print, Film, Outdoor advertising and Social Media,
c) Concepts - Media Buying, Media Selling, Media Mix, Clutter, Zipping & Zapping, Branding & Brand Positioning

Unit- IV Economic & Social Aspects of Advertising **12 Lectures**

a) Economic aspects of Advertising: Impact on production, distribution and consumer cost, advertising and competition, Understanding the role of advertising agencies.
b) Social aspects of advertising, advertising and culture (values, festivals, customs), standard of living, ethics in advertising, Advertising and Women, Advertising and Children, Ethical issues of Packaging and Branding, Ethical issues in Online and Social Media Marketing,
c) Regulation and control on advertising in India – Advertising Standard Council of India (ASCI), Advertising Agencies Association of India (AAAI), and Information & Broadcasting Ministry, Advertising self-Regulation

Unit- V Advertising Agency and Advertising as a Career **12 Lectures**

a) Advertising Agency – definition, types of services offered, types of advertising agencies, structure of Ad agencies, agency selection criterion, ways of getting clients with special reference to creative pitch, Top advertising agencies and their campaigns.
b) Career options available in advertising field – Advertising agency, media, production houses, research and allied fields - printing, graphics and animation, modelling and dubbing, brand managers, copywriters, Art Directors, Web content Managers, Creative writers, Freelancing

Unit-VI Practical Segment

(This Unit is not to be considered for the Assessment/ Examination)

a) Poster / Technology based group presentations on various Advertisements on socially relevant topics with relevant case studies.
b) Creating a print Advertisement (Students can be asked to make a print advertisement and displaying it to the class)

Evaluation Pattern:

Third Semester End Examination	**Duration: 3 Hours**	**100 Marks**

Question 1	One Essay or Two Short notes on Unit I	20 Marks
Question 2	One Essay or Two Short notes on Unit II	20 Marks
Question 3	One Essay or Two Short notes on Unit III	20 Marks
Question 4	One Essay or Two Short notes on Unit IV	20 Marks
Question 5	One Essay or Two Short notes on Unit V	20 Marks

Semester IV Applied Component Paper II 2 Credits
Course Title: Introduction to Advertising - Creativity and Research in Advertising

Total Lectures: 60

Unit- I Creativity and Psychology in Advertising **12 Lectures**

a) Role of Creativity in Advertising, Positioning strategies, Role of Persuasion, Determining the message theme, USP, Decision on Advertising appeals and selling styles (soft selling / hard selling skills), Appropriateness and Novelty, Styles of Creative Advertising- Generic Creative Style, Pre-emptive Creative Style, Resonance Creative Style
b) Psychology in Advertising – Perception, attitudes and values, personality and motivations (including buying motives), Use of Metaphors in Advertising

Unit-II Copy Writing **12 Lectures**

a) Copy – types and essentials, Copy writing for print, Outdoor, Radio, Web and Television (concept of storyboards)
b) Elements of copy – headline (functions and types), over line, body copy, captions, taglines, slogans, call to action, logo, company name

Unit-III Creativity in Advertising **12 Lectures**

a) Illustrations – functions and types, Essentials of a good illustration
b) Visualization – Techniques of Visualization, Layouts- Stages and Types, Slogans, Logo, Headlines, Memes, GIFs as means of creative marketing strategy etc.
c) Digital Advertising: The societal and business impact of digital advertising, Types of digital advertising, The future of online advertising

Unit-IV Advertising Research **12 Lectures**

a) Evaluating advertising effectiveness, Importance of research in Advertising, Types of research: copy research and behavioural research, Psychographic Segmentation
b) The impact of Ideology on Advertisements- Various ideological issues and concerns
c) Pre-testing and Post-testing methods of evaluation, Pre-testing methods: methods for concept testing and copy testing , Post-testing methods: sales and response rates, recall tests, recognition tests and attitude and opinion tests.

Unit- V Advertising Budget **12 Lectures**

a) Meaning of Advertising Budget: Collection of Data and Preparation of Advertising Budget, Presentation and Approval of the Budget, Budget Execution, Control of Budget
b) Methods of Framing the Advertising Budget: Affordable Method, Percentage of Sales Method, Competitive Parity Method, Return on Investment Method, Objective and Task Method, Judgment Method
c) Approaches to Advertising Budget: Traditional Approach, Modern Approach, Marcom Budgeting

Unit-VI Practical Segment:

(This Unit is not to be considered for the Assessment/ Examination)

a) A visit to an Advertising agency or group presentation on Copy writing
b) Creating an electronic Advertisement and displaying it to the class via electronic communication medium

Evaluation Pattern:

Fourth Semester End Examination	**Duration: 3 Hours**	**100 Marks**

Question 1	One Essay or Two Short notes on Unit I	20 Marks
Question 2	One Essay or Two Short notes on Unit II	20 Marks
Question 3	One Essay or Two Short notes on Unit III	20 Marks
Question 4	One Essay or Two Short notes on Unit IV	20 Marks
Question 5	One Essay or Two Short notes on Unit V	20 Marks

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2. www.advertisinginindia.com
3. www.tamindia.com
4. www.tamadex.com

5. www.aidem.in
6. http://en.wikipedia.org/wiki/Chennai
7. http://en.wikipedia.org/wiki/Pondicherry_urban_area
8. http://www.census2011.co.in/census/district/482-puducherry.html
9. 9.www.digitalimpulse.in/insights/wp-content/upoads/2013/01/Digital-advertising-Industry-inIndia.jpg
10. http://findarticles.com/p/articles/mi_hb3192/is_200205/ai_n7866610/
11. http://www.revistalatinacs.org/_2008/23_34_Santiago/Francisco_Campos.html
12. http://www.anthropoetics.ucla.edu/a
13. http://ideasmarkit.blogspot.in/2009/02/indian-advertising-2009-2013-kpmg-ficci.html
14. http://info.shine.com/Industry-Information/Automobiles/783.aspx=Media advertising - By Shailja Shah Purohit
15. http://www.inderscience.com/search/index.php?action=record&rec_id=11489
16. 16.http://Writingfordigital.Com/2010/04/19/Three-Key-Media-Variables-Time-Attention-And-Memory/
17. http://www.merinews.com/article/the-changing-scenario-of-advertising/126596.shtml
18. http://www.entrepreneur.com/encyclopedia/media-planning
19. http://www.chillibreeze.com/ articles various/advertising-firms.asp
20. www.afaqs.com
21. www.ascionline.org;
22. www.campaignindia.in
23. www.exchange4media.com
24. www.tamindia.com
25. www.cengage.com/global

MOOC Courses:

1) <<https://www.mooc-list.com/course/online-advertising-onlinead-open2study>>
2)\<<https://www.mooc-list.com/course/integrated-marketing-communications-advertisingpublic-relations-digital-marketing-and-more>>
3) <<https://www.mooc-list.com/course/content-advertising-social-imc-coursera>>
4) <<https://www.mooc-list.com/course/advertising-and-society-coursera>>

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University of Mumbai

No. AAMS(UG)/ 52 of 2022-23

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, Directors of the Recognized Institutions in Faculty of Humanities is invited to this office circular No. UG/91 and UG/92 of 2016-17 dated 25th October, 2016 relating to the revised syllabus as per the CBCS for F.Y.B.A. Marathi (Compulsory) and (Ancillary) (Sem. I & II) respectively.

They are hereby informed that the recommendations made by the Board of Studies in **Marathi** at its meeting held on 11th May, 2022 and subsequently passed by the Board of Deans at its meeting held on 17th May, 2022 **vide** item No. 5.29(R) have been accepted by the Academic Council at its meeting held on 17th May, 2022 **vide** item No. 5.29(R) and that in accordance therewith, the revised syllabus of **F.Y.B.A. (Marathi) (Ancillary and Compulsory) Sem I and II (CBCS)**, has been brought into force with effect from the academic year 2022-23. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
28th June, 2022

(Dr. Vinod Patil)
I/c Registrar

To

The Principals of the Affiliated Colleges, and Directors of the Recognized Institutions in Faculty of Humanities.

A.C/5.29(R)/17/05/2022

****

No. AAMS(UG)/ 52-A of 2022-23

28th June, 2022

Copy forwarded with Compliments for information to:-

1) The Dean, Faculty of Humanities,
2) The Chairman, Board of Studies Marathi,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Director, Department of Information & Communication Technology,
6) The Co-ordinator, MKCL.

(Dr. Vinod Patil)
I/c Registrar

Copy to :-

1. **The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
2. **The Deputy Registrar, College Affiliations & Development Department (CAD),**
3. **The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
4. **The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
5. **The Deputy Registrar, Executive Authorities Section (EA),**
6. **The Deputy Registrar, PRO, Fort, (Publication Section),**
7. **The Deputy Registrar, (Special Cell),**
8. **The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
9. **The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. **P.A to Hon'ble Vice-Chancellor,**
2. **P.A Pro-Vice-Chancellor,**
3. **P.A to Registrar,**
4. **All Deans of all Faculties,**
5. **P.A to Finance & Account Officers, (F.& A.O),**
6. **P.A to Director, Board of Examinations and Evaluation,**
7. **P.A to Director, Innovation, Incubation and Linkages,**
8. **P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
9. **The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
10. **The Director of Board of Student Development,**
11. **The Director, Department of Students Walfare (DSD),**
12. **All Deputy Registrar, Examination House,**
13. **The Deputy Registrars, Finance & Accounts Section,**
14. **The Assistant Registrar, Administrative sub-Campus Thane,**
15. **The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
16. **The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
17. **The Assistant Registrar, Constituent Colleges Unit,**
18. **BUCTU,**
19. **The Receptionist,**
20. **The Telephone Operator,**
21. **The Secretary MUASA**

for information.

AC-17/05/2022

Item No- 5.29 (R)

UNIVERSITY OF MUMBAI

Revised Syllabus for F.Y.B.A Marathi

(Ancillary And Compulsory)

Semester - I And II

(Choice Based Credit System)

(With effect from the academic year 2022-23)

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr No.	Heading	Particular
1	Title of the Course	F.Y.B.A (Marathi) Ancillary And Compulsory
2	Eligibility for Admission	Candidates with at least 50% marks in the senior secondary +2 or its equivalent
3	Passing Marks	40%
4	Ordinances / Regulation (if any) No. of Years/Semester	
5	No. of Years / Semester	Sem-I and II (CBCS)
6	Level	U.G
7	Pattern	Semester
8	Status	Revised Syllabus
9	To be implemented form Academic Year	From Academic Year 2022-23

Name & Signature Of BOS Chairperson : Dr. Vandana Mahajan

Name & Signature Of Dean : Dr. Rajesh Kharat

FYBA MAR(ANC)
(To be implemented from 2022-23)
SEM-1 (UMAR 101)
SEM2 (UMAR 201)

प्रथम वर्ष बी.ए. मराठी ऐच्छिक (प्रत्येक सत्रात ३ श्रेयांकने)

प्रथम वर्ष बी.ए. मराठी या ऐच्छिक या विषयासाठी २०२२-२३ या शैक्षणिक वर्षापासून नेमलेला अभ्यासक्रम प्रथम वर्ष बी.ए. मराठी ऐच्छिक अभ्यासक्रमात प्रथम सत्रात दोन नाटयकृती व दुसऱ्या सत्रात दोन ललित गद्याचा समावेश करण्यात आला आहे. या अभ्यासक्रमाची श्रेयांकन पद्धतीनुसार रचना करण्यात आली आहे. वरील अभ्यासक्रम दोन सत्रात विभागलेला असून, नेमलेल्या विशिष्ट तासिकामध्ये तो शिकवला जाणे आवश्यक आहे.

अभ्यासपत्रिकेचे उद्दिष्ट्ये -

मराठी साहित्याचा परिचय करून देत असताना साहित्याच्या अभ्यासाकडे वळणाऱ्या विद्यार्थ्यांना विशिष्ट वाङ्मय प्रकारचे ज्ञान मिळवून देणे व साहित्य प्रकाराचे आकलन करून देणे. हे प्रमुख उद्दिष्ट्य या अभ्यासपत्रिकेचे आहे. मराठीतील नाटक आणि ललितगद्य या साहित्यप्रकारांचा परिचय करून देणे.

सत्र – पहिले - एकूण व्याख्याने – ४५, श्रेयांकने- ०३

घटक १ - नाटक या साहित्यप्रकाराचा सैद्धान्तिक परिचय (४८ मिनिटांच्या १५ तासिका) श्रेयांकन- १

नाटक या साहित्यप्रकाराची संकल्पना, नाटक या साहित्य प्रकाराचे घटक,
नाटकाचे महत्त्वाचे दोन प्रकार (शोकात्मिका व सुखात्मिका), नाटक एक संमिश्र कला, मराठी

नाटकाच्या इतिहासातील महत्त्वाचे टप्पे.

घटक २ - देवभाबळी – प्राजक्त देशमुख,पॉप्युल रप्रकाशन, (४८ मिनिटांच्या १५ तासिका) श्रेयांकन १

घटक ३ – माझं घर – जयंत पवार, शब्दालय प्रकाशन, (४८ मिनिटांच्या १५तासिका) श्रेयांकन १

प्रथम सत्रान्त परीक्षा - **गुण १००**

वरील अभ्यासपत्रिकेचे सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी.ए. मराठी (ऐच्छिक)

प्रश्न १- 'नाटक' या साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर अंतर्गत पर्याय देऊन एक प्रश्न गुण २०.

प्रश्न २ - देवभाबळी या नाटकावर अंतर्गत पर्याय देऊन एक प्रश्न गुण २०.

प्रश्न ३ माझं घर या नाटकावर अंतर्गत पर्याय देऊन एक प्रश्न गुण २०.

प्रश्न ४ प्रत्येक गटातील एकेक टीप लिहा (अंतर्गत पर्यायासह) गुण ३०.

१) नाटकाचा सैद्धान्तिक परिचय

२) देवभाबळी या नाटकावर टिपा

३) माझं घर या नाटकावर टिपा

प्रश्न ५- अभ्यासपत्रिकेतील घटक २ व ३ वर आधारित वस्तुनिष्ठ प्रश्न प्रत्येक घटकावर ४ असे एकूण ८ वस्तुनिष्ठ स्वरूपाचे प्रश्न विचारले जातील परीक्षार्थींनी त्यापैकीकोणतेही ५ प्रश्न सोडवायचे आहेत. प्रत्येक योग्य उत्तरास २ गुण असे एकूण गुण १०

प्रथम वर्ष बी.ए. मराठी (ऐच्छिक)

सत्र दुसरे - एकूण व्याख्याने ४५, श्रेयांकने - ०३

घटक १- ललितगद्य या साहित्यप्रकाराचा सैद्धांतिक परिचय (१५ तासिका) श्रेयांकन - १
या साहित्यप्रकाराची संकल्पना, ललितगद्य या साहित्य प्रकाराचे विविध घटक व विविध प्रकार आणि मराठीतील ललितगद्याचा इतिहास याचा परिचय करणे.

घटक २- इरावती कर्वे – परिपूर्ति

घटक ३- ग्रेस – चर्चबेल

दुसरी सत्रान्त परीक्षा **गुण १००**

वरील अभ्यासपत्रिकेचे सत्रांत प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी. ए. मराठी (ऐच्छिक)

प्रश्न १ – घटक १ वर अंतर्गत पर्यायासह एक प्रश्न गुण २०

प्रश्न २ - घटक २ मधील ललितगद्यावर अंतर्गत पर्याय देऊन एक प्रश्न गुण २०

प्रश्न ३ - घटक ३ मधील ललितगद्यावर अंतर्गत पर्याय देऊन एक प्रश्न गुण२०

प्रश्न ४ - प्रत्येक गटातील एकेक टीप लिहा - (अंतर्गत पर्यायांसह) गुण ३०

१) ललितगद्याचा सैद्धान्तिक परिचय

२) घटक २ मधील ललितगद्य

३) घटक ३ मधील ललितगद्य

प्रश्न ५ - अभ्यासपत्रिकेतील घटक २ व ३ वर आधारित वस्तुनिष्ठ प्रश्न प्रत्येक घटकावर ४ असे एकूण ८ वस्तुनिष्ठ स्वरूपाचे प्रश्न विचारले जातील परीक्षार्थींनी त्यापैकी कोणतेही ५ प्रश्न सोडवायचे आहेत. प्रत्येक योग्य उत्तरास २ गुण असे एकूण गुण १०.

FYBA-MAR- Comp

(To be implemented from 2022-23)

SEM-1 (UAMAR 1C1)

प्रथम वर्ष बी.ए. मराठी अनिवार्य

प्रथम वर्ष बी.ए मराठी अनिवार्य या विषयासाठी २०२२-२३ या शैक्षणिक वर्षापासून नेमलेला अभ्यासक्रम

सत्र – पहिले - एकूण व्याख्याने - ४० श्रेयांकने- ०२ **गुण ५०**

घटक १- निवडक कथांचा अभ्यास

१) रत्नाकर मतकरी
२) योगीराज वाघमारे
३) लक्ष्मण माने
४) भारत सासणे
५) उषाकिरणआत्राम
६) जयंत पवार
७) अशोक कौतिक कोळी
८) शिल्पा कांबळे
९) रफिक सूरज
१०) बबन पोतदार
११) प्रणव सखदेव
१२) विवेक कुडू

(कथांची नावे नंतर कळविण्यात येतील.)

घटक - २ व्यावहारिक मराठी - (घटकविषय) - (२० तासिका) - श्रेयांकन १ गुण ५०

व्यावहारिक मराठी या विषयासाठी घटकविषय

१) मराठी लेखनाचे नियम व विरामचिन्हे
२) वर्तमानपत्रासाठी वृत्तलेखन
३) वृत्तांतलेखन
४) अर्जलेखन
५)भाषांतर (इंग्रजीतून मराठीत)

सत्रांत परीक्षा

प्रथम सत्रान्त परीक्षा **गुण १००**

वरील अभ्यासपत्रिकेचे सत्रांत प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी.ए. मराठी (अनिवार्य)

प्रश्न १- घटक १ वर आधारित अंतर्गत पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न २ -घटक १ वर आधारित अंतर्गतप र्याय देऊन एक प्रश्न	गुण २०.
प्रश्न ३ -घटक १ वर आधारित चार पैकी दोन टिपा	गुण १०.
प्रश्न ४- मराठी लेखनाचे नियम व विरामचिन्हे या उपघटकावर आधारित अंतर्गत पर्यायासह प्रत्येकी ५ गुणांचे २ प्रश्न एकूण	गुण १०.
प्रश्न ५ - वर्तमानपत्रासाठी वृत्तलेखन या उपघटकावर अंतर्गत पर्यायासह १ प्रश्न	गुण १०
प्रश्न ६- वृत्तांतलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ७- अर्जलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न८- भाषांतर (इंग्रजीतून मराठीत) या उपघटकावर अंतर्गत पर्यायासह १ प्रश्न	गुण १०

संदर्भ सूची

१) कथा : संकल्पना आणि समीक्षा - सुधा जोशी
२) मराठी कथामूल्य आणि ऱ्हास – जी. के. ऐनापुरे
३) रा. रं. बोराडे यांची कथा शोध आणि समीक्षा - व्यंकटी पावडे
४) मराठीतील कथनरूपे – वसंत आबाजी डहाके
५) कथनात्म साहित्य आणि समीक्षा - हरिश्चंद्र थोरात
६) स्त्रियांचे कथालेखन नवी दृष्टी, नवी शैली – डॉ. मंगला वरखेडे
७) मराठी कथा विसावे शतक – संपा. के. ज. पुरोहित

SEM- 2 (UAMAR 2C1)

सत्र – दुसरे - एकूण व्याख्याने ४०, श्रेयांक– ०२

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्तप्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

घटक १ निवडक कवितांचा अभ्यास (२० तासिका) श्रेयांकन १ गुण ५०

१) आसावरी काकडे
२) सिसिलिया कार्व्हालो
३) किशोर कदम
४) भगवान निळे
५) नीरजा
६) योगिनी राऊळ
७) छाया कोरेगावकर
८) आय. ए. पवार
९) वैभव सोनारकर
१०) वीरधवल परब
११) अजीम नवाज राही
१२) नीलकंठ शेरे
१३) महेंद्र गायकवाड
१४) मच्छिंद्र चोरमारे
१५) प्रतिभा सराफ
१६) संजय बोरुडे
१७) संजय बालघाटे
१८) पितांबर कोडापे
१९) हबीब भंडारे
२०) योजना यादव
२१) विनायक पवार
२२) मेघराज मेश्राम
२३) अनिल साबळे
२४) नामदेव कोळी
२५) हेमंत सोनकांबळे

(कविता नंतर कळविण्यात येतील.)

घटक - २ व्यावहारिक मराठी - (४ घटकविषय) - (२० तासिका) - श्रेयांकन १

१) इतिवृत्तलेखन
२) वर्तमान पत्रासाठी जाहिरातलेखन
३) उताऱ्यावरील प्रश्न
४) सारांशलेखन
५) निबंधलेखन

प्रश्न १- घटक क्र. १ वर आधारित पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न २- घटक क्र. १ वर आधारित पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न ३- घटक क्र. १ वर आधारित चार पैकी दोन टिपा	गुण १०.
प्रश्न ४- इतिवृत्तलेखन या उपघटकावर आधारित अंतर्गत पर्यायासह १ प्रश्न	गुण १०
प्रश्न ५- वर्तमानपत्रासाठी जाहिरातलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ६- उताऱ्यावरील या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ७ - सारांशलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ८- निबंधलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०

संदर्भग्रंथ

१. कुलकर्णी, वा० ल०; मराठी कविता-जुनी आणि नवी, पॉप्युलर प्रकाशन आणि मौज प्रकाशन गृह, मुंबई, १९८७.
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५. पाटणकर, वसंत, शोध कवितेचा, मौज प्रकाशन गृह, मुंबई, २०११. ६. डहाके, वसंत आबाजी; कवितेविषयी, स्वरूप प्रकाशन, औरंगाबाद, १९९९.
७. बेडेकर, दि० के०; आधुनिक मराठी काव्य उद्गम आणि भवितव्य, नागपूर विद्यापीठ, नागपूर, १९६९.
८. रसाळ, सुधीर; काही मराठी कवी जाणिवा आणि शैली, जनशक्ती वाचक चळवळ, औरंगाबाद, आवृत्ती ३ री, २०११.
९. करोगल, सुषमा (संपा०); स्वातंत्र्योत्तर मराठी कविता, प्रतिमा प्रकाशन, पुणे, १९९९.
१०. गाडगीळ, डॉ. स. रा., काव्यशास्त्रप्रदीप, व्हीनसप्र काशन, पुणे, २०१६
११. रसाळ, सुधीर, कविता आणि प्रतिमा, मौज प्रकाशनगृह, मुंबई, १९८२
१२.गाडगीळ, डॉ. स. रा., मराठी काव्याचे मानदंड (खंड पहिला), पद्मगंधा प्रकाशन, पुणे, २००५

Cover Page

AC_____
Item No. _____

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	**T.Y.B.A. (MARATHI)**
2	Eligibility for Admission	**S.Y.B.A. Pass**
3	Passing Marks	**40**
4	Ordinances / Regulations (if any)	**Nil**
5	No. of Years / Semesters	**01 (Two Semester)**
6	Level	**U.G.**
7	Pattern	**Semester**
8	Status	**Revised**
9	To be implemented from Academic Year	**From Academic Year 2021-22**

Name & Signature of BOS Chairperson :

Name & Signature of Dean: _____

UNIVERSITY OF MUMBAI

Revised Syllabus

(Choice Based Credit System, CBCS)

Sem. V & Sem. VI

Program: B.A.

Course: Marathi

From 2021-22

मुंबई विद्यापीठ
तृतीय वर्ष बी.ए.
मराठी
अभ्यासक्रम (CBCS)

Course Code	Core Course	No of Credits
सत्र ५ वे		
UAMAR ५०१	अभ्यासपत्रिका क्र. ४. मध्ययुगीन मराठी वाङ्मयाचा इतिहास भाग १	४
UAMAR ५०२	अभ्यासपत्रिका -५ भारतीय साहित्यविचार	४
UAMAR ५०३	अभ्यासपत्रिका ६. साहित्य आणि समाज भाग १	३
UAMAR ५०४	अभ्यासपत्रिका क्र. ७ भाषाविज्ञान	४
UAMAR ५०५	अभ्यासपत्रिका क्र. ८ आधुनिक मराठी साहित्य,	४
UAMAR ५०६	अभ्यासपत्रिका क्र. ९ भाषांतर कौशल्य	३
सत्र ६ वे		
UAMAR ६०१	अभ्यासपत्रिका क्र. ४. मध्ययुगीन मराठी वाङ्मयाचा इतिहास भाग २	४
UAMAR ६०२	अभ्यासपत्रिका -५ पाश्चात्य साहित्यविचार	४
UAMAR ६०३	अभ्यासपत्रिका ६. साहित्य आणि समाज भाग २	३
UAMAR ६०४	अभ्यासपत्रिका क्र. ७ मराठी व्याकरण	४
UAMAR ६०५	अभ्यासपत्रिका क्र. ८ उत्तर आधुनिक मराठी साहित्य,	४
UAMAR ६०६	अभ्यासपत्रिका क्र. ९ व्यावसायिक मराठी	३

अभ्यासपत्रिका क्र. ४. मध्ययुगीन मराठी वाङ्मयाचा इतिहास भाग १
सत्र - ५वे (श्रेयांकने-४) व्याख्याने -६०

उदिष्टे (Objective)

१) मध्यमयुगीन वाड्मयीन इतिहासाचा परिचय करून देणे

२) मध्यमयुगीन कालखंडातील वाड्मय निर्मिती प्रेरणा व सास्कृतिक पार्श्वभूमीचा उलगडा करणे

३) मध्यमयुगीन कालखंडातील वाडमयीन परंपरा, रचना प्रकार व ग्रंथकारांची माहिती करून घेणे

.४) मध्यमयुगीन कालखंडातील मराठी भाषेचे स्वरूप स्पष्ट करणे

५) वारकरी संप्रदायातील प्रमुख संतकवींच्या काव्निर्मितीचे स्वरूप जाणून घेऊन त्यांची वैशिष्टे लक्षात घेणे

६) पंडिती काव्याचे स्वरूप समजावून घेणे

घटक -१ मराठी साहित्याची सुरुवात व महानुभावीयवाङ् मय

अ) मराठी साहित्याची सुरुवात - मराठी : देशीभाषा म्हणून ८ , ९वे शतक परिचय , मराठीतील आद्यग्रंथ :चर्चा, शिलालेख, ताम्रपट यावरील मराठी लेखन. – थोडक्यात परिचय

ब) महानुभाव संप्रदायाची ठळक वैशिष्ट्ये : व्दैती तत्त्वज्ञान, पंचकृष्ण, चक्रधरांचे व्यक्तिमत्त्व, मराठीचा स्वीकार व आग्रह, सांकेतिक लिपी.

महानुभावीय वाङ्मय : चरित्रग्रंथ , तत्त्वज्ञानग्रंथ, सातीग्रंथ, स्फुट गद्य-पद्य-धवळे, टीकाग्रंथ, व्याकरणग्रंथ.

घटक -२ वारकरी पंथीयांचे वाङ् मय -

अ) यादवकालीन महाराष्ट्रात वारकरी पंथाची प्रस्थापना, पंढरीचा भक्तीसंप्रदाय हा महाराष्ट्रातील प्रमुख वारकरी संप्रदाय म्हणून तेराव्या शतकात धार्मिक, सामाजिक व साहित्यिक दृष्ट्या प्रभावी.

ब) ज्ञानदेव-नामदेव व त्यांच्या प्रभावळीतील इतरांचे वाङ् मय.

घटक ३ वारकरी पंथीयांचे वाङ् मय –

अ) बहामनी राजवट, एकनाथकालीन महाराष्ट्र, तमोयुग, एकनाथ, एकनाथपंचक यांचे वाङ् मय

ब) शिवकालीन महाराष्ट्र – स्वराज्य प्रेरणा. तुकाराम, तुकारामाचे शिष्य यांचे वाङ् मय

घटक ४ पंडिती काव्य-

अ) पंडिती काव्याची स्वरूपवैशिष्ट्ये, पंडिती काव्याचे गुणदोष चर्चा

ब) पंडित कवी- मुक्तेश्वर, मोरोपंत, रघुनाथ पंडित, सामराज, निरंजनमाधव, वामनपंडित, नागेश, विठ्ठल

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

1) ***प्राचीन मराठी वाङ्मयाच्या इतिहासाची माहिती होईल***
2) ***प्राचीन मराठी वाङ्मयाचे रचना प्रकार समजतील***
3) ***मराठी भाषेबद्ल अभिमान निर्माण होईल***

संदर्भ ग्रंथ-

१) जोग, रा.श्री. व इतर (संपा.) मराठी वाङ् मयाचा इतिहास- खंड ३, महाराष्ट्र साहित्य परिषद, पुणे, प.आ. १९७३.
२) तुळेपुळे, शं.गो., पाच संतकवी, सुविचार प्रकाशन मंडळ, पुणे, १९८४, (ति.आ.)
३) तुळेपुळे, शं. गो. व इतर (संपा.) मराठी वाङ् मयाचा इतिहास- खंड १, महाराष्ट्र साहित्य परिषद, पुणे, प.आ. १९८४.
४) मालशे, सं.गं. व इतर (संपा.) मराठी वाङ् मयाचा इतिहास- खंड २ भाग १ व भाग २, महाराष्ट्र साहित्य परिषद, पुणे, प.आ. १९८२.
५) भावे, वि.ल. महाराष्ट्र सारस्वत, पॉप्युलर, मुंबई,आ. ५वि १९६३.
६) धोंड, म. वा., (संपा.) मऱ्हाटी लावणी, मौज, मुंबई १९५६.
७) शेणोलीकर, ह. श्री., प्राचीन मराठी वाङ् मयाचे स्वरूप, मोघे प्रकाशन, कोल्हापूर, १९७१.
८) सहस्त्रबुद्धे, म. ना., मराठी शाहिरी वाङ् मय, ठोकळ पुणे, १९६१.
९) सरदार गं.बा., संत साहित्याची सामाजिक फलश्रुती, म. सा.प., पुणे १९७० (ति.आ.)

अभ्यासपत्रिका क्र. ४. मध्ययुगीन मराठी वाङ्मयाचा इतिहास भाग २
सत्र - ६वे (श्रेयांकने-४) व्याख्याने -६०

उदिष्टे (Objective)

१) शाहिरी वाड्मयाचा परिचय करून घेणे-

२) इतर धर्मीयांनी केलेल्या वाड्मयीन निर्मितीचा परिचय करून घेणे

३) वेगवेगळ्या पंथाचे वाड्मयाचा परिचय करून घेणे

४) बखर वाड्मय निर्मितीचा परिचय करून घेऊन त्याची ठळक वैशिष्टे जाणून घेणे

५) मध्ययुगीन कालखंडातील प्रमुख संप्रदाय व ग्रंथ निर्मिती यांचा अनुबंध स्पष्ट करणे

घटक -१ शाहिरी वाङ् मय-

अ) लावणी, पोवाडे, या काव्य प्रकारांची स्वरूप वैशिष्ट्ये.

ब) काही लावणीकार- होनाजी बाळा, रामजोशी, प्रभाकर, अनंत फंदी, परशराम या शाहिरांचा व त्यांच्या साहित्याचा परिचय.

घटक -२ महानुभाव व वारकरी यांखेरीज इतर पंथीयांचेवाङ् मय

अ) नाथ, दत्त या पंथातील वाङ् मयाचे स्वरूप.

ब) समर्थ, लिंगायत या पंथातील वाङ् मयाचे स्वरूप

घटक – ३ हिंदू धर्माखेरीज इतर धर्मियांनी केलेलीवाङ् मयनिर्मिती

अ) ख्रिस्ती धर्मियांनी केलेली वाङ् मयनिर्मिती

(ख्रिस्ती –फादर स्टीफन्स, क्रुआँ, सालंदाज, पाद्री अल्मैद)

ब) इस्लामी धर्मियांनी केलेली वाङ् मयनिर्मिती

(इस्लामी – मुंतोजी (मृत्युंजय), हुसेन अंबरखान, शेख महमंद, शहामुनी)

घटक – ४ बखर गद्याची स्वरूप वैशिष्ट्ये

अ) बखरी- शिवपूर्वकालीन – महिकावतीची उर्फ माहीमची बखर, राक्षसतागडीची लढाई.

बखरी- शिवकालीन- शिवछत्रपतींचे चरित्र- कृष्णाजी अनंत सभासद, चित्रगुप्तविरचित शिवाजी महाराजांची बखर, श्री छत्रपतींची ९१ कलमी बखर – दत्तोत्रिमल वाकेनिस, मल्हार रामराव चिटणीस विरचित श्री शिवछत्रपतींचे सप्तप्रकरणात्मक चरित्र.

ब) बखरी – पेशवेकालीन- नाना फडणवीसाचे आत्मचरित्र, श्री रामदास स्वामींचे चरित्राची बखर उर्फ हनुमंत स्वामीची बखर, पेशव्यांची बखर, कृष्णाजी विनायक सोहनी, पानिपतची बखर- रघुनाथ यादव, भाऊसाहेबांची बखर-कृष्णाजी शामराव, खडर्याच्या स्वारीची बखर.

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

१) ***शाहिरी वाड्मयाचा परिचय होईल***
२) ***बखर वाड्मयाचा परिचय होईल***
३) ***वेगवेगळ्या पंथाचे वाड्मयाचे स्वरूप लक्षात येईल***
४) ***वेगवेगळ्या धर्मीयांनी केलेल्या वाड्मय निर्मितीचा परिचय होईल***
५) ***मध्युगीन वाड्मयाचे स्वरूप स्पष्ट होईल.***

अभ्यासपत्रिका -५
भारतीय साहित्यविचार

सत्र – ५ वे (श्रेयांकने-४) व्याख्याने-६०

उदिष्टे (Objective)

1) *भारतीय साहित्याचे स्वरूप आणि सिद्धांत समजावून देणे*
2) *साहित्य भाषेचे स्वरूप व कार्य समजावून घेणे*
3) *साहित्याची निर्मिती प्रक्रिया व प्रयोजन समजावून घेणे*

घटक -१ भारतीय साहित्यशास्त्र: संकल्पना व सिद्धांत-(१)

१ अलंकारविचार,वक्रोक्तीविचार
२ रितीसिद्धांत, ध्वनिसिद्धांत
३ औचित्य विचार

घटक-२ भारतीय साहित्यशास्त्र : साहित्याचा आस्वाद.

१ भरताचा रससिद्धांत
रससिद्धांताचे भाष्यकार : १. भट्टलोल्लट
२. श्रीशंकुक
३. भट्टनायक
४. अभिनवगुप्त

घटक-३ भारतीय साहित्यशास्त्र : साहित्य भाषेचे स्वरूप व कार्य

१. शब्दशक्ती : अभिधा, लक्षणा व व्यंजना.
२. वृत्त, छंद,मुक्तछंद.

घटक – ४ भारतीय साहित्यशास्त्र : निर्मिती प्रकिया व प्रयोजन विचार

१. साहित्य निर्मिती मागील कारणे: प्रतिभा, व्युत्पत्ती व अभ्यास.
२. साहित्याची प्रयोजने : भरत ते अभिनवगुप्त

सत्रान्त परीक्षा – गुण १००

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

1) ***भारतीय साहित्य विचाराचा परिचय होईल***
2) ***भारतीय साहित्य आस्वाडची प्रक्रिया समजेल***
3) ***भारतीय साहित्याची निर्मिती प्रक्रिया व प्रयोजनाचा परिचय होईल.***

संदर्भ ग्रंथ-

१ कंगले, र.प.,(संपा.) काव्यशास्त्र, मौज प्रकाशन, मुंबई १९७४

२ कंगले, र.प.,(संपा.) रस-भाव-विचार, महाराष्ट्र राज्य साहित्य संस्कृती मंडळ मुंबई, १९७३

४ कुलकर्णी वा.ल.,साहित्य स्वरूप आणि समीक्षा, पॉप्युलर, मुंबई १९७५

५ गाडगीळ. स.रा., काव्यशास्त्रप्रदीप, व्हीनस, पुणे (सहावी आवृत्ती), २००३

६ देशपांडे, ग. त्र्यं., भारतीय साहित्यशास्त्र, पॉप्युलर, मुंबई (ति.आ.) १९८०

७ नेमाडे भालचंद्र, साहित्याची भाषा, साकेत, औरंगाबाद, १९८७

८ पाटणकर, रा. भा., सौंदर्यमीमांसा, मौज, मुंबई (ति.आ.) २००४

९ पाटणकर, वसंत, साहित्यशास्त्र : स्वरूप आणि समस्या पद्मगंधा, पुणे, २००६.

१० पाटील, गंगाधर, समीक्षेची नवी रूपे, मॅजेस्टीक, मुंबई १९८१

११ मालशे, मिलिंद, आधुनिक, भाषा विज्ञान : सिद्धांत आणि उपयोजन. लोकवाङ् मयगृह, मुंबई. १९९५

१२ रसाळ, सुधीर, कविता आणि प्रतिमा, मौज, मुंबई १९८२

१३ गणोरकर, प्रभा, डहाके वसंत आबाजी व इतर, (संपा.) वाङ् मयीन संज्ञा संकल्पना कोश, ग.रा. भटकळ फाऊंडेशन, मुंबई, २००१

१४ राजाध्यक्ष, विजया व इतर, (संपा.) मराठी वाङ् मयकोश, खंड ४, (समीक्षा संज्ञा), महाराष्ट्र राज्य साहित्य संस्कृती मंडळ, मुंबई, २००२

१५ साहित्यशास्त्र उदभव आणि विकास : पांडुरंग वामन काणे

१६ प्राचीन काव्यशास्त्र : र.रा. कंगले

१७ प्राचीन काव्यशास्त्र : डॉ. स.रा. गाडगीळ

१८ साहित्य स्वरूप आणि समीक्षा : वा.ल कुलकर्णी

१९ भारतीय साहित्यविचार : प्रा. ब.लु. सोनार

२० भारतीय साहित्यविचार : ग.त्र्य. देशपांडे

२१ अभिनव काव्यप्रकाश : रा.श्री. जोग

सत्र -६ वे (श्रेयांकने-४) व्याख्याने-६०
पाश्चात्य साहित्य विचार

उदिष्टे (Objective)

1) ***पाश्चात्य साहित्याचे स्वरूप समजावून घेणे***
2) ***पाश्चात्य साहित्य विचारात साहित्याच्या भाषेचे स्वरूप समजावून घेणे***
3) ***साहित्याची निर्मिती प्रक्रिया व प्रयोजन समजावून घेणे***
4) ***साहित्याच्या आस्वादाचे सिद्धांत समजावून घेणे***

घटक – १ पाश्चात्य साहित्य विचार : साहित्याचे स्वरूप

१ अनुकृती सिद्धांत : प्लेटो व ॲरिस्टॉटल

२ पाश्चात्यांनी केलेल्या काव्यव्याख्या : वर्डस्वर्थ, कोलरीज. कोर्टहॉप, एडगर अलन पो, अर्नोल्ड.

घटक -२ पाश्चात्य साहित्य विचार : साहित्याची भाषा

१. रूपक, प्रतिक व प्रतिमा

२. अनेकार्थता, नियामोल्लंघन, अपरिचीतीकरण.

घटक -३ पाश्चात्य साहित्य विचार : साहित्याची निर्मिती प्रक्रिया व प्रयोजन विचार

१ कोलरिजचा कल्पनाशक्तीचा व चमत्कृतीशक्तीचा सिद्धांत.

२ आत्मविष्कार, जीवनभाष्य, सामाजिक बांधिलकी (मार्क्सवादी विचारासह) ही प्रयोजने.

घटक-४ पाश्चात्य साहित्य विचार : साहित्याचा आस्वाद

१ ॲरिस्टॉटलच्या कॅथार्सिसचा सिद्धांत.

२ रिचर्ड्सचा प्रेरणा संतुलनाचा सिद्धांत.

सत्रान्त परीक्षा – गुण १००

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

1) ***पाश्चात्य साहित्य विचारांचा परिचय होईल***
2) ***पाश्चात्य साहित्याच्या निर्मिती प्रक्रिया व प्रयोजन विचाराचा परिचय होईल***
3) ***पाश्चात्य साहित्याच्या आस्वाद घेण्याच्या पद्धती समजतील***

संदर्भ ग्रंथ-

१ करंदीकर, गो.वि., (भाषांतर) ॲरिस्टॉटलचे काव्यशास्त्र, मौज, मुंबई १९७८

२ नेमाडे भालचंद्र, साहित्याची भाषा, साकेत, औरंगाबाद, १९८७

३ पाटणकर, वसंत, साहित्यशास्त्र : स्वरूप आणि समस्या पद्मगंधा, पुणे, २००६.

४ पाटील, गंगाधर, समीक्षेची नवी रूपे, मॅजेस्टीक, मुंबई १९८१

५ मालशे, मिलिंद, आधुनिक, भाषा विज्ञान : सिद्धांत आणि उपयोजन. लोकवाङ् मयगृह, मुंबई. १९९५

६ गणोरकर, प्रभा, डहाके वसंत आबाजी व इतर, (संपा.) वाङ् मयीन संज्ञा संकल्पना कोश, ग.रा. भटकळ फाऊंडेशन, मुंबई, २००१

७ राजाध्यक्ष, विजया व इतर, (संपा.) मराठी वाङ् मयकोश, खंड ४, (समीक्षा संज्ञा), महाराष्ट्र राज्य साहित्य संस्कृती मंडळ, मुंबई, २००२

८) पाश्चात्य साहित्यविचार : भालचंद्र खांडेकर, लीला गोविलकर

९) पाश्चात्य साहित्यविचार : प्रा. ब.लु. सोनार

अभ्यासपत्रिका ६.
साहित्य आणि समाज भाग १
सत्र -५ वे तासिका ४५ श्रेयांकने ३

उदिष्टे (Objective)

१) साहित्य आणि समाज यांचा अनोन्य संबध तपासणे

२) महानगरीय साहित्याच्या जाणीव समजावून घेणे

३) ग्रामीण साहित्याच्या जाणीव समजावून घेणे

४) निवडक कलाकृतीच्या आधारे वाड्मयीन प्रवृत्तीचा शोध घेणे

घटक १ साहित्य - समाज अन्योन्य संबंध (तासिका १५) श्रेयांकन १

अ) साहित्य, समाजसंस्कृती या संकल्पना व त्यांच्या परस्परसंबंधाचे स्वरुप

ब) साहित्य- समाज संबंध - तेन , मार्क्स यांचे सिद्धांत , मानवतावाद, मार्क्सवाद, स्त्रीवाद, आंबेडकरवाद यांचे स्वरूप विशेष

घटक २ महानगरी जाणिवेचे साहित्य (तासिका १५) श्रेयांकन १

अ) महानगरी जाणिवेचे साहित्य संकल्पना व मराठीतील परंपरा

ब) क्रमश: : महेश केळूसकर मनोविकास प्रकाशन, पुणे

घटक -३ ग्रामीण साहित्य (तासिका १५) श्रेयांकने १

अ) ग्रामीण साहित्य- संकल्पना व मराठीतील परंपरा

ब) धग असतेच आसपास : कल्पना दुधाळ, लोकवाङ्मय गृह, मुंबई

घटक ४ प्रकल्प अहवाल – सबंधित विषयावर २० गुणांचे प्रकल्प लेखन श्रेयांकन १

सत्रान्त परीक्षा (गुण ८०)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न ४. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

१) साहित्य व समाज यांच्या अनोन्य संबंधाचा परिचय होईल

२) महानगरीय व ग्रामीण जाणीवेच्या साहित्याचा व समाजाचा अनोन्य संबंध लक्षात येईल

३) निवडक कलाकृतीच्या आधारे विविध वाड्मयीन प्रवाहाचा परिचय होईल

संदर्भ ग्रंथ-

१ मराठी वाङ् मयाचा इतिहास – खंड ५, भाग १ – संपादक – रा. श्री. जोग म.सा. परिषद, पुणे, १९७३.

२) कादंबरीविषयी – हरिश्चंद्र थोरात. पद्मगंधा प्रकाशन, पुणे, २००६.

३) टीकास्वयंवर - भालचंद्र नेमाडे, साकेत प्रकाशन, औरंगाबाद, १९९०.

४) कादंबरी - एक साहित्यप्रकार - हरिश्चंद्र थोरात, शब्द पब्लिकेशन्स मुंबई, २०१०.

५) मराठी वाङ् मय कोश-खंड ४, (समीक्षा संज्ञा), समन्वयक संपादक- डॉ. विजया राजाध्यक्ष, महाराष्ट्र राज्य साहित्य संस्कृती मंडळ, मुंबई, २००२ ,

६) वाङ् मयीन संज्ञा-संकल्पना कोश- संपादक, प्रभा गणोरकर, वसंत आबाजी डहाके व इतर, पॉप्युलर प्रकाशन, मुंबई, २००९.

७) ग्रामीण साहित्यः स्वरूप आणि समस्या- आनंद यादव, मेहता पब्लिशिंग हाउस, १९७९.

८) ग्रामीणता-साहित्य आणि वास्तव - आनंद यादव, मेहता पब्लिशिंग हाऊस, १९८९.

९) धार आणि काठ -नरहर कुरुंदकर, १९७१.

सत्र सहावे अभ्यासपत्रिका -६
साहित्य आणि समाज भाग २
(तासिका ६०) श्रेयांकने ४

उदिष्टे (Objective)

1) ***समाजातील सामाजिक स्थित्यातराचा आणि साहित्याचा संबंध जाणून घेणे***
2) ***दलित साहित्याचे स्वरूप, वैशिष्ट्ये समजावून घेणे***
3) ***स्त्रीवादी जाणीवेच्या साहित्याची वैशिष्ट्ये समजावून घेणे***
4) ***निवडक कलाकृतीच्या आधारे वाङ्मयीन प्रवाह समजावून घेणे***

घटक -१ सामाजिक स्थित्यंतरे आणि मराठी साहित्य (तासिका १५) श्रेयांकने १

अ) महाराष्ट्रातील सामाजिक स्थित्यंतरे व मराठी साहित्य – मागोवा

ब) साहित्य- समाज संबंध- १) ललित वाङ्मयातील सामाजिक जाणिवेचे स्वरूप : शरदचंद्र मुक्तिबोध, साहित्य विचार आणि समाजचिंतन. २) दलित जाणिवेचे स्वरूप - म.ना वानखेडे यांच्या लेखाधारे

घटक –२ दलित साहित्य (तासिका १५) श्रेयांकने १

अ) दलित साहित्य : संकल्पना व मराठीतील परंपरा

ब) भाई तुम्ही कुठे आहात ! : ऋषिकेश कांबळे, चिन्मय प्रकाशन, औरंगाबाद

घटक ३ स्त्रीवादी जाणिवेचे साहित्य (तासिका१५) श्रेयांकन १

अ) स्त्रीवादी साहित्याची संकल्पना व मराठीतील परंपरा

ब) निवडलेल्या स्त्रीवादी कथांचा अभ्यास

१) गौरी देशपांडे – पाऊस आला मोठा (आहे हे अस आहे)

२) सानिया – दुष्काळ (अशी वेळ)

३) प्रिया तेंडूलकर – खेळ मांडियला (तिहार)

४) उर्मिला पवार – सुटे गिऱ्हाण (हातचा एक)

५) मेघना पेठे – आहे कुछ अब्र (आंधळयाच्या गायी)

६) नीरजा – महिषासुरमर्दिनी (ओल हरवलेली माती)

७) प्रज्ञा दया पवार – आईच्या नावान (मिळून साऱ्या जणी मासिक)

८) प्रतिमा जोशी – दरी (जहन्नम)

९) मनस्विनी लता रवींद्र – माझ्या जन्माची गोष्ट (ब्लॉगच या आरशा पल्याड)

१०) वंदना महाजन – निर्वाणाची स्वगते (वसा दिवाळी अंक)

घटक –४ प्रकल्प अहवाल – सबंधित विषयावर २० गुणांचे प्रकल्प लेखन

सत्रान्त परीक्षा (गुण ८० + २०)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

1) ***सामाजिक स्थित्यंतराचा मराठी साहित्यावर प्रभाव पडतो, हे समजेल***
2) ***दलित साहित्याची निर्मिती प्रक्रिया समजेल***
3) ***स्त्रीवादी जाणीव आणि वाङ्मयीन प्रवृतीचे ज्ञान होईल***

संदर्भ ग्रंथ

१) दलित साहित्य- प्रवाह व प्रतिक्रिया -गो. म. कुळकर्णी, प्रतिमा प्रकाशन, पुणे, १९८६
२) निळी पहाट-रा. ग. जाधव, प्राज्ञपाठशाळा वाई.१९७८.
३) दलित साहित्य- एक चिंतन- अर्जुन डांगळे (संपा.), महाराष्ट्र राज्य साहित्य संस्कृती आणि मंडळ, मुंबई, १९७८.
४) दलित साहित्य-वेदना आणि विद्रोह- भालचंद्र फडके, श्रीविद्या प्रकाशन, पुणे, १९७७ (प्र.आ.), १९८९(दु. आ.)
५) दलित साहित्याची स्थितिगती- केशव मेश्राम व इतर (संपा.) मराठी विभाग, मुंबई विद्यापीठ आणि अनुभव पब्लिकेशन्स, मुंबई, १९९७
६) स्त्रीवादी समीक्षा- सैद्धान्तिक चौकट- डॉ. मिलिंद मालशे, श्रीवाणी- ऑक्टोबर, १९९३
७) स्त्रीवादी साहित्य समीक्षा-स्वरूप आणि व्याप्ती- वसंत आबाजी डहाके, श्रीवाणी- ऑक्टोबर, १९९३.
८) स्त्रीवादी साहित्य आणि समीक्षा विशेषांक- अनुष्टुभ, सप्टें. ऑक्टो१९९६.
९) स्त्रीवादी समीक्षा-स्वरूप आणि उपयोजन- दिलीपराज प्रकाशन, पुणे, १९९३.
१०) आंबेडकरवाद, डॉ. शेरे नीलकंठ, सुविद्या प्रकाशन, पुणे २००९.
११) डॉ. बाबासाहेब आंबेडकरांचे तत्त्वज्ञान: आशय व विश्लेषण, गायकवाड दत्तात्रय स्वयंदीप प्रकाशन, पुणे २०१६.
१२) आंबेडकर आणि मार्क्स, कसबे रावसाहेब, सुगावा प्रकाशन, पुणे, १९८५.
१३) प्रज्ञासूर्य, लिंबाळे शरणकुमार, (संपा.), प्रचार प्रकाशन, कोल्हापूर,१९९१.
१४) दलित कविता आणि ब्लॅक पोएट्री ऋषिकेश कांबळे गोदा प्रकाशन औरंगाबाद
१५) डॉ. आंबेडकर चिंतन, केशव मेश्राम, लोकवाङ्मयग्रह, मुंबई.
१६) सत्तासंघर्ष : संपा. सुहास पळशीकर, सुहास कुलकर्णी, समकालीन प्रकाशन, पुणे.

अभ्यासपत्रिका क्र. ७
भाषाविज्ञान
सत्र - ५ वे श्रेयांकने -४ व्याख्याने -६०

उदिष्टे (Objective)

१) भाषेचे स्वरूप आणि तिचे कार्य जाणून घेणे

२) भाषाभ्यासाच्या विविध अंगांचा परिचय करून घेणे

३) भाषेच्या अभ्यासाच्या आधुनिक व शास्त्रीय पध्दतीचा परिचय करुन घेणे तसेच पारंपारिकऐतिहासिक अभ्यासपध्दतीपेक्षा तिचे वेगळेपण समजून घेणे.

घटक-१ भाषाशास्त्राच्या विविध शाखा– वर्णनात्मक, ऐतिहासिक व समाजशास्त्रीय.

घटक -२ स्वनिम विन्यास (स्वन, स्वनिम, स्वनांतर, स्वनिमांचे प्रकार, स्वनिम विश्लेषणाची तत्त्वे – तंत्रे.

घटक -३ रूपिमविन्यास– रूपिका, रुपिम, रुपिकांतर, रुपिमांचे प्रकार, रुपिम प्रकिया.

घटक – ४ अर्थविन्यास – भाषिक अर्थाचे स्वरूप, शब्दार्थाचे प्रकार, अर्थ आणि त्याचे परस्पर संबंध

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

1) ***भाषेच्या विविध अंगांचा परिचय होईल***
2) ***भाषेच्या अभ्यासाच्या आधुनिक व शास्त्रीय पद्धतीचा परिचय होईल***

संदर्भ ग्रंथ-

१) काळे, कल्याण व इतर (संपा.), आधुनिक भाषाविज्ञान (संरचनावादी, सामान्य आणि सामाजिक, प्रतिमा प्रकाशन, पुणे, (दु.आ.) २००३.
२) काळे कल्याण व इतर (संपा.), वर्णनात्मक भाषाविज्ञान स्वरूप आणि पद्धती, गोखले एज्युकेशन सोसायटी, नाशिक, १९८२.

३) गजेंद्रगडकर, श्री. न., भाषा आणि भाषाशास्त्र, व्हीनस प्रकाशन. पुणे, (दु. आ.) १९७९.
४) गोविलकर लीला, वर्णनात्मक भाषाविज्ञान, आरती प्रकाशन, डोंबिवली, १९९२.
५) घोंगडे, रमेश, सामाजिक भाषाविज्ञान दिलीपराज प्रकाशन पुणे, २०१२.
६) पुंडे, द. दि., सुलभ भाषाविज्ञान, स्नेहवर्धन प्रकाशन, पुणे,२००५
७) मालशे, स. गं. व इतर(संपा.), भाषाविज्ञानः ऐतिहासिक व वर्णनात्मक, पद्मगंधा प्रकाशन, पुणे, २००५ (ति. आ.)
८) मालशे, स.गं. व इतर (संपा.),भाषाविज्ञान परिचय, पद्मगंधा प्रकाशन, पुणे, २००५ (दु.आ)
९) गायकवाड संपत, दलित आत्मकथन : भाषिक समाज, भाषा आणि भाषा व्यवहार, प्रज्ञा प्रबोध प्रकाशन, सांगली २०१२ .
१०) मराठी भाषेचा भाषावैज्ञानिक अभ्यास : मठकर अलका, शब्दालय प्रकाशन २०१५

सत्र – ६ वे श्रेयांकने -४ व्याख्याने -६०

मराठी व्याकरण

उदिष्टे (Objective)

१ . मराठी व्याकरणाचा इतिहास व विविध व्याकरण कर्त्यांचा परिचय करुन घेणे.

२. शब्दाचे वर्गीकरण समजावून घेणे

३. विकारण विचार समजावून घेणे

४. शब्द घटना समजावून घेणे

घटक -१ शब्दांचे वर्गीकरण– पारंपरिक व आधुनिक

घटक –२ विकरण- लिंग, वचन, विभक्ती, आख्यात.

घटक-३ शब्दसिद्धी

घटक-४ प्रयोग विचार

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

१) मराठी व्याकरण व्यवस्थेचा सूक्ष्म परिचय होईल

२) मराठी व्याकरण व्यवस्थेतील समस्या लक्षात येतील

संदर्भ ग्रंथ-

१) मराठी व्याकरण वाद आणि प्रवाद, कृष्ण श्री अर्जुनवाडकर
२) मराठी व्याकरण काही समस्या : प्र. ना. दीक्षित
३) मराठी व्याकरणाचा इतिहास कृष्ण श्री अर्जुनवाडकर
४) मराठी व्याकरण : मो. रा. वाळंबे
५) मराठी व्याकरणविवेक : मा. ना. आचार्य
६) मराठी व्याकरणाचा पुनर्विचार :अरविंद मंगरुळकर
७) मराठीचे व्याकरण : लीला गोविलकर
८) शास्त्रीय मराठी व्याकरण : मोरो केशव दामले

अभ्यासपत्रिका क्र. ८

आधुनिक मराठी साहित्य,
सत्र - ५ वे तासिका ६० श्रेयांकने – ४

उदिष्टे (Objective)

१) आधुनिक मराठी साहित्याची संकल्पना समजावून घेणे

२) आधुनिक मराठी साहित्याचा आढावा घेणे

३) विविध कलाकृतीच्या आधारे आधुनिक वाङ्मयाची वैशिष्ट्ये अभ्यासणे

घटक १ आधुनिक, आधुनिकता आणि आधुनिकतावाद : संकल्पना विचार (तासिका १५) श्रेयांकन १

घटक २ अ - आधुनिक मराठी कथा - ऐतिहासिक आढावा (तासिका १५) श्रेयांकन १
आ आधुनिक मराठी कादंबरी– ऐतिहासिक आढावा

घटक ३ आधुनिकतावादी मराठी कथा (तासिका १५) श्रेयांकन १

१) मुक्काम पोस्ट सास्कृतिक फट, सतीश तांबे, रोहन प्रकाशन (कथांची आशयसूत्रे व कथांचे रूपबंध यांसह)

घटक ४ आधुनिक मराठी कादंबरी (तासिका १५) श्रेयांकन १

१) पुरोगामी, राकेश वानखडे लोकवाङ्मयग्रह प्रकाशन, मुंबई (आशयसूत्र व कादंबरीचा रूपबंध यांसह)

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

१) आधुनिकता वादाचे वैशिष्ट्याची ओळख होईल

२) वाङ्मयीन प्रवृत्ती समजतील

संदर्भ ग्रंथ

१) मराठी कादंबरी – तंत्र व विकास, प्रा. बापट, व्हीनस प्रकाशन, पुणे १९७३

२) साहित्य : अध्यापन आणि प्रकार, मौज प्रकाशन, पॉप्युलर प्रकाशन, भागवत श्री.पु. मुंबई १९८७

३) कादंबरी, मराठी कादंबरी, उषा हस्तक, साहित्यसेवा प्रकाशन औरंगाबाद, १९९३.

४) कांदबरी: एक साहित्य प्रकार, हरिशचंद्र थोरात, शब्द पब्लिकेशन, मुंबई २०१०.

५) १९८० नंतरची मराठी कादंबरी, अविनाश सप्रे, खेळ, दिवाळी, २००७

६) मराठी नवकथा : रंग आणि रूप, डॉ सुभाष पुलावले,चिन्मय प्रकाशन ,औरंगाबाद,२०१२.

७) मराठीतील कथनरूपे ,वसंत आबाजी डहाके,पापुलर प्रकाशन ,मुंबई,२०१२ .

८) मालशे, मिलिंद, आधुनिक, भाषा विज्ञान : सिद्धांत आणि उपयोजन. लोकवाङ् मयगृह, मुंबई. १९९५

९) आधुनिक मराठी साहित्य आणि सामाजिकता : संपा. डॉ. मृणालिनी शहा, डॉ. गौरी टिळक, पद्मगंधा प्रकाशन, पुणे.

१०) नवोदोत्तर मराठी कथा : रंग आणि अंतरंग संपा. गजानन हेरोळे, गोदा प्रकाशन, औरंगाबाद.

सत्र – ६वे अभ्यासपत्रिका ८

उत्तर आधुनिक मराठी साहित्य

(तासिका ६०) श्रेयांकन ४

उदिष्टे (Objective)

१. विविध विचारधारांच्या वाङ्मयाची ओळख करुन घेऊन त्या विचारधारांना समजून घेण्याचा प्रयत्न करणे.

२. उत्तर आधुनिक साहित्याचा परिचय करून घेणे

३) विविध कलाकृतीच्या आधारे उत्तर आधुनिकता वादाची वैशिष्ट्ये अभ्यासणे

घटक १ अ) उत्तर आधुनिकतावाद : संकल्पना विचार

आ) उत्तर आधुनिक मराठी कविता– ऐतिहासिक आढावा (तासिका १५) श्रेयांकन १

घटक २ उत्तर आधुनिक मराठी कविता - (तासिका १५) श्रेयांकन १

सलील वाघ, हेमंत दिवटे, सचिन केतकर, मंगेश नारायणराव काळे, संजीव खांडेकर, श्रीधर तिळवे, वज्रेश सोळंकी, मन्या जोशी, दा.गो. काळे, कविता मुरुमकर (निवडलेल्या कवितांचा संग्रह प्रसिद्ध होईल.)

घटक ३ उत्तर आधुनिक मराठी नाटक - ऐतिहासिक आढावा (तासिका १५) श्रेयांकन १

घटक ४ उत्तर आधुनिक मराठी नाटक (तासिका १५) श्रेयांकन १

१) सिधू सुधाकर, रम आणि इतर – आशुतोष पोतदार (वॉटरमार्क पब्लिकेशन), आशयसूत्र व नाटकाचा आकृतिबंध यांसह

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह) गुण २०

साध्ये (Outcome)

१) उत्तर आधुनिकता वादाची वैशिष्ट्ये लक्षात येतील

२) उत्तर आधुनिकता वादाची स्वरूप वैशिष्ट्ये समजल्याने साहित्याकडे पाहण्याचा नवा दृष्टीकोन प्राप्त होईल.

संदर्भ पुस्तके

१. उत्तर आधुनिकता : समकालीन साहित्य, समाज व संस्कृती, बी. रंगराव, कुसुमाग्रज प्रकाशन नाशिक

२. अतिरिक्त मासिक, संपा. दा. गो. काळे – दिनकर मनवर, मार्च २०१३.

३. नाटक आणि मी ,विजय तेंडुलकर, डिम्पल प्रकाशन ,मुंबई, ,१९९७.

४. नाटक एक चिंतन – कानेटकर वसंत

५. नाटकातली चिन्हं – नाईक राजीव

६. महानगरी नाटकं – नाईक राजीव

७. मराठी नाटक : नव्या दिशा आणि वळणे, भवाळकर, तारा

८. नाटक कालचं आणि आजचं : राजापुरे-तापास, पुष्पलता

९. प्रायोगिक नाटक : भारतीय आणि जागतिक-(संपा) सूर्यवंशी नानासाहेब

अभ्यासपत्रिका क्र. ९
भाषांतर कौशल्य
सत्र – ५ वे श्रेयांकने –३ व्याख्याने – ४५

उदिष्टे (Objective)

१) भाषांतर अनुवाद, रुपांतर या संकल्पनेचा परिचय करून घेणे.

२) भाषांतराच्या विविध समस्याचा अभ्यास करणे

३) इंग्रजी-मराठी-इंग्रजी व हिंदी-मराठी-हिंदी असे भाषांतर करण्याचे कौशल्य प्राप्त करणे

घटक – १- भाषांतर –सैद्धान्तिक विचार (तासिका १५) श्रेयांकन १

अ)

१) भाषांतर, अनुवाद, रुपांतर, अर्वाचीनीकरण या स्वरूपभेदांची चर्चा.

२) ललित साहित्याचे भाषांतर – सांस्कृतिक भेदांचे संदर्भांचे महत्त्व.

आ)

१) ललित साहित्याचे भाषांतर – भाषिक समस्या व स्वरूप

२) ललित साहित्याचे भाषांतर – शैली विषयक समस्या

घटक – २ भाषांतर – प्रत्यक्ष भाषांतर अभ्यास (तासिका १५) श्रेयांकन १

१) इंग्रजी/हिंदी उताऱ्याचे मराठीत भाषांतर

२) मराठी उताऱ्याचे इंग्रजीत/हिंदीत भाषांतर

घटक – ३ (तासिका १५) श्रेयांकन १

अ) पारिभाषिक शब्द (प्रशासकीय)

ब) कोशाची संकल्पना, रचना, कोशांच्या नोंदी, अकारविल्हे आणि सूची

घटक ४ प्रकल्प अहवाल – सबंधित विषयावर २० गुणांचे प्रकल्प लेखनश्रेयांकन १

सत्रान्त परीक्षा – (गुण ८० + २० गुणांचा प्रकल्प = १००)

प्रश्न १. घटक १**अ** वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न २. घटक १ **आ** वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न ३. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०

प्रश्न ४. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०

साध्ये (Outcome)

१) भाषांतर विद्येबद्ल सूक्ष्म माहिती होईल

२) भाषांतर कौशल्य प्राप्त होईल, त्यामुळे रोजगार संधी प्राप्त होईल.

संदर्भ ग्रंथ –

१. कऱ्हाडे सदा, भाषांतर, लोकवाङ्मय गृह, मुंबई १९९२
२. बापट वसंत, तौलनिक साहित्य अभ्यास, पॉप्यूलर प्रकाशन
३. फाटक म. वि आणि ठाकर रजनी, भाषांतर : शास्त्र की कला, वरदा बुक्स, पुणे १९८७
४. डॉ. काळे कल्याण आणि डॉ. सोमण अंजली, भाषांतरमीमांसा प्रतिमा प्रकाशन, पुणे १९९७
५. भाषांतर – शास्त्र की कला : म.वि. फाटक, रजनी ठकार, वरदा, पुणे.
६. भाषांतर आणि भाषा : विलास सारंग, मौज, मुबई
७. अनुवादमीमांसा – संपा. केशव तुपे, साक्षात, औरंगाबाद.
८ भाषांतरविद्या : स्वरूप आणि समस्या, संपा. रमेश वरखेडे, य.च.म.मु.वि., नाशिक
९ भाषा आणि भाषांतर - य.च.म.मु.वि., नाशिक
१० साहित्य - सेतू – (साहित्याची भाषांतर एक अभ्यास), एल.एस देशपांडे, निर्मल प्रकाशन, नांदेड , १९९९

सत्र – ६ वे श्रेयांकने- ३ व्याख्याने-४५
व्यावसायिक मराठी

उदिष्टे (Objective)

१) विद्यार्थ्यांच्या लेखनक्षमतेचा व सर्जनशीलतेचा विकास करणे

२) मुद्रित दृक श्राव्य माध्यमांसाठी आवश्यक लेखन कौशल्य शिकवणे

३) माध्यमांमधील रोजगाराच्या संधीचा परिचय करून घेणे

४) व्यावसायिक लेखनासाठी मराठी भाषेचे उपयोजन करणे

५) आधुनिक समाजमाध्यमांचा विशेष परिचय कार्य व उपयुक्तता याबाबत जाणून घेणे

६) ब्लॉग लेखनाचे स्वरूप लक्षात घेऊन ते लेखन तंत्र अवगत करणे

७) ईमेल लेखनाचे स्वरूप लक्षात घेऊन ते लेखनतंत्र अवगत करणे

घटक १ : वृतपत्र माध्यमासाठी लेखन (तासिका १५) श्रेयांकन १

१:१ वृत्त लेखन
१:२ पुस्तक परीक्षण लेखन
१:३ नाट्य व चित्रपट समीक्षा लेखन

घटक २ : आकाशवाणी माध्यमासाठी लेखन (तासिका १५) श्रेयांकन १

२:१ श्रुतिका लेखन
२:२ नभोनाट्य
२:३ जाहिरात लेखन

घटक ३ : दूरचित्रवाणी व समाज माध्यमासाठी लेखन (तासिका १५) श्रेयांकन १

३:१ दूरचित्रवाणीसाठी मुलाखत लेखन
३:२ दूरचित्रवाणी मालिकेसाठी संवाद लेखन
३:३ ईमेल लेखन, ब्लॉगलेखन, विकिपीडियासाठी लेखन

घटक ४ प्रकल्प अहवाल – सबंधित विषयावर २० गुणांचे प्रकल्प लेखनश्रेयांकन १

सत्रान्त परीक्षा – (गुण ८० + २० गुणांचा प्रकल्प = १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह) गुण २०
प्रश्न ४. सर्व घटकांवर दोन टीपा/लघुत्तरी प्रश्न (पर्यायासह) गुण २०

साध्ये (Outcome)

१) विद्यार्थ्यांच्या लेखन क्षमतेचा आणि सर्जनशीलतेचा विकास होईल

२) विविध माध्यमांसाठी आवश्क लेखनाच्या प्रकारांचा परिचय होईल आणि त्यासाठी आवश्क कौशल्ये आत्मसात होतील

३) लेखन कौशल्ये आत्मसात करून माध्यामामधील रोजगाराच्या संधी उपलब्ध होतील

संदर्भ ग्रंथ –

१) व्यावहारिक मराठी : संपा. स्नेहल तावरे
२) व्यावहारिक मराठी : ल.रा नशिराबादकर
३) व्यावहारिक मराठी : मोकाशी सयाजी, नेमाडे रंजना
४) ओळख माहिती तंत्रज्ञानाची : एम.एस.आय.टी. महाराष्ट्र राज्य
५) संगणक युग : अच्युत गोडबोले
६) वृत्तविद्या : स.ह देशपांडे
७) नभोवाणी कार्यक्रम तंत्र आणि मंत्र : पुष्पा काणे
८) आधुनिक माहिती तंत्रज्ञानाच्या विश्वात : दीपक शिकरपूर, उज्वल मराठे
९) वाळंबे, मो. रा. सुगम मराठी व्याकरण, नितीन प्रकाशन पुणे
१०) जोशी चंद्रहास, मराठी लेखन दर्शन, मेहता पब्लिकेश हाऊस, पुणे
११) मराठी भाषा उगम आणि विकास, मेहता पब्लिकेश हाऊस, पुणे
१२) केळकर अशोक, वैखरी, मॅजिस्टिक प्रकाशन पुणे.
१३) नसीराबादकर, ल.रा., व्यावहारिक मराठी, फडके प्रकाशन, कोल्हापूर
१४) डॉ. शेकडे, सुभाष, व्यावहारिक मराठी अध्यापनाच्या दिशा, ऋतू प्रकाशन, अहमदनगर, २०१२.
१५) उपयोजित मराठी : डॉ. संजय लांडगे, दिलीपराज प्रकाशन, पुणे.
१६) अनिवार्य मराठी : डॉ. लीला गोविलकर, के. सागर पब्लिकेशन, पुणे.
१७) मराठी कोश व संदर्भसाधने यांची समग्र सूची (इ.स १८००-२००३) संपादक डॉ. वसंत विष्णू कुलकर्णी, राज्य मराठी विकास संस्था, २००७

University of Mumbai

No. UG/ 29 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/51 of 2017-18, dated 15th July, 2017 relating to the revised syllabus as per (CBCS) of F.Y.B.A. in Hindi (Compulsory & Ancillary) (Sem. I & II).

They are hereby informed that the recommendations made by the Board of Studies in Hindi at its meeting held on 9th April, 2019 have been accepted by the Academic Council at its meeting held on 15th April, 2019 **vide** item No. 4.23 & 4.24 and that in accordance therewith, the revised syllabus as per the (CBCS) for the F.Y.B.A. Compulsory & Ancillary (Sem. I & II) in Hindi has been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
3rd June, 2019

(Dr. Ajay Deshmukh)
REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.23 & 4.24 /15/04/2019

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No. UG/ 29 -A of 2019 MUMBAI-400 032 3rd June, 2019

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Humanities,
2) The Chairman, Board of Studies in Hindi,
3) The Director, Board of Examinations and Evaluation,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Director, Board of Students Development,
6) The Co-ordinator, University Computerization Centre,

(Dr. Ajay Deshmukh)
REGISTRAR

UNIVERSITY OF MUMBAI

Revised Syllabus

And

Pattern of Question Paper in the Subject of

Hindi

Atthe

F.Y.B.A.Ancillary Examination

As per

CHOICEBASED CREDIT SYSTEM (CBCS)

(With effect from the Academic Year:2019-2020)

UNIVERSITY OF MUMBAI

Revised Syllabus andPattern of Question Paper in the Subject of Hindi at the

F.Y.B.A. Ancillary Examination

CHOICEBASED CREDIT SYSTEM (CBCS)

(With effect from the Academic Year :2019-2020)

हिन्दी अध्ययन मंडल

अध्यक्ष : डॉ. अनिल सिंह

1. डॉ. करुणाशंकर उपाध्याय(सदस्य)
2. डॉ. हूबनाथ पाण्डेय(सदस्य)
3. डॉ. विद्या शिंदे (सदस्य)
4. डॉ. शीला आहुजा (सदस्य)
5. डॉ. चित्रा गोस्वामी(सदस्य)
6. डॉ. संतोष मोटवानी(सदस्य)
7. डॉ. प्रकाश धुमाल(सदस्य)
8. डॉ. गौतम सोनकांबले(सदस्य)
9. डॉ. मोहसिन ख़ान(सदस्य)

पाठ्यक्रम समिति

1. **डॉ. विद्या शिंदे (समन्वयक)**
2. डॉ. मीना सुतवणी (सदस्य)
3. डॉ. मृगेन्द्र राय(सदस्य)
4. डॉ. चित्रा गोस्वामी(सदस्य)
5. डॉ. मोहसिन ख़ान(सदस्य)
6. डॉ. प्रवीण चंद्र बिष्ट(सदस्य)

मुंबई विश्वविद्यालय, मुंबई

SEMESTER – I

NAME OF PROGRAM : B.A.
NAME OF THE COURSE : F.Y.B.A. Ancillary Hindi (ऐच्छिक हिन्दी)
COURSECODE : UAHIN 101
TOTAL LECTURES : 60
CREDITS : 3

Aims and Objectives:

1. विद्यार्थियों को गद्य विधाओं की प्रचलित रचना कहानी, निबंध आदि के अतिरिक्त आत्मकथा, जीवनी,संस्मरण, यात्रा वृतांत और रेखाचित्र आदि नवीनतम विधाओं से परिचित कराना।
2. हिंदी कहानी के आरंभ से लेकर अद्यतन कहानी की प्रवृत्तियों एवं कहानी के विकास से अवगत कराना।
3. विद्यार्थियों का नवीन गद्य विधाओं के स्वरूप-विवेचन तथा विशेषताओं से परिचय कराना।

निर्धारित पाठ्य पुस्तकें :

1) कथा संचयन :संपादन : हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई
लोकभारती प्रकाशन, इलाहाबाद -1

1.उसने कहा था - चन्द्रधर शर्मा 'गुलेरी'
2.परीक्षा - प्रेमचन्द
3.चित्र का शीर्षक - यशपाल
4.दिल्ली में एक मौत - कमलेश्वर
5.फैसला - भीष्म साहनी
6.बहादुर - अमरकांत
7.आस्था के आयाम - मालती जोशी
8.बेटी - मैत्रेयी पुष्पा
9.परदेसी - ममता कालिया
10.निर्वासित - सूर्यबाला

2) गद्य के विविध आयाम :संपादन : हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई
राजकमल प्रकाशन,1-बी. नेताजी सुभाष मार्ग,
नई दिल्ली-110002

1. महात्मा गांधी - मेरा विद्यार्थी-काल (आत्मकथा)
2. शांतिप्रिय द्विवेदी - तू तो मुझसे भी अभागा है (रेखाचित्र)
3. हरिशंकर परसाई - सद्गुरु का कहना है (व्यंग्य)
4. देवेंद्रनाथ ठाकुर - शाहजहाँ के आँसू (एकांकी)
5. फणीश्वरनाथ रेणु - यशपाल (संस्मरण)
6. विजय कुमार संदेश - मेरी अंडमान यात्रा (यात्रावृत्त)
7. समाज सेवा - पदुमलाल पुन्नालाल बख्शी (निबंध)
8. मनमोहन मदारिया - हंसिनी की भविष्यवाणी (लोककथा)

प्रथम सत्र यूनिट विभाजन

1) कथा संचयन : संपादन : हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई

यूनिट-1. (पाठ वाचन,व्याख्या और समीक्षा) व्याख्यान - 15

1. उसने कहा था - चन्द्रधर शर्मा 'गुलेरी'
2. परीक्षा - प्रेमचन्द
3. चित्र का शीर्षक - यशपाल
4. दिल्ली में एक मौत - कमलेश्वर
5. फैसला - भीष्म साहनी

यूनिट-2. (पाठ वाचन,व्याख्या और समीक्षा) व्याख्यान –15

6. बहादुर - अमरकांत
7. आस्था के आयाम - मालती जोशी
8. बेटी - मैत्रेयी पुष्पा
9. परदेसी - ममता कालिया
10. निर्वासित - सूर्यबाला

2)गद्य के विविध आयाम :संपादन :हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई

यूनिट-3. (पाठ वाचन,व्याख्या और समीक्षा) व्याख्यान - 15

1.महात्मा गांधी - मेरा विद्यार्थी - काल (आत्मकथा)
2.शांतिप्रिय द्विवेदी - तू तो मुझसे भी अभागा है (रेखाचित्र)
3.हरिशंकर परसाई - सद्गुरु का कहना है (व्यंग्य)
4.देवेंद्रनाथ ठाकुर - शाहजहाँ के आँसू (एकांकी)

यूनिट-4. (पाठ वाचन,व्याख्या और समीक्षा) व्याख्यान - 15

5.फणीश्वरनाथ रेणु - यशपाल (संस्मरण)
6.विजय कुमार संदेश - मेरी अंडमान यात्रा (यात्रावृत्त)
7.समाज सेवा - पदुमलाल पुन्नालाल बख्शी (निबंध)
8.मनमोहन मदारिया - हंसिनी की भविष्यवाणी (लोककथा)

प्रथम सत्रांत परीक्षा के प्रश्न पत्र का प्रारूप

कुल अंक : 100 **समय : 3 घंटे**

प्रश्न1. संदर्भ सहित व्याख्या (दोनों पुस्तकों से विकल्प सहित)	24 अंक
प्रश्न 2. दीर्घोत्तरी प्रश्न (दोनों पुस्तकों से विकल्प सहित)	30 अंक
प्रश्न 3. सामान्य प्रश्न (दोनों पुस्तकों से एक-एक प्रश्न)	15 अंक
प्रश्न 4. टिप्पणियाँ(दोनों पुस्तकों से विकल्प सहित)	16 अंक
प्रश्न 5. अतिलघूत्तरी प्रश्न-15 (दोनों पुस्तकों से पूछे जाएँ)	15 अंक

SEMESTER – II

NAME OF PROGRAM : B.A.
NAME OF THE COURSE : F.Y.B.A. Ancillary Hindi (ऐच्छिक हिन्दी)
COURSECODE : UAHIN 201
TOTAL LECTURES : 60
CREDITS : 3

Aims and Objectives:

1. विद्यार्थियों को गद्य विधाओं की प्रचलित रचना कहानी, निबंध आदि के अतिरिक्त आत्मकथा, जीवनी,संस्मरण, यात्रा वृतांत और रेखाचित्र आदि नवीनतम विधाओं से परिचित कराना।
2. हिंदी कहानी के आरंभ से लेकर अद्यतन कहानी की प्रवृत्तियों एवं कहानी के विकास से अवगत कराना।
3. विद्यार्थियों का उपन्यास के स्वरूप - विवेचन तथा विशेषताओं से परिचय कराना।

निर्धारित पाठ्य पुस्तकें :

1) जंगल के जुगनू (उपन्यास) - देवेश ठाकुर
वाणी प्रकाशन,21–ए दरियागंज,नई दिल्ली -110002

2) गद्य के विविध आयाम : संपादन : हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई
राजकमल प्रकाशन,1-बी. नेताजी सुभाष मार्ग,
नई दिल्ली-110002

9. रामधारी सिंह 'दिनकर' -नेता नहीं,नागरिक चाहिए (निबंध)
10. महादेवी वर्मा -बदलू (संस्मरण)
11. बनारसीदास चतुर्वेदी - बाईस वर्ष बाद (रेखाचित्र)
12. मोहन राकेश - स्वामी दयानन्द (जीवनी)
13. शंकर पुणतांबेकर -एक मूर्ति कथा (व्यंग्य)
14. जगदीशचंद्र माथुर -मकड़ी का जाला (एकांकी)
15. गुणाकर मुले -कम्प्यूटर: नई क्रांति की दस्तक (वैज्ञानिक लेख)
16. अमृतलाल बेगड़ -सौंदर्य की नदी नर्मदा (यात्रावृत्त)

द्वितीय सत्र यूनिट विभाजन

यूनिट-1. (पाठ वाचनऔर व्याख्या) **व्याख्यान - 15**

1)जंगल के जुगनू (उपन्यास) - देवेश ठाकुर

यूनिट-2. (उपन्यास की समीक्षा) **व्याख्यान -15**

जंगल के जुगनू (उपन्यास) - देवेश ठाकुर

2)गद्य के विविध आयाम : संपादन :हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई

यूनिट-3. (पाठ वाचन,व्याख्या और समीक्षा) **व्याख्यान -15**

9. रामधारी सिंह 'दिनकर' -नेता नहीं, नागरिक चाहिए (निबंध)
10. महादेवी वर्मा -बदलू (संस्मरण)
11. बनारसीदास चतुर्वेदी - बाईस वर्ष बाद (रेखाचित्र)
12. मोहन राकेश - स्वामी दयानन्द (जीवनी)

यूनिट-4. (पाठ वाचन,व्याख्या और समीक्षा) **व्याख्यान -15**

13. शंकर पुणतांबेकर -एक मूर्ति कथा (व्यंग्य)
14. जगदीशचंद्र माथुर -मकड़ी का जाला (एकांकी)
15. गुणाकर मुले -कम्प्यूटर: नई क्रांति की दस्तक (वैज्ञानिक लेख)
16. अमृतलाल बेगड़ -सौंदर्य की नदी नर्मदा (यात्रावृत्त)

द्वितीय सत्रांत परीक्षा के प्रश्न पत्र का प्रारूप

कुल अंक : 100 **समय : 3 घंटे**

प्रश्न 1. संदर्भ सहित व्याख्या (दोनों पुस्तकों से विकल्प सहित)	24 अंक
प्रश्न 2. दीर्घोत्तरी प्रश्न (दोनों पुस्तकों से विकल्प सहित)	30 अंक
प्रश्न 3. सामान्य प्रश्न (दोनों पुस्तकों से एक-एक प्रश्न)	15 अंक
प्रश्न 4. टिप्पणियाँ (दोनों पुस्तकों से विकल्प सहित)	16 अंक
प्रश्न 5. अतिलघूत्तरी प्रश्न-15 (दोनों पुस्तकों से पूछे जाएँ)	15 अंक

UNIVERSITY OF MUMBAI

Revised Syllabus

And

Pattern of Question Paper in the Subject of Hindi

At the

S.Y.B.A. PAPER- II & III

CHOICE BASED CREDIT SYSTEM (CBCS)

(With effect from the Academic Year: 2020-2021)

UNIVERSITY OF MUMBAI

Revised Syllabus and Pattern of Question Paper in the Subject of Hindi- PAPER II & III at the

S.Y.B.A. Examination

CHOICE BASED CREDIT SYSTEM (CBCS)
(With effect from the Academic Year: 2020-2021)

हिन्दी अध्ययन मण्डल

अध्यक्ष : डॉ. अनिल सिंह

1. डॉ. करुणाशंकर उपाध्याय (सदस्य)
2. डॉ. हूबनाथ पाण्डेय (सदस्य)
3. डॉ. विद्या शिंदे (सदस्य)
4. डॉ. शीला आहुजा (सदस्य)
5. डॉ. चित्रा गोस्वामी (सदस्य)
6. डॉ. संतोष मोटवानी (सदस्य)
7. डॉ. प्रकाश धुमाल (सदस्य)
8. डॉ. गौतम सोनकांबले (सदस्य)
9. डॉ. मोहसिन ख़ान (सदस्य)

पाठ्यक्रम समिति

प्रश्न - पत्र II	प्रश्न - पत्र III
1. डॉ. मोहसिन ख़ान (समन्वयक)	**1. प्रा. तबस्सुम ख़ान (समन्वयक)**
2. डॉ. उमेश चन्द्र शुक्ल (सदस्य)	2. डॉ. सतीश पाण्डेय (सदस्य)
3. डॉ. एम. एच. सिद्दीक़ी (सदस्य)	3. डॉ. रमा विनोद सिंह (सदस्य)
4. डॉ. अशोक ए. सालुंखे (सदस्य)	4. डॉ. नारायण बागुल (सदस्य)
5. प्रा. बालासाहेब गुंजाल (सदस्य)	5. प्रा. संजय वी. निंबालकर (सदस्य)
6. डॉ. प्रवीण चंद्र बिष्ट (सदस्य)	6. डॉ. एस. टी. आवटे (सदस्य)
	7. प्रा. संज्योति एम. सानप (सदस्य)

मुंबई विश्वविद्यालय, मुंबई

PAPER II, SEMESTER – III

NAME OF PROGRAM : B. A. (C.B.C.S)
NAME OF THE COURSE : S. Y. B. A.
COURSE CODE : UAHIN301
TOTAL LECTURES : 45
CREDITS : 03

अभिप्राय एवं उद्देश्य- Aims and Objectives:

1. विद्यार्थियों को हिन्दी की मध्यकालीन और आधुनिककालीन पद्य विधाओं की प्रसिद्ध, प्रचलित रचनाओं एवं परिवेश की जानकारी प्रदान करते हुए दार्शनिक, सामाजिक, राष्ट्रीय, मानवीय और नवीनतम आधुनिक जीवन-शैली संबंधी मूल्यों का परिचय कराना।
2. हिंदी काव्य के मध्यकाल से लेकर अद्यतन काव्य की प्रवृत्तियों एवं कविता के विकास से अवगत कराते हुए काव्य के सामाजिक, मानवीय सरोकारों के साथ पर्यावरण-चेतना को समृद्ध करना।
3. काव्य के अंतर्गत प्रयुक्त विभिन्न शैलियों का परिचय कराते हुए उसकी शिल्पगत बनावट के साथ जीवन के क्षेत्र में काव्य की उपादेयता को दर्शाना ।

परिणाम- Outcomes:

1. विद्यार्थियों में मानवीय संवेदनाओं के विकास के साथ नवीन सामाजिक, सांस्कृतिक बोध और जीवन मूल्यों का विकास होगा।
2. विद्यार्थियों में साहित्य के माध्यम से कलात्मक गुणों की अभिवृद्धि होगी, कला की साहित्यिक विधाओं के प्रति अभिरुचि जागृत होगी तथा रचनात्मक-कौशल को बढ़ावा मिलेगा।
3. विद्यार्थियों में नये वैश्विक-मूल्यों के प्रति सजगता को बढ़ावा मिलेगा एवं पर्यावरणीय चेतना के प्रति दायित्व-बोध उत्पन्न होगा।

अध्यापन प्रणालियाँ- Teaching Method:

1. व्याख्यान, विश्लेषण तथा व्याख्यात्मक पद्धति का प्रयोग।
2. दृश्य/श्रव्य माध्यमों और संगणक का प्रयोग।
3. उदाहरण द्वारा पुष्टि एवं लेखकों के अतिथि व्याख्यान।
4. स्वाध्याय / परियोजना।

S. Y. B. A. PAPER II, SEMESTER – III (C.B.C.S)

निर्धारित पाठ्य पुस्तकें :

1. मध्यकालीन और आधुनिक काव्य संपादन : हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई राजपाल एण्ड संज, 1590, मदरसा रोड, कश्मीरी गेट, दिल्ली।

पाठ्यक्रम के लिए निर्धारित कविताएँ-

- ***मध्यकालीन काव्य***

(क) कबीर के दोहे (कबीर-ग्रन्थावली, संपा. डॉ. माताप्रसाद गुप्त)

गुरुदेव कौ अंग-

1. पीछैं लागा जाइ.....दीपक दीया हाथि॥

2. सतगुर साचा सुरिवां.....लीया ततसार॥

सुमिरण कौ अंग-

1. जिहि घटि प्रीति.....उपजि खये बेकांम॥

2. लूटि सकै तो.....यहु तन जैहै छूटि॥

बिरह कौ अंग-

1. यहु तन जालौं.....रांम पठांउं॥

2. अंखड़ियां झांईं.....पुकारि पुकारि॥

(ख) सूरदास के पद (भ्रमरगीत-सार, संपा. आचार्य रामचन्द्र शुक्ल)

1. ए अलि! कहा जोग.....जहर की बेली॥

2. अँखियाँ हरि-दरसन.....सरिता हैं सुखी॥

3. निर्गुन कौन देस को.....सबै मति नासी॥

4. उधो! मन नाहीं दस.....पुरबौ मन जगदीस॥

(ग) तुलसीदास के पद (विनय-पत्रिका, तुलसीदास गीताप्रेस गोरखपुर)

1. दीन को दयालु.....तुलसिदास मेरो॥

2. तू दयालु, दीन हौं.....चरन-सरन पावै॥

3. कबहूँ मन बिस्राम.....जनम सिरान्यो॥

4. जाऊँ कहाँ तजि.....अपनपौ हारे॥

(घ) मीराँबाई के पद (संत मीराँबाई और उनकी पदावली, संपा. बलदेव वंशी)

1. बसो मेरे नैनन.....भक्त वछल गोपाल॥

2. मेरे तो गिरधर गोपाल.....तारो अब मोहि॥

3. पग घुँघरू बांध मीराँ.....की दासी रे॥

4. दरस बिन दूखन.....मेटण सुख दैण॥

(ङ) रहीम के दोहे (रहीम ग्रन्थावली, संपा. विद्यानिवास मिश्र एवं गोविंद रजनीश)

1. एकै साधे सब……..फूलै फलै अघाय॥

2. खैर, खून, खाँसी……..जानत सकल जहान॥

3. जो रहीम उत्तम……..…लपटे रहत भुजंग॥

4. बिगरी बात बनै……..…मथे न माखन होय॥

5. रहिमन अँसुआ नैन……..भेद कहि देइ॥

6. रहिमन धागा प्रेम……..गाँठ परि जाय॥

(च) बिहारी के दोहे (बिहारी रत्नाकर- श्री जगन्नाथदास 'रत्नाकर')

1. मेरी भव-बाधा.....हरित-दुति होइ॥
2. कहत, नटत, रीझत.....नैननु हीं सब बात॥
3. कागद पर लिखत.....मेरे हिय की बात॥
4. या अनुरागी चित्त.....उज्जलु होइ॥
5. घरु घरु डोलत दीन.....बड़ौ लखाइ॥
6. मोहन-मूरति स्याम.....प्रतिबिंबितु जग होइ॥

- ***आधुनिक काव्य***

1. मनुष्यता	:	मैथिलीशरण गुप्त
2. वह तोड़ती पत्थर	:	सूर्यकांत त्रिपाठी 'निराला'
3. कोशिश करने वालों की हार नहीं होती	:	सोहनलाल द्विवेदी
4. जो बीत गई सो बात गई	:	हरिवंशराय बच्चन
5. अपना अहम् नहीं बेचूंगा	:	रामावतार त्यागी
6. शीशे और पत्थर का गणित	:	दिनकर सोनवलकर
7. आज सड़कों पर लिखे हैं (ग़ज़ल)	:	दुष्यंत कुमार

8. माँ पर नहीं लिख सकता कविता : चंद्रकांत देवताले

9. विकल्प : राजेश जोशी

10. एक और युद्ध : ओमप्रकाश वाल्मीकि

11. नये इलाक़े में : अरुण कमल

12. उतनी दूर मत ब्याहना बाबा ! : निर्मला पुतुल

2. स्वयंप्रभा (खंडकाव्य) : लेखक – रमाकांत शर्मा 'उद्भ्रांत'
प्रकाशक : अमन प्रकाशन 104/80C रामबाग, कानपुर-208012

इकाई- विभाजन- SEMESTER-III, PAPER II, COURSE CODE- UAHIN301

इकाई-1-व्याख्यान-04- **कबीर, सूरदास** (पाठ वाचन एवं व्याख्या)

इकाई-2-व्याख्यान-04- **तुलसी, मीराँबाई** (पाठ वाचन एवं व्याख्या)

इकाई-3-व्याख्यान-04- **रहीम, बिहारी** (पाठ वाचन एवं व्याख्या)

इकाई-4-व्याख्यान-15- **आधुनिक काव्य** (पाठ वाचन एवं व्याख्या)

इकाई-5-व्याख्यान-13- **स्वयंप्रभा** (पाठ वाचन एवं व्याख्या)

व्याख्यान-05-पाठालोचन और प्रश्न चर्चा

क्रेडिट- 03

विद्यार्थियों हेतु प्रश्न पत्र का प्रारूप

प्रश्न पत्र II, सेमेस्टर III (तृतीय सत्र)

पूर्णांक- 100 **समय- 03:00 घंटे**

प्रश्न-1 संदर्भ सहित व्याख्या (दोनों पुस्तकों में से विकल्प सहित)	अंक-20
प्रश्न-2 दीर्घोत्तरी प्रश्न (दोनों पुस्तकों में से विकल्प सहित)	अंक-40
प्रश्न-3 सामान्य प्रश्न (दोनों पुस्तकों में से किसी एक का उत्तर अपेक्षित)	अंक-20
प्रश्न-4 टिप्पणियाँ (दोनों पुस्तकों से विकल्प सहित)	अंक-10
प्रश्न-5 अतिलघूत्तरी वस्तुनिष्ठ (दोनों पुस्तकों में से)	अंक-10
	योग = 100

संदर्भ ग्रंथ-सूची

1. कबीर – हजारीप्रसाद द्विवेदी
2. कबीर ग्रंथावली – संपा. डॉ माताप्रसाद गुप्त
3. विनय पत्रिका – वियोगी हरि
4. सूरदास – व्रजेश वर्मा
5. संत मीराँबाई और उनकी पदावली – संपा. बलदेव वंशी
6. बिहारी रत्नाकर- श्री जगन्नाथदास 'रत्नाकर'
7. भक्ति के तीन स्वर : मीरा, सूर, कबीर – जॉन स्ट्रैटन हौली, अनुवाद-अशोक कुमार
8. कविता के नये प्रतिमान – नामवर सिंह
9. काव्यशास्त्र – भगीरथ मिश्र
10. छायावाद – नामवर सिंह
11. भारतेन्दु हरिश्चंद्र – डॉ. रामविलास शर्मा
12. निराला की साहित्य साधना - डॉ. रामविलास शर्मा
13. दुष्यंत कुमार की ग़ज़लों का समीक्षात्मक अध्ययन – डॉ. सरदार मुजावर
14. रहीम के काव्य में पुराख्यान – डॉ. मोहसिन ख़ान
15. ये रहीम दर दर फिरिहिं – डॉ. श्रीकांत उपाध्याय
16. आदिवासी साहित्य यात्रा – संपा. रमणिका गुप्ता
17. दलित साहित्य का समाजशास्त्र - ओमप्रकाश वाल्मीकि
18. दलित साहित्य का सौंदर्यशास्त्र – शरणकुमार लिंबाले
19. भारतीय साहित्य शास्त्र – बलदेव उपाध्याय

PAPER II, SEMESTER –IV

NAME OF PROGRAM : B. A. (C.B.C.S)
NAME OF THE COURSE : S. Y. B. A.
COURSE CODE : UAHIN401
TOTAL LECTURES : 45
CREDITS : 03

अभिप्राय एवं उद्देश्य- Aims and Objectives:

1. विद्यार्थियों को गद्य की व्यंग्य विधा की प्रसिद्ध, प्रचलित व्यंग्यात्मक रचनाओं एवं समकालीन परिवेश की जानकारी प्रदान करते हुए सामाजिक, मानवीय,सांस्कृतिक और नवीनतम आधुनिक जीवन शैली संबंधी मूल्यों का परिचय कराना।
2. हिंदी गद्य के प्रारम्भिक काल में प्रस्फुटित व्यंग्य रचनाओं से लेकर अद्यतन व्यंग्यात्मक रचनाओं, प्रवृत्तियों एवं व्यंग्य के विकास से अवगत कराते हुए काव्य के सामाजिक, मानवीय संतुलन-असंतुलन को दर्शाते हुए सकारात्मक पक्षों को बल देना एवं सामूहिक नैतिकता को समृद्ध करना।
3. व्यंग्य के अंतर्गत प्रयुक्त विभिन्न व्यंग्य दृष्टियों को उजागर करते हुए उसकी शिल्पगत बनावट के साथ आम जीवन के क्षेत्र में व्यंग्य की उपादेयता को दर्शाते हुए उसके विभिन्न सरोकारों से अवगत कराना।

परिणाम- Outcomes:

1. विद्यार्थियों में मानवीय संवेदनाओं के विकास के साथ नवीन सामाजिक, सांस्कृतिक और राजनीतिक मूल्यों का गुणात्मक विकास होगा।
2. विद्यार्थियों में राष्ट्र-निर्माण हेतु नये सामाजिक, राजनीतिक, सांस्कृतिक विचारों का प्रसार होगा और दायित्व-बोध निर्वहन का विकास होगा।
3. विद्यार्थियों में नये वैश्विक मूल्यों के प्रति सजगता को बढ़ावा मिलेगा एवं मूल्यवादी दृष्टि के प्रति दायित्व-बोध उत्पन्न होगा।
4. विद्यार्थियों में साहित्य-रसास्वादन के साथ कलात्मक अभिरुचि का निर्माण होगा, रचनात्मक-कौशल को बढ़ावा मिलेगा।

अध्यापन प्रणालियाँ- Teaching Method:

1. व्याख्यान, विश्लेषण तथा व्याख्यात्मक पद्धति का प्रयोग।
2. दृश्य/ श्रव्य माध्यमों और संगणक का प्रयोग।
3. उदाहरण द्वारा पुष्टि एवं लेखकों, अतिथियों के व्याख्यान।
4. स्वाध्याय/ परियोजना।

S. Y. B. A. PAPER II, SEMESTER –IV (C.B.C.S)

निर्धारित पाठ्य पुस्तकें :

1. व्यंग्य-वीथी संपादन : हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई
राधाकृष्ण प्रकाशन, जी-17 जगतपुरी, दिल्ली-110 051

पाठ्यक्रम के लिए निर्धारित व्यंग्य निबंध-

1. वसीयत	:	भगवती चरण वर्मा
2. सुदामा के चावल	:	हरिशंकर परसाई
3. एक लाख	:	शंकर पुणतांबेकर
4. बापू की विरासत	:	नामवर सिंह
5. बंसी वाले का पुजारी	:	शरद जोशी
6. वाह रे ! हमदर्द	:	घनश्याम अग्रवाल
7. प्रभु जी, तुम डॉलर हम पानी	:	सूर्यबाला
8. छूकर चरण भाग्य बनते हैं	:	स्नेहलता पाठक
9. कन्या रत्न का दर्द	:	प्रेम जनमेजय
10. वाशिंग मशीन में बाल सरस्वती	:	बी. एल. आच्छा
11. गाँव के स्कूल में कम्प्यूटर	:	ज्ञान चतुर्वेदी
12. ऐनक के बहाने	:	ब्रजेश कानूनगो

2. शकुंतिका (उपन्यास) : लेखक - भगवानदास मोरवाल
प्रकाशक : राजकमल प्रकाशन, 1-बी. नेताजी सुभाष मार्ग, नई दिल्ली।

इकाई- विभाजन- SEMESTER-IV, PAPER II, COURSE CODE- UAHIN401

इकाई-1-व्याख्यान-08- **वसीयत** से **बापू की विरासत** निबंध तक (पाठ वाचन एवं व्याख्या)

इकाई-2-व्याख्यान-08-**बंसी वाले का पुजारी** से **छूकर चरण भाग्य बनते हैं** निबंध तक (पाठ वाचन एवं व्याख्या)

इकाई-3-व्याख्यान-08- **कन्या रत्न का दर्द** से **ऐनक के बहाने** व्यंग्य निबंध तक (पाठ वाचन एवं व्याख्या)

इकाई-4-व्याख्यान-08- **उपन्यास** (पाठ वाचन एवं व्याख्या)

इकाई-5-व्याख्यान-08- **उपन्यास** (पाठ वाचन एवं व्याख्या)

व्याख्यान-05-पाठालोचन और प्रश्न चर्चा

क्रेडिट- 03

विद्यार्थियों हेतु प्रश्न पत्र का प्रारूप

प्रश्न पत्र II, सेमेस्टर IV(चतुर्थ सत्र)

पूर्णांक- 100	**समय- 03:00 घंटे**
प्रश्न-1 संदर्भ सहित व्याख्या (दोनों पुस्तकों में से विकल्प सहित)	अंक-20
प्रश्न-2 दीर्घोत्तरी प्रश्न (दोनों पुस्तकों में से विकल्प सहित)	अंक-40
प्रश्न-3 सामान्य प्रश्न (दोनों पुस्तकों में से किसी एक का उत्तर अपेक्षित)	अंक-20
प्रश्न-4 टिप्पणियाँ (दोनों पुस्तकों से विकल्प सहित)	अंक-10
प्रश्न-5 अतिलघूत्तरी वस्तुनिष्ठ (दोनों पुस्तकों में से)	अंक-10
	योग = 100

संदर्भ ग्रंथ-सूची

1. स्वातंत्र्योत्तर हिन्दी व्यंग्य निबंध – डॉ. शशि मिश्र
2. आधुनिक हिन्दी साहित्य में व्यंग्य – वीरेंद्र मेहंदीरत्ता
3. हरिशंकर परसाई के व्यंग्य साहित्य में मिथकीय संरचना का अनुशीलन – डॉ. शरद सुनेरी
4. परसाई के साहित्य में समकालीन यथार्थ – डॉ. संध्या कुमारी सिंह
5.शंकर पुणतांबेकर का व्यंग्य साहित्य -डॉ. मीना सुनील सुतवणी
6. हिन्दी उपन्यास का विकास – मधुरेश
7. हिन्दी उपन्यास का इतिहास – गोपाल राय
8. उपन्यास का लोकधर्म - सं. डॉ. नैया
9. कथा का सौन्दर्य शास्त्र - प्रभाकर क्षोत्रिय
10. उपन्यासकार भगवानदास मोरवाल - सं. डॉ. मधु खराटे
11.लोकमन का सिरजनहार : भगवानदास मोरवाल - सं. डॉ. लोकेश कुमार गुप्ता

PAPER III, SEMESTER – III

NAME OF PROGRAM : B. A. (C.B.C.S)
NAME OF THE COURSE : S. Y. B. A.
COURSE CODE : UAHIN302
TOTAL LECTURES : 45
CREDITS : 03

अभिप्राय एवं उद्देश्य- Aims and Objectives:

1. विद्यार्थियों को प्रयोजनमूलक भाषा की जानकारी देते हुए कार्यालयीन तथा अन्य व्यवहार क्षेत्रों में हिंदी भाषा के व्यवहार एवं प्रयोग के लिए प्रशिक्षित करते हुए लेखन कौशल का विकास कराना।
2. विद्यार्थियों को प्रयोजनमूलक हिंदी तथा अंग्रेजी की पारिभाषिक शब्दावली से परिचय कराना।
3. विद्यार्थियों को व्यावसायिक/ कार्यालयीन पत्राचार से अवगत कराना।
4. विद्यार्थियों को अंग्रेजी/ मराठी भाषा से हिंदी भाषा में अनुवाद कौशल का विकास कराना।
5. विद्यार्थियों को जनसंचार माध्यमों में प्रयुक्त हिंदी भाषा की जानकारी से अवगत कराना।
6. विद्यार्थियों को जनसंचार माध्यमों के विकास से परिचय कराना।

परिणाम- Outcomes:

1. विद्यार्थियों को व्यावहारिक हिन्दी भाषा-दक्षता की प्रवीणता की प्राप्ति होगी।
2. विद्यार्थियों का व्यावसायिक रूप से आत्मनिर्भरता के योग्य बनाना।
3. विद्यार्थी जनसंचार माध्यमों में रोज़गार के अवसर व अन्य क्षेत्रों से अवगत होंगे।

अध्यापन प्रणालियाँ- Teaching Method:

1. व्याख्यान तथा विश्लेषण।
2. दृश्य/ श्रव्य माध्यमों और संगणक का प्रयोग।
3. राजभाषा अधिकारियों/ जनसंचार माध्यमों से संलग्न व्यक्तियों के अतिथि व्याख्यान।
4. स्वाध्याय/ परियोजना।

S. Y. B. A. PAPER- III, SEMESTER –III

इकाई 1. प्रयोजनमूलक हिंदी :

- प्रयोजनमूलक हिंदी : अर्थ और परिभाषा
- सामान्य हिंदी, साहित्यिक हिंदी
- प्रयोजनमूलक हिंदी : स्वरूप एवं विशेषताएँ
- प्रयोजनमूलक हिंदी : व्यवहार क्षेत्र

इकाई 2. कार्यालयीन एवं व्यावसायिक पत्र-लेखन :

- कार्यालयीन पत्र : कार्यालय आदेश, कार्यालय ज्ञापन, परिपत्र, अनुस्मारक
- व्यावसायिक पत्र : आवेदन (रिक्त पद/अवकाश), पूछताछ, क्रयादेश
- शिकायती पत्र (सार्वजनिक)

इकाई 3. अनुवाद :

- अनुवाद : अर्थ, परिभाषा
- अनुवाद के भेद:

  (i) शब्दानुवाद (ii) भावानुवाद

  (iii) अर्थानुवाद (iv) सारानुवाद

  (v) सर्जनात्मक अनुवाद (काव्यानुवाद/कथानुवाद)
- अनुवाद : महत्व एवं उपयोगिता

इकाई 4. पत्रकारिता :

- पत्रकारिता : परिभाषा, स्वरूप और महत्त्व
- हिंदी पत्रकारिता : विकासक्रम
- पत्रकारिता के विविध रूप (खेल पत्रकारिता, इलेक्ट्रॉनिक माध्यमों की पत्रकारिता, साहित्यिक- सांस्कृतिक पत्रकारिता)

इकाई 5. व्यावहारिक अनुवाद : पारिभाषिक शब्दावली

- अंग्रेजी / मराठी से हिंदी में अनुवाद
- पारिभाषिक शब्दावली : अर्थ, परिभाषा और महत्त्व
- निर्धारित पारिभाषिक शब्दों के 50 हिन्दी प्रतिशब्द

1. Accounting Year : लेखा वर्ष
2. Approval : अनुमोदन
3. Arrears : बकाया राशि
4. Basic Pay : मूलवेतन
5. Brought Forward : आगे लाया गया
6. Concerned : संबंधित
7. Confidential : गोपनीय

8. Consumer : उपभोक्ता
9. Deduction : कटौती
10. Deficit : घाटा
11. Delete : हटा दीजिए
12. Enclosure : संलग्नक
13. Excise Duty : उत्पाद शुल्क
14. Favourable : अनुकूल
15. Forth Coming : आगामी
16. Forged Signature : जाली हस्ताक्षर
17. Gazette : राजपत्र
18. Grant : अनुदान
19. Guideline : दिशानिर्देश
20. Honorary : अवैतनिक
21. Incentive : प्रोत्साहन
22. In charge : प्रभारी
23. Increment : वेतनवृद्धि
24. Joint Committee : संयुक्त समिति
25. Key Post : मुख्य पद
26. Ledger : बहीखाता
27. Leave : छुट्टी
28. Maturity : परिपक्वता
29. Minutes : कार्यवृत्त
30. Norm : मानक/मानदण्ड
31. Notice : सूचना
32. Outline : रूपरेखा
33. Renewal : नवीनीकरण
34. Please Verify : कृपया सत्यापन/जाँच करें
35. Proposal : प्रस्ताव
36. Password : पारण शब्द
37. Section : अनुभाग
38. Show Cause Notice : कारण बताओ सूचना
39. Specimen Signature : नमूना हस्ताक्षर
40. Standard : मानक
41. Tentative List : अस्थायी सूची
42. Testimonial : प्रशंसा-पत्र
43. Transfer : स्थानांतरण
44. Unauthorized : अनधिकृत

45. Vacancy : रिक्त पद
46. Value Declared : घोषित मूल्य
47. Violation : उल्लंघन
48. Waiting list : प्रतीक्षा सूची
49. With Reference तो : के संदर्भ में
50. Zonal Office : आंचलिक कार्यालय

इकाई- विभाजन- SEMESTER-III, PAPER III, COURSE CODE- UAHIN302

इकाई-1-व्याख्यान 8–प्रयोजनमूलक हिंदी
इकाई-2-व्याख्यान 8–कार्यालयीन एवं व्यावसायिक पत्र-लेखन
इकाई-3–व्याख्यान 8–अनुवाद
इकाई-4-व्याख्यान 8–पत्रकारिता
इकाई-5-व्याख्यान 8–व्यावहारिक अनुवाद एवं पारिभाषिक शब्दावली
व्याख्यान-05-पाठालोचन और प्रश्न चर्चा

क्रेडिट- 03

विद्यार्थियों हेतु प्रश्न पत्र का प्रारूप

प्रश्न पत्र- III, सेमेस्टर- III (तृतीय सत्र)

पूर्णांक- 80	**समय- 3 घंटे**
पूछे गए 1 से 6 प्रश्नों में से 4 प्रश्नों के उत्तर अपेक्षित हैं।	20x4 = 80
प्रश्न 7 वां अनिवार्य होगा।	
अ. अनुवाद (अंग्रेजी/मराठी से हिंदी)	अंक 10
आ. हिंदी पारिभाषिक शब्द (10 शब्द)	अंक 10
	योग = 100

सन्दर्भ ग्रन्थ-सूची

1. प्रयोजनमूलक हिंदी – डॉ. विनोद गोदरे
2. प्रयोजनमूलक हिंदी – डॉ. नरेश मिश्र
3. प्रयोजनमूलक हिंदी – डॉ. रवींद्रनाथ श्रीवास्तव
4. अनुवाद सिद्धांत - भोलानाथ तिवारी
5. अनुवाद का समकाल – डॉ. मोहसिन ख़ान
6. कार्यालय दीपिका – हरिबाबू कंसल
7. अभिनव व्यावहारिक पत्र लेखन - डॉ.अनिल सिंह
8. आधुनिक पत्रकारिता - डॉ. अर्जुन तिवारी
9. ऑनलाइन पत्रकारिता - हर्षदेव
10. बदलती पत्रकारिता गिरते मूल्य - डॉ.निशांत सिंह
11. हिंदी पत्रकारिता उद्भव और विकास – डॉ. रचना भोला 'यामिनी'
12. इलेक्ट्रॉनिक पत्रकारिता- अजय कुमार सिंह

PAPER III, SEMESTER – IV

NAME OF PROGRAM : B. A. (C.B.C.S)
NAME OF THE COURSE : S. Y. B. A.
COURSE CODE : UAHIN402
TOTAL LECTURES : 45
CREDITS : 03

अभिप्राय एवं उद्देश्य- Aims and Objectives:

1. विद्यार्थियों को जनसंचार-भाषा की जानकारी देते हुए व्यवहार क्षेत्रों में हिंदी भाषा के व्यवहार एवं प्रयोग के लिए प्रशिक्षित करना।
2. विद्यार्थियों को परंपरागत जनसंचार माध्यमों से परिचय कराते हुए नव्य-संचार माध्यमों में प्रयुक्त तकनीक के आंतरिक और बाह्य पक्षों के सामाजिक सरोकारों को दर्शाना।
3. विद्यार्थियों को समाचार लेखन, संपादकीय लेखन, साक्षात्कार, फ़ीचर लेखन से अवगत कराना।
4. विद्यार्थियों को सोशल मीडिया, कंप्यूटर, टेलीविज़न इत्यादि के भाषाई प्रयोगों का परिचय देना।

परिणाम- Outcomes:

1. विद्यार्थियों को तकनीकी और व्यावहारिक भाषा दक्षता की प्रवीणता प्राप्ति होगी।
2. व्यावसायिक रूप से आत्मनिर्भरता की संभावना बढ़ेगी।
3. जनसंचार माध्यमों में रोज़गार के क्षेत्रों से परिचय होगा।

अध्यापन प्रणालियाँ- Teaching Method:

1. व्याख्यान तथा विश्लेषण।
2. दृश्य/ श्रव्य माध्यमों और संगणक का प्रयोग।
3. राजभाषा अधिकारियों/ जनसंचार माध्यमों से संलग्न व्यक्तियों के अतिथि व्याख्यान।
4. स्वाध्याय/ परियोजना।
5. शैक्षणिक भ्रमण।

S. Y. B. A. PAPER III, SEMESTER – IV

इकाई 1. जनसंचार :

- अर्थ, परिभाषा एवं स्वरूप
- जनसंचार के तत्त्व

इकाई 2. जनसंचार माध्यम :

- परंपरागत संचार माध्यमों का सामान्य परिचय एवं भेद
  (तमाशा, लावणी, कठपुतली, नोटंकी, कीर्तन, लोक-संगीत)
- आधुनिक जनसंचार माध्यमों का सामान्य परिचय एवं भेद
  (मुद्रित एवं इलेक्ट्रॉनिक)

इकाई 3. जनसंचार माध्यमों का विकास एवं उपयोगिता :

(i) समाचार पत्र (ii) रेडियो (iii) सिनेमा
(iv) टेलीविज़न (v) कंप्यूटर (vi) मोबाइल
(vii) सोशल मीडिया

इकाई 4. जनसंचार माध्यमोपयोगी लेखन : सामान्य परिचय

(i) समाचार लेखन (ii) साक्षात्कार
(iii) फ़ीचर लेखन (iv) संपादकीय
(v) संवाद लेखन (vi) पुस्तक एवं फ़िल्म समीक्षा
(vii) विज्ञापन लेखन

इकाई 5. माध्यमोपयोगी लेखन :

(i) समाचार लेखन (ii) फ़ीचर लेखन (iii) संवाद लेखन
(iv) फ़िल्म समीक्षा (v) विज्ञापन लेखन

- ***पाठ्यक्रम के लिए निर्धारित वस्तुनिष्ठ 50 प्रश्न***

1. संचार अंग्रेजी के किस शब्द का पर्याय है?
2. अर्थ की दृष्टि से संचार से सम्बद्ध कौन सा शब्द है ?
3. स्रोत और श्रोता के बीच कौन सी प्रक्रिया होती है?
4. किन्हीं दो संचार माध्यमों के नाम लिखिए?
5. भारतीय पत्रकारिता का जनक किसे माना जाता है?
6. भारत में रंगीन दूरदर्शन का सूत्रपात कब हुआ?
7. निरक्षर लोगों के बीच सन्देश प्रसारित करने के लिए कौन सा माध्यम उपयुक्त है?
8. रेडियो प्रसारण के क्षेत्र में विविध भारती का आरम्भ कब हुआ?
9. भारत की पहली बोलती फिल्म कौन सी है?
10. हिंदी का पहला समाचार पत्र कौन सा था?
11. भारतेंदु द्वारा प्रकाशित किसी एक पत्रिका का नाम लिखिए?
12. केसरी पत्र का सम्बन्ध किस भाषा से रहा?
13. सरस्वती पत्रिका का पहला अंक कब प्रकाशित हुआ था?
14. अंग्रेजी में अनुवाद के लिए किस शब्द का प्रयोग होता है?

15. रेडियो जनसंचार का किस प्रकार का माध्यम है?
16. दिनांक ८ जून, १९३६ को इंडियन स्टेट ब्रॉडकास्टिंग का नाम बदलकर क्या रख दिया गया?
17. भारत में पहला टेलीविज़न केंद्र कहाँ स्थापित हुआ?
18. दादा साहब फाल्के को भारतीय सिनेमा किस नाम से याद करता है?
19. सन १९५७ में 'ऑल इंडिया रेडियो' का नाम बदलकर क्या रखा गया?
20. 'हवा महल' कार्यक्रम का संबंध किस संचार माध्यम से है?
21. मुंबई में दूरदर्शन का केंद्र किस वर्ष शुरू हुआ?
22. प्रसार भारती का सम्बन्ध किन संचार माध्यमों से है?
23. दूरदर्शन पर चर्चित 'हम लोग' धारावाहिक के लेखक कौन थे?
24. 'सोप ओपेरा' शब्द किस के लिए प्रयुक्त होता है?
25. सोनी टी.वी. का सम्बन्ध किस देश से है?
26. डिस्कवरी चैनल किस प्रकार का चैनल है?
27. 'दैनिक भास्कर' में कार्टून कॉलम किस नाम से प्रकाशित होता है?
28. 'कंप्यूटर' की उत्पत्ति किस शब्द से हुई है?
29. कंप्यूटर की मुख्य या प्राथमिक मेमोरी किसे कहा जाता है?
30. कंप्यूटर से सम्बद्ध शब्द 'अंडू' का क्या तात्पर्य है?
31. टी.वी. चैनलों पर कमर्शियल ब्रेक से क्या तात्पर्य है?
32. आधुनिक जनसंपर्क का जनक किसे माना जाता है?
33. कठपुतली किस प्रकार का माध्यम है?
34. राष्ट्रीय फिल्म विकास निगम की स्थापना कब हुई?
35. इंडियन जर्नलिस्ट एसोसिएशन की स्थापना किस वर्ष हुई?
36. किस देश में सब से पहले खोजी पत्रकारिता को मान्यता मिली?
37. खोजी पत्रकारिता की कोई एक विशेषता लिखिए?
38. देविका रानी को सर्वप्रथम कौन सा पुरस्कार प्रदान किया गया?
39. आज़ादी से पूर्व पत्रकारिता का स्वरूप व्यावसायिक न होकर कैसा था?
40. समाचार पत्र की आय बढ़ाने में किस विभाग की भूमिका सर्वाधिक महत्त्वपूर्ण होती है?
41. आज़ादी के बाद किस वर्ष कॉपीराईट एक्ट बना?
42. सन् १९७५ में किस अधिनियम के अंतर्गत सेंसरशिप लागू की गई?
43. उत्तर प्रदेश से प्रकाशित पहला हिंदी समाचार पत्र कौन सा है?
44. 'कवि वचन सुधा' पत्रिका का प्रकाशक कौन था?
45. दो प्रभावशाली सोशल मीडिया के नाम लिखिए?
46. ट्विटर की स्थापना कब हुई?
47. फेसबुक की स्थापना किसने की?
48. इन्सटाग्राम का एक उपयोग लिखिए?
49. स्नेपचेट की शरुवात किसने की?
50. सोशल मीडिया में टम्बलर का प्रयोग किस लिए किया जाता है?

इकाई- विभाजन- SEMESTER-IV, PAPER III, COURSE CODE- UAHIN402

इकाई-1–व्याख्यान 8–जनसंचार-अर्थ परिभाषा स्वरूप एवं तत्त्व

इकाई-2–व्याख्यान 8-परम्परागत एवं आधुनिक जनसंचार माध्यम

इकाई-3– व्याख्यान 8-जनसंचार-विकास एवं उपयोगिता

इकाई-4–व्याख्यान 8-माध्यमोपयोगी लेखन-सामान्य परिचय

इकाई-5–व्याख्यान 8-विविध माध्यमोपयोगी लेखन का अभ्यास

व्याख्यान-05-पाठालोचन और प्रश्न चर्चा

क्रेडिट- 03

विद्यार्थियों हेतु प्रश्न पत्र का प्रारूप

प्रश्न पत्र- III, सेमेस्टर IV(चतुर्थ सत्र)

पूर्णांक- 100 **समय- 03:00 घंटे**

पूछे गए 1 से 6 प्रश्नों में से 4 प्रश्नों के उत्तर अपेक्षित हैं।	20x4 = 80
प्रश्न 7 वां अनिवार्य होगा।	
अ-पूछे गए 4 (चार) में से 2 (दो) माध्यमोपयोगी लेखन	अंक-10
आ-अतिलघूत्तरी / वस्तुनिष्ठ प्रश्न	अंक-10
	योग = 100

सन्दर्भ ग्रन्थ-सूची

1. जनसंचार एवं समाज - डॉ. मोनिका नागोरी
2. आधुनिक जनसंचार माध्यम और हिंदी - डॉ. हरिमोहन
3. भारतीय मीडिया – डॉ. स्मिता मिश्र
4. मीडिया की बदलती भाषा - डॉ.अजयकुमार सिंह
5. मीडिया और हिंदी – बदलती प्रवृत्तियां-सं.रविन्द्र जाधव / केशव मोरे
6. संचार माध्यम लेखन - गौरी शंकर रैना
7. समाचार, फीचर लेखन एवं संपादन कला - डॉ.हरिमोहन
8. जनसंचार विविध आयाम - डॉ.बृजमोहन गुप्त
9. मीडिया लेखन, सिद्धान्त और व्यवहार – डॉ. चंद्रप्रकाश मिश्र
10. संचार से जनसंचार और जनसम्पर्क तक - बलवीर कुन्दरा
11. इलेक्ट्रॉनिक मीडिया के सिद्धांत - रूपचन्द गौतम
12. संचार सिद्धांत की रूपरेखा – डॉ. प्रेमचंद पांतजलि
13. जनसंचार माध्यम – चुनौतियाँ और दायित्व – डॉ. त्रिभुवन राय

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UNIVERSITY OF MUMBAI

REVISED SYLLABUS AND PATTERN OF

QUESTION PAPER IN THE

SUBJECT OF HINDI

AT THE

T.Y.B.A. EXAMINATION

CHOICE BASED CREDIT SYSTEM (C.B.C.S.)

(PAPER - IV, V, VI, VII, VIII, IX)

(With Effect From The Academic Year : 2021-2022)

Revised Syllabus and Pattern of Question Paper in the Subject of HINDI At the T.Y.B.A. EXAMINATION Choice Based Credit System (C.B.C.S.) (Paper - IV, V, VI, VII, VIII, IX) (With effect from the Academic Year : 2021-2022)

हिन्दी अध्ययन मण्डल

अध्यक्ष : डॉ. अनिल सिंह

1. डॉ.करुणाशंकर उपाध्याय (सदस्य)
2. डॉ. हूबनाथ पाण्डेय (सदस्य)
3. डॉ. विद्या शिंदे (सदस्य)
4. डॉ. शीला आहुजा (सदस्य)
5. डॉ. चित्रा गोस्वामी (सदस्य)
6. डॉ. संतोष मोटवानी (सदस्य)
7. डॉ. प्रकाश धुमाल (सदस्य)
8. डॉ. गौतम सोनकांबले (सदस्य)
9. डॉ. मोहसिन ख़ान (सदस्य)

पाठ्यक्रम समिति

समन्वयक : डॉ. मोहसिन ख़ान

1. डॉ. सतीश पाण्डेय (सदस्य)
2. डॉ. विद्या शिंदे (सदस्य)
3. डॉ. रेखा शर्मा (सदस्य)
4. डॉ. एल.आई. घोरपड़े (सदस्य)
5. डॉ. रमा सिंह (सदस्य)
6. प्रा. संतोष गायकवाड़ (सदस्य)
7. डॉ. रामदास तोंडे (सदस्य)
8. डॉ. संध्या गर्जे (सदस्य)

मुंबई विश्वविद्यालय, मुंबई

पाठ्यक्रम का अभिप्राय, उद्देश्य, परिणाम, अध्यापन प्रणालियाँ

अभिप्राय एवं उद्देश्य– AIMS AND OBJECTIVES:

1. विद्यार्थियों को हिन्दी साहित्य के प्राचीन, मध्यकालीन और आधुनिक इतिहास का बोध कराते हुए हिन्दी साहित्य के इतिहास संबंधी साहित्य के विकासक्रम, प्रवृत्तियों एवं परिवेश का परिचय कराना।
2. विद्यार्थियों को हिन्दी की आधुनिककालीन गद्य–पद्य विधाओं की प्रसिद्ध, प्रचलित रचनाओं एवं परिवेश की जानकारी प्रदान करते हुए दार्शनिक, सामाजिक, राष्ट्रीय, मानवीय और नवीनतम आधुनिक जीवन-शैली संबंधी मूल्यों का परिचय कराना। आधुनिक साहित्य की प्रवृत्तियों के विकास से अवगत कराते हुए साहित्य के सामाजिक, मानवीय सरोकारों के साथ पर्यावरण–चेतना को समृद्ध करना।
3. विद्यार्थियों को पारंपरिक भारतीय काव्यशास्त्र के मानदंडों से परिचय कराते हुए, साहित्य की विभिन्न विधाओं से अवगत कराना, साहित्य के काव्यशास्त्रीय नियमों की जानकारी प्रदान करना।
4. विद्यार्थियों को भाषा के वैज्ञानिक अध्ययन के महत्व से अवगत कराते हुए भाषा विज्ञान की उपयोगिता तथा भाषा एवं लिपि-विज्ञान के विभिन्न अंगों का व्यावहारिक परिचय कराना।
5. जनसंचार, सूचना प्रौद्योगिकी, सोशल मीडिया के अधुनातन माध्यमों में हिन्दी के प्रयोग, प्रसार से अवगत कराते हुए हिन्दी के माध्यम से रोज़गार की संभावनाओं को विद्यार्थियों के समक्ष लाना।
6. सामाजिक परिवर्तन हेतु वैचारिक प्रसार को अवगत कराते हुए विविध नव्य सामाजिक वैचारिक आंदोलनों की पृष्ठभूमि,विविध विमर्शों को दर्शाना तथा साहित्य पर पड़े उनके प्रभावों से अवगत कराना।

परिणाम– OUTCOMES:

1. विद्यार्थी को हिन्दी साहित्य के इतिहास की व्यापक जानकारी प्राप्त होगी, साहित्य की अविरल धारा का परिचय प्राप्त होगा। हिन्दी साहित्य की विभिन्न विधाओं का व्यापक और क्रमबद्ध ज्ञान प्राप्त होगा।
2. विद्यार्थियों में साहित्य के माध्यम से कलात्मक गुणों की अभिवृद्धि होगी, कला की साहित्यिक विधाओं के प्रति अभिरुचि जागृत होगी तथा रचनात्मक–कौशल को बढ़ावा मिलेगा, साहित्य के समकालीन परिवेश से जुड़ सकेंगे, सामाजिक समस्याओं, पक्षों से अवगत होते हुए समाधान की ओर बढ़ सकेंगे।
3. विद्यार्थी जनसंचार, सूचना प्रौद्योगिकी, सोशल मीडिया के अधुनातन माध्यमों में प्रयुक्त हिन्दी-देवनागरी लिपि के अध्ययन, प्रयोग से मीडिया, कोश निर्माण आदि क्षेत्रों में रोज़गार के अवसर प्राप्त कर सकेंगे ।
4. विद्यार्थी भारतीय काव्यशास्त्र की व्यापक जानकारी प्राप्त होने के साथ काव्यशास्त्रीय मानदंडों का ज्ञान प्राप्त होगा जिसके माध्यम से विद्यार्थी स्वयं साहित्य-रचना की प्रवृत्ति की ओर प्रेरित हो सकेगा।
5. विद्यार्थी भाषा के विविध रूप तथा भाषा परिवर्तन के कारणों का ज्ञान प्राप्त कर सकेंगे। भाषा विज्ञान के विभिन्न अंगों से परिचित होते हुए उसकी उपयोगिता का ज्ञान प्राप्त कर सकेंगे। विद्यार्थी हिन्दी-ध्वनियों के उच्चारण संबंधी तथा देवनागरी लिपि का वैज्ञानिक ज्ञान को प्राप्त कर सकेंगे।
6. विद्यार्थियों में मानवीय संवेदनाओं के विकास के साथ नवीन सामाजिक, सांस्कृतिक बोध और जीवन मूल्यों का विकास होगा, जिससे विद्यार्थी अधिक उदार, चेतना-सम्पन्न तथा ज़िम्मेदार नागरिक बनेंगे।
7. विद्यार्थियों में नये वैश्विक–मूल्यों के प्रति सजगता को बढ़ावा मिलेगा एवं पर्यावरणीय चेतना के प्रति दायित्व–बोध उत्पन्न होगा।

अध्यापन प्रणालियाँ- TEACHING METHOD

1. व्याख्यान तथा विश्लेषण।
2. दृश्य/ श्रव्य माध्यमों और संगणक का प्रयोग।
3. राजभाषा अधिकारियों/ जनसंचार माध्यमों से संलग्न व्यक्तियों के अतिथि व्याख्यान।
4. स्वाध्याय/ परियोजना।
5. शैक्षणिक भ्रमण।

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) IV
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	V
PAPER NAME	HISTORY OF HINDI LITERATURE हिंदी साहित्य का इतिहास
PAPER NO.	IV
COURSE CODE	UAHIN–501
LACTURE	60
CREDITS & MARKS	CREDITS - 4 & MARKS-100

हिंदी साहित्य का इतिहास

इकाई– I हिंदी साहित्य का इतिहास–

- हिंदी साहित्य का काल–विभाजन
- हिंदी साहित्य का नामकरण

इकाई– II आदिकाल–

- आदिकालीन हिंदी साहित्य की पृष्ठभूमि
- सिद्ध, नाथ, जैन एवं रासो साहित्य की प्रमुख विशेषताएँ

इकाई– III भक्तिकाल–

- भक्तिकालीन हिंदी साहित्य की पृष्ठभूमि
- संत काव्य, सूफी काव्य, रामभक्ति काव्य, कृष्णभक्ति काव्य की सामान्य विशेषताएँ

इकाई– IV रीतिकाल–

- रीतिकालीन हिंदी साहित्य की पृष्ठभूमि
- रीतिबध्द, रीतिसिद्ध एवं रीतिमुक्त काव्य की प्रमुख प्रवृतियाँ

निर्धारित वस्तुनिष्ठ प्रश्नों की सूची–

1. हिंदी साहित्य के इतिहास का काल–विभाजन सर्वप्रथम किसने किया?
2. हिंदी साहित्य का इतिहास लेखन का सबसे पहला प्रयास किसका था?
3. आ.रामचंद्र शुक्ल के इतिहास ग्रंथ का नाम क्या है?
4. आदिकाल को 'बीजवपन काल' किस विद्वान ने कहा है?
5. हिंदी साहित्य के प्रारम्भिक काल को 'आदिकाल' नाम किसने दिया?
6. रीतिकाल का 'श्रृंगार काल' नामकरण किसने किया है?
7. राहुल सांकृत्यायन हिंदी का पहला कवि किसे मानते हैं?
8. कवि स्वयंभू किस भाषा के कवि है?
9. किस कवि को 'मैथिल कोकिल' कहा गया है?
10. आदिकाल में खड़ीबोली को काव्य भाषा बनाने वाले प्रथम कवि कौन थे?
11. चौरासी सिध्दों में सबसे ऊँचा स्थान किसका है?
12. 'दोहाकोश' के रचयिता कौन हैं?
13. सिध्दों की भाषा को 'संधा–भाषा' किसने कहा है?
14. नाथ संप्रदाय के प्रवर्तक कौन हैं?
15. नाथों की संख्या कितनी है?
16. 'हठयोग' किस संप्रदाय से संबंधित है?
17. 'उलटबासियाँ' किस साहित्य की एक प्रमुख विशेषता है?
18. जैन धर्म के प्रवर्तक कौन हैं?
19. प्रथम जैन कवि कौन है?
20. जैन साहित्य में कौन से ग्रंथ सबसे अधिक लोकप्रिय माने जाते हैं?
21. 'परमाल रासो' के रचयिता कौन हैं?
22. रासो काव्य परंपरा का सर्वश्रेष्ठ एवं प्रतिनिधि ग्रंथ कौन–सा है?
23. 'भरतेश्वर बाहुबली रास' के रचनाकार कौन है?
24. 'खुमान रासो' किसकी रचना है?
25. 'युद्धों का सजीव वर्णन' किस साहित्य की एक प्रमुख विशेषता है?
26. भक्तिकाल की दो काव्यधाराएँ कौन–सी हैं?
27. जाति–पाति के बंधनो का खुलकर विरोध किसने किया?
28. 'राजतरंगिणी' में किसका इतिहास वर्णित है?
29. रत्नसेन किस महाकाव्य का नायक है?
30. भक्ति की लहर का उद्भव कहाँ से हुआ था?
31. चैतन्य सम्प्रदाय के प्रवर्तक कौन हैं?
32. आलवार भक्तों की संख्या कितनी है?
33. स्वामी हरिदास किस सम्प्रदाय के प्रवर्तक थे?
34. बहुदेववाद तथा अवतारवाद का विरोध किसने किया?

35. संतों का रहस्यवाद किससे प्रभावित है?
36. सुन्दरदास किसके शिष्य थे?
37. 'मृगावती' के रचयिता कौन हैं?
38. 'ज्ञानदीप' के रचनाकार का नाम लिखिए?
39. आईने अकबरी में सूफ़ियों के कितने सम्प्रदाय का उल्लेख है?
40. पद्मावत काव्य में राघव, चेतन को किस रूप में चित्रित किया गया है?
41. रामानंद के भक्त सम्प्रदाय का क्या नाम है?
42. तुलसीदास जी के गुरु का नाम क्या है?
43. हिन्दी साहित्य के किस काव्य में विराट समन्वय की भावना है?
44. तानसेन के गुरु का नाम क्या था?
45. पुष्टिमार्ग के प्रवर्तक कौन हैं?
46. 'हित चौरासी' रचना के रचयिता कौन हैं?
47. रीतिकाल को 'रीतिकाल' की संज्ञा किसने दी?
48. 'हित तरंगिणी' के रचयिता कौन हैं?
49. 'कविप्रिया' के रचनाकार कौन हैं?
50. रीतिकाल के अंतिम बड़े आचार्य कौन हैं?

51. आदिकाल को 'वीरगाथा काल' किस विद्वान ने कहा है?
i) आ. रामचंद्र शुक्ल ii) मिश्रबन्धु
iii) राहुल सांकृत्यायन iv) डॉ. रामकुमार वर्मा
52. गार्सा–द–तासी के हिंदी साहित्य के इतिहास की भाषा कौन–सी है?
i) फ्रेंच ii) हिंदी
iii) फ़ारसी iv) अरबी
53. आदिकाल का प्रमुख रस कौन–सा है?
i) श्रृंगार ii) वीर
iii) करुण iv) शांत
54. आदिकाल को 'वीर काल' नाम किसने दिया है?
i) आ. हजारीप्रसाद द्विवेदी ii) जॉर्ज ग्रियर्सन
iii) विश्वनाथप्रसाद मिश्र iv) महावीरप्रसाद द्विवेदी
55. गार्सा–द–तासी की इतिहास लेखन परंपरा को आगे बढ़ाने का श्रेय किसे जाता है?
i) शिवसिंह सेंगर ii) जॉर्ज ग्रियर्सन
iii) आ. रामचंद्र शुक्ल iv) मिश्रबन्धु
56. जैन कवि शालीभद्र सूरि को हिन्दी का प्रथम कवि किसने माना है?
i) राजनाथ शर्मा ii) गणपतिचन्द्र गुप्त
iii) आचार्य शुक्ल iv) रामकुमार वर्मा

57. हिंदी साहित्य का आलोचनात्मक इतिहास के लेखक कौन हैं?

i) डॉ. रामकुमार वर्मा ii) डॉ. नगेन्द्र

iii) डॉ. गणपतिचन्द्र गुप्त iv) शिवकुमार शर्मा

58. 'हिंदी साहित्य की भूमिका' पुस्तक के लेखक कौन है?

i) आ. हजारीप्रसाद द्विवेदी ii) बच्चन सिंह

iii) राहुल सांकृत्यायन iv) मिश्रबन्धु

59. 'खालिकबारी' के रचयिता कौन हैं?

i) अमीर खुसरो ii) मुल्ला दाऊद

iii) चंदबरदाई iv) जगनिक

60. सिध्दों की संख्या कितनी मानी जाती है?

i) 80 ii) 82

iii) 84 iv) 89

61. नाथ पंथ के प्रवर्तक कौन हैं?

i) गोरखनाथ ii) मत्स्येन्द्रनाथ

iii) नागनाथ iv) आदिनाथ

62. कौन–सी शैली जैन रचनाओं की नहीं है?

i) रास ii) फागु

iii) चर्यापद iv) चरित

63. 'बीसलदेव रासो' के रचयिता कौन हैं?

i) नरपति नाल्ह ii) दलपति विजय

iii) हमीर हठ iv) चंदबरदाई

64. खुसरो की पहेलियों और मुकरियों की विशेषता क्या है?

i) श्रृंगार ii) परिहास

iii) उक्तिवैभिन्य iv) उक्तिवैचित्र्य

65. भक्ति आंदोलन मुस्लिम साम्राज्य के प्रभाव का परिणाम है।" इस मत को नहीं मानने वाले विद्वान कौन है?

i) ताराचन्द ii) आ. रामचन्द्र शुक्ल

iii) रामस्वरूप चतुर्वेदी iv) वल्लभाचार्य

66. उत्तरी भारत में भक्ति आंदोलन की त्रिमूर्ति कौन थे?

i) कबीर, नानक, दादू ii) कबीर, नानक , रैदास

iii) कबीर, रामानंद, रैदास iv) कबीर, रामानंद, शंकराचार्य

67. 'बीजक' किसकी प्रसिद्ध रचना है?

i) सूरदास ii) कबीर

iii) जायसी iv) दयाल

68. "संतन को कहा सीकरी सो काज" किसकी पंक्ति है?

i) कुंभनदास ii) नाभादास

iii) चतुर्भुजदास iv) तुलसीदास

69. नानक किस काव्यधारा के कवि हैं?

i) सूफ़ी काव्य ii) राम काव्य

iii) संत काव्य iv) कृष्ण काव्य

70."मानुष प्रेम भयउ बैकुंठी" किस कवि की पंक्ति है?

i) दादू दयाल ii) मुल्ला दाउद

iii) कुतुबन iv) जायसी

71. 'भ्रमरगीत' के रचयिता कौन हैं?

i) तुलसीदास ii) बिहारी

iii) सूरदास iv) कबीरदास

72. सैयद इब्राहिम ने कृष्णभक्ति के प्रभाववश अपना नाम रख लिया?

i) कृष्णदास ii) रामदास

iii) रसखान iv) प्रेमदास

73. 'पुष्टिमार्ग का जहाज' किस कवि को कहा गया है?

i) कबीरदास ii) तुलसीदास

iii) केशवदास iv) सूरदास

74. अकबर दरबार के किस सदस्य ने 'दोहावली' की रचना की?

i) बीरबल ii) रहीम

iii) तानसेन iv) बिहारी

75. नामदेव द्वारा लिखित सगुण पदों की भाषा क्या थी?

i) मराठी ii) अवधी

iii) ब्रजभाषा iv) संस्कृत

76. द्वैताद्वैतवाद दर्शन को मानने वाले आचार्य इनमें से कौन हैं?

i) रामानंद ii) मध्वाचार्य

iii) चैतन्य महाप्रभु iv) रामानुजाचार्य

77. निर्गुण भक्ति साहित्य को ज्ञानाश्रयी और प्रेमाश्रयी भागों में विभाजित करने वाले विद्वान कौन हैं?

i) डॉ. रामकुमार वर्मा ii) आ. हजारी प्रसाद द्विवेदी

iii) नामवर सिंह iv) आ. रामचंद्र शुक्ल

78. प्रेमाश्रयी शाखा को सूफ़ी काव्य कहने वाले विद्वान निम्नलिखित में से कौन है?

i) डॉ. रामकुमार वर्मा ii) आ. हजारीप्रसाद द्विवेदी

iii) आ. रामचंद्र शुक्ल iv) डॉ. गणपतिचंद्र गुप्त

79. वल्लभाचार्य ने किसकी उपासना पर बल दिया है?

i) श्रीराम ii) गणेश

iii) बालकृष्ण iv) विष्णु

80. वारकरी सम्प्रदाय की स्थापना किसने की?

i) नामदेव ii) कबीर

iii) संत ज्ञानेश्वर iv) सुंदरदास

81. 'चित्रावली' के रचयिता कौन हैं?

i) कुतुबन ii) जायसी

iii) उसमान iv) शेख नबी

82. 'महानुभाव सम्प्रदाय' की स्थापना किसने की है?

i) रामानंद ii) तुलसीदास

iii) श्रीचक्रधर स्वामी iv) स्वामी हरिदास

83. नाभदास की भक्तमाल में रामानंद के कितने शिष्य बताए गए हैं?

i) दस ii) बारह

iii) चौदह iv) सोलह

84. 'राधावल्लभ सम्प्रदाय' के प्रवर्तक कौन है?

i) स्वामी हरिदास ii) हितहरिवंश

iii) सूरदास iv) वल्लभाचार्य

85. किस काल को ब्रजभाषा का स्वर्ण युग कहा जाता है?

i) आदिकाल ii) भक्तिकाल

iii) रीतिकाल iv) आधुनिक काल

86. रीतिकाल को 'अलंकृतकाल' किसने कहा है?

i) डॉ. रामकुमार वर्मा ii) आ. रामचंद्र शुक्ल

iii) आ. हजारी प्रसाद द्विवेदी iv) मिश्रबंधु

87. 'रसमंजरी' के रचयिता कौन हैं?

i) चिंतामणि ii) केशव

iii) भिखारीदास iv) मतिराम

88. आचार्य शुक्ल ने रीतिकाल का प्रवर्तक किसे माना है?

i) आचार्य चिंतामणि ii) कवि ग्वाल

iii) केशव iv) कृपाराम

89. 'रसराज' के रचयिता कौन है?

i) घनानंद ii) मतिराम

iii) बोधा iv) ठाकुर

90. घनानंद को अमर करने वाली रचना का नाम क्या है?

i) रसराज ii) सुजान हित

iii) कविप्रिया iv) ललित ललाम

91. रीतिमुक्त काव्यधारा का अंतिम कवि किसे माना जाता है?

i) चिंतामणि ii) द्विजदेव

iii) भूषण iv) केशव

92. 'ललित ललाम' किसकी रचना है?

i) घनानंद ii) मतिराम

iii) बोधा iv) आलम

93. 'साहित्य लहरी' में किसकी लीला का वर्णन है?

i) बालकृष्ण ii) राधा–कृष्ण

iii) कृष्ण iv) राम–सीता

94. "मैं तो समझती थी की वृन्दावन में कृष्ण के अतिरिक्त कोई दूसरा पुरुष है ही नहीं, पर अब पता चला यहाँ कोई दूसरा पुरुष भी रहता है।" यह वाक्य किसने कहा है?

i) राधा ii) रुक्मिणी

iii) मीरा iv) यशोदा

95. "निर्गुण कौन देस को बासी?" किसकी पंक्ति है?

i) सूरदास ii) कबीरदास

iii) तुलसीदास iv) मीराबाई

96. "बिगरी बात बने नहीं, लाख करो किन कोय।" पंक्ति के कवि कौन है?

i) बिहारी ii) रहीम

iii) आलम iv) मतिराम

97. रीतिमुक्त काव्य धारा के प्रमुख कवि इनमें से कौन है?

i) बिहारी ii) देव

iii) घनानंद iv) पद्माकर

98. 'रामचंद्रिका' के रचयिता का नाम क्या है?

i) तुलसीदास ii) भिखारीदास

iii) नाभादास iv) केशवदास

99. पद्माकर इनमें से किस काव्यधारा के कवि है?

i) रीतिबद्ध ii) रीतिसिद्ध

iii) रीतिमुक्त iv) सूफ़ी

100. स्वच्छंद प्रेम के गायक कौन हैं?

i) वृंद ii) आलम

iii) देव iv) मतिराम

नमूना प्रश्न पत्र

Semester – V | Course – IV

समय: 3:00 घंटे | पूर्णांक: 100

सूचना : 1. सभी प्रश्न अनिवार्य है।
2. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. हिंदी साहित्य के इतिहास के काल–विभाजन पर विस्तार से प्रकाश डालिए। 20

अथवा

आदिकाल के नामकरण के संबंध में विभिन्न विद्वानों के मत स्पष्ट कीजिए।

प्रश्न 2. हिंदी साहित्य की आदिकालीन परिस्थितियों का सामान्य परिचय दीजिए। 20

अथवा

नाथ साहित्य की प्रमुख विशेषताओं को स्पष्ट कीजिए।

प्रश्न 3. सूफ़ी काव्य की सामान्य विशेषताओं पर प्रकाश डालिए। 20

अथवा

कृष्णभक्ति काव्य की प्रमुख विशेषताओं को स्पष्ट कीजिए।

प्रश्न 4. रीतिकालीन साहित्य की परिस्थितियों पर प्रकाश डालिए। 20

अथवा

रीतिबध्द काव्यधारा की प्रमुख प्रवृत्तियाँ स्पष्ट कीजिए।

प्रश्न 5. क) किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 10

1. आ.रामचन्द्र शुक्ल का काल–विभाजन
2. सिध्द काव्य
3. संत काव्य
4. रीतिमुक्त काव्य

ख) वस्तुनिष्ठ प्रश्न– 05

1. आदिकाल को 'बीजवपन काल' किस विद्वान ने कहा है?
2. नाथ संप्रदाय के प्रवर्तक कौन हैं?
3. भक्तिकाल की दो काव्यधाराएँ कौन–सी हैं?
4. 'मृगावती' के रचियता कौन हैं?
5. रीतिकाल के अंतिम बड़े आचार्य कौन हैं?

ग) विकल्प प्रश्न– 05

1. आदिकाल को 'वीरगाथा काल' किस विद्वान ने कहा है?

i) आ. रामचंद्र शुक्ल ii) मिश्रबन्धु

iii) राहुल सांकृत्यायन iv) डॉ. रामकुमार वर्मा

2. 'ख़ालिकबारी' के रचयिता कौन हैं?

i) अमीर ख़ुसरो ii) मुल्ला दाऊद

iii) चंदबरदाई iv) जगनिक

3. नानक किस काव्यधारा के कवि हैं?

i) सूफ़ी काव्य ii) राम काव्य

iii) संत काव्य iv) कृष्ण काव्य

4. 'पुष्टिमार्ग का जहाज़' किस कवि को कहा गया है?

i) कबीरदास ii) तुलसीदास

iii) केशवदास iv) सूरदास

5. आचार्य शुक्ल ने रीतिकाल का प्रवर्तक किसे माना है?

i) आचार्य चिंतामणि ii) कवि ग्वाल

iii) केशव iv) कृपाराम

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) IV
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	VI
PAPER NAME	HISTORY OF MODERN HINDI LITERATURE आधुनिक हिंदी साहित्य का इतिहास
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आधुनिक हिंदी साहित्य का इतिहास

इकाई– I (क) आधुनिक हिंदी कविता का विकास

- आधुनिक काल – हिंदी साहित्य की पृष्ठभूमि एवं प्रवृत्तियों का सामान्य परिचय
- भारतेन्दु युग
- द्विवेदी युग
- छायावाद

इकाई– II

- प्रगतिवाद
- प्रयोगवाद
- नई कविता
- समकालीन कविता

इकाई– III (ख) आधुनिक हिंदी साहित्य की गद्य विधाओं का विकास–

- उपन्यास
- कहानी
- आलोचना

इकाई– IV

- आत्मकथा
- जीवनी
- संस्मरण

निर्धारित वस्तुनिष्ठ प्रश्नों की सूची–

1. 'कविवचन सुधा' मासिक पत्रिका के संपादक कौन थे?
2. भारतेन्दु युग को 'पुनर्जागरण काल' की संज्ञा किसने दी है?
3. "पपीहा जब पूछिहे पीव कहाँ" काव्य पंक्ति किस कवि की है?
4. 'सुकवि' की उपाधि भारतेन्दु युग के किस कवि को प्राप्त हुई थी?
5. सन् 1903 में 'सरस्वती' पत्रिका के संपादक कौन बने?
6. 'यशोधरा' प्रबंध काव्य के रचनाकार कौन है?
7. आधुनिक काल में लिखा गया खड़ी बोली का प्रथम महाकाव्य कौन–सा है?
8. 'पुष्प की अभिलाषा' कविता के कवि कौन हैं?
9. 'कामायनी' में किस दर्शन की अभिव्यक्ति हुई है?
10. 'आधुनिक काल की मीरा' किसे कहा जाता है?
11. 'प्रकृति के सुकुमार कवि' किसे कहा गया है?
12. 'जूही की कली' कविता के रचनाकार कौन हैं?
13. 'मधुशाला' किसकी काव्य कृति है?
14. 'भारतीय प्रगतिशील लेखक संघ' के लखनऊ में सम्पन्न पहले अधिवेशन के अध्यक्ष कौन थे?
15. 'क्रांति की भावना' किस कविता की एक प्रमुख विशेषता है?
16. 'प्रेत का बयान' किसकी कविता है?
17. 'आज देश की मिट्टी बोल उठी है' किस कवि की रचना है?
18. 'हरी घास पर क्षण भर' कविता के रचनाकार कौन है?
19. 'अँधेरे में' लंबी कविता किसने लिखी है?
20. 'संसद से सड़क तक' काव्य संग्रह किस कवि ने लिखा है?
21. हिंदी का प्रतिनिधि ग़ज़लकार किसे माना जाता है?
22. 'छन्दशती' के रचयिता कौन है?
23. 'मछलीघर' किसकी कृति है?
24. 'अपनी केवल धार' काव्य–संग्रह किसका है?
25. ' बाघ' कविता किस कवि ने लिखी है?
26. भारतेन्दु के नाटक 'प्रेम जोगनी' में किस प्रकार की समस्या है?
27. प्रसाद जी के नाटकों को दुखांत या सुखांत न कहकर क्या कहा गया?
28. हिंदी का प्रथम गीतिनाटक कौन–सा है?
29. 'स्वर्ग की झलक' नाटक के रचनाकार कौन हैं?
30. 'डॉक्टर' नाटक के लेखक कौन हैं?
31. 'बिना दीवारों का घर' नाटक के रचयिता कौन हैं?
32. गोपालराम गहमरी जी ने अधिकतर किस प्रकार के उपन्यास लिखे?
33. गहमरी के जासूसी उपन्यासों का आधार कौन–से उपन्यास थे?

34. 'आखिरी दाँव' उपन्यास के लेखक कौन हैं?
35. 'अपने अपने अजनबी' उपन्यास पर किस दर्शन का प्रभाव है?
36. 'सोया हुआ जल' उपन्यास के लेखक कौन हैं?
37. शैलेश मटियानी के 'छोटे–छोटे पक्षी' उपन्यास मे किस महानगर का चित्रण है?
38. 'साँप और सीढ़ी' उपन्यास के लेखक कौन हैं?
39. सुरेंद्र तिवारी की 'वार्ड न. २' कहानी में किसका वर्णन है?
40. 'काला शुक्रवार' कहानी की लेखिका कौन हैं?
41. 'कवि और कविता' के निबंधकार कौन हैं?
42. 'मेरा चौदहवा जन्म दिवस' किस प्रकार का निबंध हैं?
43. 'अर्ध नारीश्वर' निबंध संग्रह के लेखक कौन हैं?
44. नंददुलारे वाजपेयी जी के निबंध अधिकतर किस प्रकार के हैं?
45. हिंदी साहित्य में किसे आलोचना सम्राट कहा जाता है?
46. आलोचना के क्षेत्र मे शुक्ल संस्थान के प्रथम मुख्य स्तंभ कौन हैं?
47. संस्मरण और रेखाचित्र की विधा को समृद्ध बनाने में किसका महत्वपूर्ण योगदान है?
48. पंत की जीवनी के रचनाकार हैं?
49. हिंदी की प्रथम आत्मकथा 'अर्द्धकथा' किसकी है?
50. हिंदी साहित्यकारों मे सर्वप्रथम किसने अपनी आत्मकथा लिखी?
51. आधुनिक हिंदी साहित्य का प्रवर्तक किसे माना जाता है?
i) प्रतापनारायण मिश्र ii) भारतेन्दु
iii) प्रेमघन iv) बालकृष्ण भट्ट
52. समस्यापूर्ति परक काव्य रचना किस युग की विशेषता है?
i) द्विवेदी युग ii) छायावाद
iii) भारतेन्दु युग iv) प्रगतिवाद
53. भारतेन्दु युग की एक निम्नलिखित विशेषता कौन–सी है?
i) देशभक्ति और राजभक्ति ii) आदर्शवाद
iii) इतिवृत्तात्मकता iv) वैयक्तिकता
54. 'साकेत' किसके जीवन पर आधारित है?
i) सीता ii) उर्मिला
iii) अहल्या iv) रूमा
55. 'जागरण या सुधार काल' नाम से किस युग को जाना जाता है?
i) भारतेन्दु ii) द्विवेदी
iii) प्रयोगवाद iv) प्रगतिवाद
56. निम्नलिखित में से कौन द्विवेदी युग के कवि है?
i) जयशंकर प्रसाद ii) अज्ञेय
iii) मैथिलीशरण गुप्त iv) निराला

57. निम्नलिखित में से कौन–सी रचना हरिऔध की है?

i) प्रिय प्रवास ii) साकेत

iii) लहर iv) उर्वशी

58. इनमें से कौन– सा कवि छायावादी है?

i) अज्ञेय ii) मुक्तिबोध

iii) धूमिल iv) जयशंकर प्रसाद

59. 'सरोज स्मृति' किसकी रचना है?

i) प्रसाद ii) निराला

iii) सुमित्रानंदन पंत iv) महादेवी वर्मा

60. 'मैं नीर भरी दुख की बदली' किसकी उक्ति है?

i) सुमित्रानंदन पंत ii) महादेवी वर्मा

iii) दिनकर iv) निराला

61. 'कामायनी' महाकाव्य किसने लिखा है?

i) नागार्जुन ii) जयशंकर प्रसाद

iii) नरेंद्र शर्मा iv) त्रिलोचन

62. निम्नलिखित में से छायावादी काव्य की प्रमुख विशेषता कौन–सी है?

i) वैयक्तिकता ii) क्रांति का आह्वान

iii) क्षणवाद iv) शिल्प की नवीनता

63. प्रगतिवाद किस दर्शन से प्रभावित है?

i) अस्तित्ववाद ii) गाँधीवाद

iii) छायावाद iv) मार्क्सवाद

64. 'मूल्य–वृद्धि का सिद्धांत' किस विचारक का है?

i) रुसो ii) टॉलस्टॉय

iii) कार्ल मार्क्स iv) अरस्तू

65) इनमें से प्रगतिवाद की प्रमुख विशेषता क्या है?

i) व्यक्तिवाद ii) शोषकों प्रति घृणा

iii) सौंदर्य भावना iv) रहस्यवाद

66. निम्नलिखित में से कौन प्रगतिवादी कवि है?

i) महादेवी वर्मा ii) अज्ञेय

iii) दिनकर iv) हरिवंशराय बच्चन

67. 'कुकुरमुत्ता' कविता किस कवि की है?

i) नागार्जुन ii) श्रीकांत वर्मा

iii) मुक्तिबोध iv) निराला

68. प्रयोगवाद के प्रवर्तक कवि कौन है?

i) अज्ञेय ii) धूमिल

iii) रांगेय राघव iv) नरेश मेहता

69. प्रयोगवादी काव्यधारा का प्रारंभ किस पुस्तक के प्रकाशन से माना जाता है?

i) तार सप्तक ii) दूसरा सप्तक

iii) तीसरा सप्तक iv) चौथा सप्तक

70. प्रयोगवादी कविता कि निम्नलिखित कौन–सी प्रमुख विशेषता है?

i) लघु मानव ii) शिल्प की नवीनता

iii) नगर बोध iv) ग्राम बोध

71. निम्नलिखित में से कौन नई कविता का कवि हैं?

i) लक्ष्मीकांत वर्मा ii) नीरज

iii) देवेंद्र शर्मा iv) अंचल

72. 'लघु मानव बोध' यह किस कविता की विशेषता है?

i) छायावाद ii) नवगीत

iii) प्रगतिवाद iv) नई कविता

73. निम्नलिखित में से कौन–सी कविता मुक्तिबोध की है?

i) नदी के द्वीप ii) अंधेरे में

iii) जुही की कली iv) साँप

74. 'संसद से सड़क तक' किसका काव्य संग्रह है?

i) अज्ञेय ii) शमशेर

iii) शिवमंगलसिंह सुमन iv) धूमिल

75. मंगलेश डबराल किस काल की कविता से जुड़े हैं?

i) छायावाद ii) समकालीन कविता

iii) नई कविता iv) प्रयोगवाद

76. हिंदी का पहला उपन्यास किसे माना जाता है?

i) भाग्यवती ii) चंद्रकांता

iii) परीक्षा गुरु iv) नूतन ब्रह्मचारी

77. 'सिरकटी लाश' उपन्यास किसका है?

i) गोपाल राय ii) गोपालराम गहमरी

iii) मथुराप्रसाद शर्मा iv) गंगा प्रसादगुप्त

78. हिंदी उपन्यास सम्राट किसे कहा जाता है?

i) यशपाल ii) जयशंकर प्रसाद

iii) प्रेमचंद iv) अमृतलाल नागर

79. सूरदास के जीवन पर आधारित उपन्यास का नाम बताइए?

i) मानस का हंस ii) सेवासदन

iii) खंजन नयन iv) भाग्यवती

80. 'कफ़न' कहानी के कहानीकार कौन है?

i) जैनेंद्र ii) सुदर्शन

iii) प्रेमचंद iv) कमलेश्वर

81. इनमें से भीष्म साहनी की कहानी कौन–सी है?

i) चीफ़ की दावत ii) प्रतीक्षा

iii) मवाली iv) नीली झील

82. अमृतराय राय किस कहानी के प्रवर्तक है?

i) सक्रिय कहानी ii) अकहानी

iii) सहज कहानी iv) सचेतन कहानी

83. समांतर कहानी आंदोलन किसने चलाया?

i) महीप सिंह ii) कमलेश्वर

iii) दूधनाथ सिंह iv) अमरकांत

84. हिंदी का पहला नाटक किसे माना जाता है?

i) शकुंतला ii) रुक्मणी हरण

iii) चंडी चरित्र iv) नहुष

85) 'भारत दुर्दशा' किसका नाटक है?

i) भारतेन्दु ii) बालकृष्ण भट्ट

iii) राधाकृष्णदास iv) प्रतापनारायण मिश्र

86. इनमें से जयशंकर प्रसाद का नाटक कौन–सा है?

i) बाल विवाह ii) भारत सौभाग्य

iii) मालती माधव iv) चन्द्रगुप्त

87. वृंदावनलाल वर्मा ने किस प्रकार के नाटक लिखे हैं?

i) सामाजिक ii) पौराणिक

iii) ऐतिहासिक iv) प्रतीकवादी

88. हिंदी के प्रथम निबंधकार कौन है?

i) आ. रामचंद्र शुक्ल ii) प्रेमघन

iii) बाबू तोताराम iv) भारतेन्दु

89. 'चिन्तामणि' किसका निबंध संग्रह है?

i) आ. हजारीप्रसाद द्विवेदी ii) आ. रामचंद्र शुक्ल

iii) सरदार पूर्णसिंह iv) मिश्रबन्धु

90. 'मेरे राम का मुकुट भीग रहा है' किसका प्रसिद्ध निबंध है?

i) डॉ. रामविलास शर्मा ii) रामधारीसिंह दिनकर

iii) कन्हैयालाल मिश्र प्रभाकर iv) पं.विद्यानिवास मिश्र

91. इनमें से कौन ललित निबंधकार है?

i) कुबेरनाथ राय ii) धर्मवीर भारती

iii) ठाकुरप्रसाद सिंह iv) श्रीलाल शुक्ल

92. 'चीड़ों पर चाँदनी' यह किसका निबंध संग्रह है?

i) शिवप्रसाद सिंह ii) विष्णुकांत शास्त्री

iii) निर्मल वर्मा iv) विवेकी राय

93. हिंदी आलोचना का जनक किसे माना गया है?

i) आ. रामचंद्र शुक्ल ii) बालकृष्ण भट्ट

iii) भारतेन्दु iv) हजारीप्रसाद द्विवेदी

94. तुलनात्मक आलोचना के जनक कौन है?

i) प्रेमघन ii) भारतेन्दु

iii) रामविलास शर्मा iv) पद्मसिंह शर्मा

95. हिंदी में वैज्ञानिक आलोचना का सूत्रपात किसने किया?

i) आ. रामचंद्र शुक्ल ii) महावीरप्रसाद द्विवेदी

iii) शिवदानसिंह चौहान iv) रामस्वरूप चतुर्वेदी

96. रीतिकाल की कविता को 'क्षयग्रस्त' किस आलोचक ने कहा है?

i) आ. शुक्ल ii) नंददुलारे वाजपेई

iii) निराला iv) डॉ. नगेन्द्र

97. 'सिंहावलोकन' किसकी आत्मकथा है?

i) सत्यदेव परिव्राजक ii) शांतिप्रिय द्विवेदी

iii) देवेंद्र सत्यार्थी iv) यशपाल

98. हिंदी में दलित आत्मकथा के सूत्रपात का श्रेय किसे जाता है?

i) मोहनदास नैमिशराय ii) ओमप्रकाश वाल्मीकि

iii) कौशल्या बैसंत्री iv) माताप्रसाद

99. 'कितने शहरों में कितनी बार' किसकी आत्मकथा है?

i) मैत्रेयी पुष्पा ii) रमणिका गुप्ता

iii) मन्नू भंडारी iv) ममता कालिया

100. 'आवारा मसीहा' जीवनी के लेखक कौन है?

i) विष्णु प्रभाकर ii) रामवृक्ष बेनीपुरी

iii) जैनेंद्र कुमार iv) कृष्ण बिहारी मिश्र

संदर्भ ग्रंथ सूची–

1. हिंदी साहित्य का इतिहास – आचार्य रामचंद्र शुक्ल, लोकभारती प्रकाशन, इलाहाबाद
2. हिंदी साहित्य का इतिहास – डॉ.नगेंद्र (संपादक), मयूर पेपरबैक, नई दिल्ली
3. हिंदी साहित्य का आदिकाल – आचार्य हजारीप्रसाद द्विवेदी, वाणी प्रकाशन, दिल्ली
4. हिंदी साहित्य की प्रवृत्तियाँ – डॉ.जयकिशन खंडेलवाल,विनोद पुस्तक मंदिर प्रकाशन,आगरा
5. हिंदी साहित्य युग और प्रवृत्तियाँ डॉ. – शिवकुमार शर्मा, अशोक प्रकाशन, नई दिल्ली
6. हिंदी साहित्य का दूसरा इतिहास – डॉ. बच्चन सिंह, लोकभारती प्रकाशन, इलाहाबाद
7. हिंदी साहित्य का वैज्ञानिक इतिहास – डॉ.गणपतिचंद्र गुप्त, लोकभारती प्रकाशन, इलाहाबाद
8. हिंदी साहित्य का आलोचनात्मक इतिहास– डॉ.रामकुमार वर्मा,लोकभारती प्रकाशन, इलाहाबाद
9. हिंदी साहित्य का इतिहास – डॉ. लक्ष्मीसागर वार्ष्णेय, लोकभारती प्रकाशन, इलाहाबाद
10. हिंदी साहित्य का इतिहास – डॉ. विजयेन्द्र स्नातक, लोकभारती प्रकाशन, इलाहाबाद
11. हिंदी साहित्य का इतिहास – डॉ. माधव सोनटक्के, विकास प्रकाशन, कानपुर
12. हिंदी साहित्य का इतिहास – सं. डॉ. पूरनचंद टंडन, डॉ. विनिता कुमारी, जगतराम एण्ड सन्स प्रकाशन, नई दिल्ली
13. हिन्दी साहित्य की भूमिका, आ. हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन,दिल्ली
14. हिंदी साहित्य का इतिहास – सं. डॉ. नगेंद्र और डॉ.हरदयाल,नेशनल पब्लिशिंग हाऊस, दिल्ली
15. आधुनिक साहित्य – नंददुलारे वाजपेयी, राजकमल प्रकाशन,दिल्ली
16. आधुनिक साहित्य की प्रवृत्तियाँ – डॉ. नामवर सिंह,लोकभारती प्रकाशन, इलाहाबाद
17. नई कविता के प्रतिमान – लक्ष्मीकांत वर्मा,भारती प्रेस प्रकाशन, इलाहाबाद
18. हिन्दी साहित्य और संवेदना का विकास – रामस्वरूप चतुर्वेदी,लोकभारती प्रकाशन,इलाहाबाद
19.पद्मावत में जायसी की लोकदृष्टि– डॉ. चंद्रलाल वरियलदास अच्छरा,ज्ञान प्रकाशन,कानपुर
20. मालिक मुहम्मद जायसी– डॉ. शिव सहाय पाठक,साहित्य भवन,इलाहाबाद
21. संत साहित्य और समाज – डॉ. रमेशचन्द्र मिश्र,आर्य प्रकाशन मण्डल, दिल्ली
22. हिन्दी आलोचना का विकास –नन्दकिशोर नवल, राजकमल प्रकाशन,दिल्ली
23. इतिहास और साहित्य–डॉ. हूबनाथ पांडेय,विद्यापीठ प्रकाशन,मुंबई

नमूना प्रश्न पत्र

Semester – VI | Course – IV

समय : 3:00 घंटे | पूर्णांक : 100

सूचना : 1. सभी प्रश्न अनिवार्य है।
2. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. आधुनिक काल की युगीन परिस्थितियों पर प्रकाश डालिए। 20

अथवा

भारतेन्दु युग की प्रमुख प्रवृत्तियों का परिचय दीजिए।

प्रश्न 2. प्रगतिवादी कविता की प्रमुख विशेषताओं पर प्रकाश डालिए। 20

अथवा

नई कविता की विशेषताओं को स्पष्ट कीजिए।

प्रश्न 3. हिंदी उपन्यास के विकास–क्रम को स्पष्ट कीजिए। 20

अथवा

हिंदी आलोचना के विकास–क्रम को विस्तार से समझाइए।

प्रश्न 4. हिंदी जीवनी साहित्य के विकास–क्रम पर प्रकाश डालिए। 20

अथवा

हिंदी आत्मकथा साहित्य के विकास–क्रम का विवेचन कीजिए।

प्रश्न 5. क) किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 10

1. द्विवेदी युगीन कविता
2. छायावादी काव्य
3. समकालीन कविता
4. हिंदी उपन्यास

ख) वस्तुनिष्ठ प्रश्न – 05

1. भारतेन्दु युग को 'पुनर्जागरण काल' की संज्ञा किसने दी है?
2. 'पुष्प की अभिलाषा' कविता के कवि कौन हैं?

3. 'क्रांति की भावना' किस कविता की एक प्रमुख विशेषता है?

4. 'स्वर्ग की झलक' नाटक के रचनाकार कौन हैं?

5. 'अर्ध नारीश्वर' निबंध संग्रह के लेखक कौन हैं?

ग) विकल्प प्रश्न– 05

1. आधुनिक हिंदी साहित्य का प्रवर्तक किसे माना जाता है?

i) प्रतापनारायण मिश्र ii) भारतेन्दु

iii) प्रेमघन iv) बालकृष्ण भट्ट

2. 'सरोज स्मृति' किसकी रचना है?

i) प्रसाद ii) निराला

iii) सुमित्रानंदन पंत iv) महादेवी वर्मा

3. इनमें से प्रगतिवाद की प्रमुख विशेषता क्या है?

i) व्यक्तिवाद ii) शोषकों प्रति घृणा

iii) सौंदर्य भावना iv) रहस्यवाद

4. प्रयोगवादी कविता कि निम्नलिखित कौन–सी प्रमुख विशेषता है?

i) लघु मानव ii) शिल्प की नवीनता

iii) नगर बोध iv) ग्राम बोध

5. इनमें से भीष्म साहनी की कहानी कौन–सी है?

i) चीफ़ की दावत ii) प्रतीक्षा

iii) मवाली iv) नीली झील

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) V
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	V
PAPER NAME	POST INDEPENDENCE HINDI LITERATURE स्वातंत्र्योत्तर हिंदी साहित्य
PAPER NO.	V
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स्वातंत्र्योत्तर हिंदी साहित्य

इकाई– I

- नाटक : अर्थ, परिभाषा, स्वरूप एवं विकास
- नाटक के तत्व एवं प्रकार

इकाई– II निर्धारित पाठ्य पुस्तक–

- काला पत्थर – (नाटक) : डॉ. सुरेश शुक्ल 'चन्द्र'
  अमन प्रकाशन, कानपुर

इकाई– III

- एकांकी : अर्थ, परिभाषा, स्वरूप एवं विकास
- नाटक और एकांकी में साम्य–वैषम्य

इकाई– IV निर्धारित पाठ्य पुस्तक–

- एकांकी–सुमन (एकांकी–संग्रह) **संपादन:** हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय,मुंबई,
  वाणी प्रकाशन 4695, 21-ए ,दरियागंज,नई दिल्ली

पाठ्यक्रम के लिए निर्धारित एकांकी–

- दीपदान – रामकुमार वर्मा
- और वह जा न सकी – विष्णु 'प्रभाकर'
- बहू की विदा – विनोद रस्तोगी
- रात के राही – ब्रज भूषण
- जान से प्यारे – ममता कालिया
- अन्वेषक – प्रताप सहगल
- नो एडमिशन – संजीव निगम

संदर्भ ग्रंथ सूची–

1. हिंदी नाटक के पांच दशक – कुसुम खेमानी, राधाकृष्ण प्रकाशन, दिल्ली
2. हिंदी नाटक कल और आज – केदार सिंह, मोतीलाल बनारसीदास पब्लिशर्स, दिल्ली
3. आधुनिक हिंदी नाटक – गिरीश रस्तोगी, ग्रंथम प्रकाशन, कानपुर
4. हिंदी नाटक और रंगमंच: नई दिशाएं, नए प्रश्न, – गिरीश रस्तोगी,अभिव्यक्ति प्रकाशन,इलाहाबाद
5. आधुनिक भारतीय नाट्य विमर्श – जयदेव तनेजा, राधाकृष्ण प्रकाशन, दिल्ली
6. हिंदी नाटककार – जयनाथ नलिन, आत्माराम एंड संस, दिल्ली
7. नाट्य निबंध – दशरथ ओझा, नेशनल पब्लिशिंग हाउस, दिल्ली
8. हिंदी नाटक बदलते आयाम – नरेंद्रनाथ त्रिपाठी, विक्रम प्रकाशन, दिल्ली
9. आधुनिक हिंदी नाटककारों के नाटक सिद्धांत – निर्मला हेमंत, अक्षर प्रकाशन, दिल्ली
10. रंगदर्शन – नेमीचंद्र जैन, राधाकृष्ण प्रकाशन, दिल्ली
11. हिंदी नाटक – बच्चन सिंह, राधाकृष्ण प्रकाश, दिल्ली
12. स्वातंत्र्योत्तर नाटक:मूल्य संक्रमण–जोतीश्वर मिश्र,राजकमल प्रकाशन,दिल्ली
13. आधुनिक हिंदी नाटक– बनवीर प्रसाद शर्मा, अनग प्रकाशन, दिल्ली
14. नाटक : विवेचना और दृष्टि – डॉ. मोहसिन ख़ान–अमन प्रकाशन, कानपुर
15. भारतीय नाट्य शास्त्र और रंगमंच– रामसागर त्रिपाठी, अशोक प्रकाशन, दिल्ली
16. हिन्दी एकांकी –सिद्धनाथ कुमार, राधाकृष्ण प्रकाशन, दिल्ली
17. रंगमंच का सौंदर्यशास्त्र –देवेंद्र राज अंकुर, राजकमल प्रकाशन,दिल्ली
18. हिन्दी नाटक का आत्मसंघर्ष– गिरीश रस्तोगी,राजकमल प्रकाशन,दिल्ली
19. स्वातंत्र्योत्तर हिन्दी नाटकों में शोषण के विविध रूप– डॉ. सुरेश तायड़े,शैलजा प्रकाशन,कानपुर
20. समकालीन हिन्दी नाटक : समय और संवेदना–डॉ. नवीन नन्दवाना,अमन प्रकाशन,कानपुर
21. विवेचनात्मक निबंध–डॉ. शकीला खानम,शैलजा प्रकाशन,कानपुर
22. समकालीन एकांकी : संवेदना एवं शिल्प–डॉ. रंजना वर्दे,शैलजा प्रकाशन,कानपुर
23. डॉ. सुरेश शुक्ल 'चन्द्र' की रंगयात्रा–डॉ. लवकुमार लवलीन,शैलजा प्रकाशन,कानपुर
24. स्वातंत्र्योत्तर हिन्दी नाटक संवेदना और शिल्प– डॉ. श्यामसुंदर पांडेय,अमन प्रकाशन,कानपुर
24. हिन्दी नाटक के पाँच दशक–कुसुम खेमनी,राजकमल प्रकाशन,दिल्ली
25.एकांकी मंच–डॉ. वी. पी. 'अमिताभ',जवाहर पुस्तकालय,मथुरा
26. मानक एकांकी–सं. डॉ. बच्चन सिंह,भूमिका प्रकाशन,नई दिल्ली
27. नाट्य-विमर्श –सं.जयदेव तनेजा,राजकमल प्रकाशन,दिल्ली
28. रंग-अरंग –हृषिकेश सुलभ,राजकमल प्रकाशन,दिल्ली

नमूना प्रश्न पत्र

Semester – V | Course – V

समय : 3:00 घंटे | पूर्णांक : 100

सूचना : 1. सभी प्रश्न अनिवार्य है।

2. सभी प्रश्नों के लिए समान अंक है।

प्रश्न 1. नाटक का स्वरूप स्पष्ट करते हुए उसका विकास क्रम लिखिए। 20

अथवा

नाटक और एकांकी में साम्य–वैषम्य स्पष्ट कीजिए।

प्रश्न 2. निम्नलिखित अवतरणों की संदर्भ सहित व्याख्या कीजिए।

क) "पाँच वर्ष से, जबसे मेरा गौना हुआ है, में इस शराबी आदमी के अत्याचार सह रही हूँ। यह हर तरह मुझे प्रताड़ित करता है। इसने मेरा ज़ेवर, घर, बर्तन, सब कुछ शराब की भेंट चढ़ा दिया।" 20

अथवा

"लेकिन राज़ीनामा के सारे काग़ज़ात, दस्तख़त करके मेरे बापू के हवाले कर दिये जाएँ। तलाक़ मंज़ूरी और बापू के कर्ज़ माफ़ी के काग़ज़ात पहले देने होंगे।"

ख) "चली गई। कहती है, ऐसा मैं नहीं सुन सकूँगी। जो मुझे करना है, वह सामली सुन भी न सकेगी। भवानी! तुमने मेरे हृदय को कैसा कर दिया।" 20

अथवा

"मैंने आज सुबह अख़बार में आप द्वारा दिया शोक समाचार पढ़ा तो मैं हिल उठा। मैं आपके लिए जीवन का नया संदेश लाया हूँ।"

प्रश्न 3. पुनिया का चरित्र-चित्रण स्पष्ट कीजिए। 20

अथवा

'काला पत्थर' नाटक की कथा विस्तार से स्पष्ट कीजिए।

प्रश्न 4. 'बहू की विदा' एकांकी के चरित्र–चित्रण कीजिए। 20

अथवा

'रात के राही' एकांकी की विशेषताएँ स्पष्ट कीजिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) पन्ना | ख) आर्यभट्ट

ग) डॉ. कौशिक का आविष्कार | घ) 'नो एडमिशन' की रेखा

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SEMESTER	VI
PAPER NAME	POST INDEPENDENCE HINDI LITERATURE स्वातंत्र्योत्तर हिंदी साहित्य
PAPER NO.	V
COURSE CODE	UAHIN–602
LACTURE	60
CREDITS & MARKS	CREDITS - 4 & MARKS -100

स्वातंत्र्योत्तर हिंदी साहित्य

इकाई- I

- कविता : अर्थ, परिभाषा एवं स्वरूप
- स्वातंत्र्योत्तर कविता : संवेदना और शिल्प

इकाई- II **निर्धारित पाठ्य पुस्तक-**

- काव्य–सौरभ (कविता-संग्रह)-**संपादन:** हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय,मुंबई, राजकमल प्रकाशन,दरियागंज,नई दिल्ली

पाठ्यक्रम के लिए निर्धारित कविताएँ–

- यात्री – सच्चिदानंद हीरानंद वात्स्यायन 'अज्ञेय'
- उनको प्रणाम – नागार्जुन
- नया कवि – गिरिजाकुमार माथुर
- प्रमथ्यु गाथा – धर्मवीर भारती
- इस तरह तो – बालस्वरूप 'राही'
- पानी में घिरे हुए लोग – केदारनाथ सिंह
- थोड़े-से बच्चे और बाक़ी बच्चे – चंद्रकांत देवताले
- सिलसिला – सुदामा पाण्डेय 'धूमिल'
- रात किसी का घर नहीं – राजेश जोशी
- चुप्पी टूटेगी – ओमप्रकाश वाल्मीकि
- बाज़ारे-नुमाइश में – दीक्षित दनकौरी
- बूढ़ी पृथ्वी का दुख – निर्मला पुतुल

इकाई- III

- निबंध : अर्थ, परिभाषा,भेद और तत्त्व
- हिन्दी निबंध साहित्य का विकास

इकाई- IV निर्धारित पाठ्य पुस्तक–

- निबंध–विविधा (निबंध–संग्रह)– **संपादन:** हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय,मुंबई, नयी किताब प्रकाशन,दरियागंज,नई दिल्ली

पाठ्यक्रम के लिए निर्धारित निबंध–

- बाज़ार-दर्शन – जैनेन्द्र कुमार
- पाप के चार हथियार – कन्हैयालाल मिश्र 'प्रभाकर'
- मनुष्य की सर्वोत्तम कृति-साहित्य – हजारीप्रसाद द्विवेदी
- हिम्मत और ज़िंदगी – रामधारी सिंह 'दिनकर'
- अगर मुल्क में अख़बार न हो – नामवर सिंह
- रसायन और हमारा पर्यावरण – डॉ. एन. एल. रामनाथन
- आँगन का पंछी – विद्यानिवास मिश्र
- पाँत का आख़िरी आदमी – कुबेरनाथ राय
- मनुष्य और ठग – प्रेम जमेजय
- ओ वसंत तुम्हें मनुहारता कचनार – श्रीराम परिहार

संदर्भ ग्रंथ सूची–

1. काव्यशास्त्र – भगीरथ मिश्र, विश्वविद्यालय प्रकाशन, वाराणसी
2. साहित्यिक निबंध – गणपतिचन्द्र गुप्त, लोकभारती प्रकाशन, इलाहाबाद
3. हिंदी का गद्य साहित्य – रामचंद्र तिवारी, विश्वविद्यालय प्रकाशन, वाराणसी
4. प्रतिनिधि हिन्दी निबंधकार – ज्योतीश्वर मिश्र, लोकभारती प्रकाशन, इलाहाबाद
5. छायावादोत्तर हिंदी गद्य साहित्य – विश्वनाथ प्रसाद तिवारी, विश्वविद्यालय प्रकाशन, वाराणसी
6. हिन्दी–निबंधकर – जयनाथ नलिन, आत्माराम एंड संज, दिल्ली
7. हिन्दी कविता का अतीत और वर्तमान – मैनेजर पाण्डेय, वाणी प्रकाशन, दिल्ली
8. स्त्री कविता पहचान और द्वंद्व – रेखा सेठी, राजकमल प्रकाशन, दिल्ली
9. आज की कविता –विनय विश्वास, राजकमल प्रकाशन, दिल्ली
10. समकालीन कविता : सृजन और संदर्भ–डॉ. सतीश पांडेय, शैलजा प्रकाशन,कानपुर
11.हिन्दी साहित्य : संवेदना के धरातल–सं. डॉ.अनिल सिंह,सीमा प्रकाशन,परभणी
12.चंद्रकांत देवताले की कविताओं में युगबोध –डॉ. गजानन भोसले,अमन प्रकाशन,कानपुर
13.आधुनिक कविता का पुनर्पाठ-डॉ.करुणाशंकर उपाध्याय
14.जनकवि नागार्जुन एवं प्रयोगवदी कवि –डॉ.वीणा दाढ़े,अमन प्रकाशन,कानपुर
15.ललित निबंध : स्वरूप एवं परंपरा –डॉ. श्रीराम परिहार,किताब घर प्रकाशन,नई दिल्ली
16.हजारीप्रसाद द्विवेदी : समग्र पुनर्वालोकन–चौथीराम यादव, राजकमल प्रकाशन, दिल्ली
17.समकालीन नवगीत का विकास –डॉ. राजेश सिंह,वाणी प्रकाशन, दिल्ली
18. समकालीन लेखन और आधुनिक संवेदना –कल्पना वर्मा,राजकमल प्रकाशन, दिल्ली
19. धूमिल और उनका काव्य –संघर्ष–ब्रम्ह्देव मिश्र,राजकमल प्रकाशन,दिल्ली
20. नागार्जुन : अंतरंग और सृजन–कर्म- सं. मुरली मनोहर प्रसाद सिंह ,राजकमल प्रकाशन,दिल्ली
21. हिन्दी कविता का वर्तमान परिदृश्य–डॉ. हरि शर्मा,प्रकाशन संस्थान,नई दिल्ली
22. कविता का शहर–राजेश जोशी,राजकमल प्रकाशन,दिल्ली
23. कविता की जमीन और जमीन की कविता– डॉ. नामवर सिंह,राजकमल प्रकाशन, नई दिल्ली
24. कविता के नए प्रतिमान– डॉ. नामवर सिंह,राजकमल प्रकाशन, नई दिल्ली
25.नागार्जुन और उनकी कविता– नंदकिशोर नवल,राजकमल प्रकाशन, नई दिल्ली
26.आधुनिक साहित्य मूल्य और मूल्यांकन–डॉ.अनिल कुमार सिंह,साहित्यभूमि,प्रकाशन,नई दिल्ली
27. हिन्दी-उर्दू कविता संदर्भ और प्रकृति–डॉ. एम.एच.सिद्दीकी,ज्ञान प्रकाशन,कानपुर
28. ललित निबंध विधा की बात–डॉ. हूबनाथ पांडेय,अनभै प्रकाशन,मुंबई
29. ललित निबंधकार कुबेरनाथ राय–डॉ. हूबनाथ पांडेय,अनभै प्रकाशन,मुंबई
30. कन्हैयालाल मिश्र 'प्रभाकर'–डॉ. जयप्रकाश नारायण सिंह,साहित्य रत्नाकर,कानपुर
31. हिन्दी गजल के नवरत्न–मधु खराटे,साहित्य रत्नाकर,कानपुर
32. केदारनाथ सिंह का काव्य लोक–डॉ.शेरपाल सिंह,साहित्य रत्नाकर,कानपुर

नमूना प्रश्न पत्र

Semester – VI | Course – V

समय : 3:00 घंटे | पूर्णांक : 100

सूचना : 1. अंतिम प्रश्न अनिवार्य है।

2. सभी प्रश्नों के लिए समान अंक है।

प्रश्न 1. स्वातंत्र्योत्तर कविता की संवेदना पर प्रकाश डालिए। 20

अथवा

स्वातंत्र्योत्तर निबंध साहित्य का विकास स्पष्ट कीजिए।

प्रश्न 2. निम्नलिखित अवतरणों की संदर्भ सहित व्याख्या कीजिए। 20

क) "पग-पग पर तीर्थ है,
मंदिर भी बहुतेरे हैं;
तू जितनी करे परिकम्मा, जितने लगा फेरे
मंदिर से, तीर्थ से, यात्रा से।"

अथवा

क्या होती है, तुम्हारे भीतर धमस
कटकर गिरता है जब कोई पेड़ धरती पर ?
सुना है कभी
रात के सन्नाटे में अंधेरे से मुँह ढाँप
किस कदर रोती हैं नदियाँ ?

ख) "मैंने मन में कहा ठीक। बाज़ार आमंत्रित करता है कि आओ मुझे लूटो और लूटो। सब भूल जाओ, मुझे देखो।" 20

अथवा

"ताबड़तोड़ हरियाली लाने के लिए वानस्पतिक संसार के दावेदारों ने पोची हरीतिमा वाली जड़ों का पोषण शुरू कर दिया।"

प्रश्न 3. 'थोड़े-से बच्चे और बाक़ी बच्चे' कविता की संवेदनाएँ स्पष्ट कीजिए। 20

अथवा

'रात किसी का घर नहीं' कविता की मूलसंवेदना स्पष्ट कीजिए।

प्रश्न 4. 'आँगन का पंछी' निबंध का भाव-सौन्दर्य स्पष्ट कीजिए। 20

अथवा

'पाप के चार हथियार' निबंध का संदेश स्पष्ट कीजिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) 'चुप्पी टूटेगी' कविता की मूल संवेदना ख) 'नया कवि'कविता का भाव

ग) 'मनुष्य और ठग'का आशय घ) 'रसायन और हमारा पर्यावरण'निबंध का उद्देश्य

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) VI
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	V
PAPER NAME	INFORMATION TECHNOLOGY IN HINDI हिन्दी में सूचना प्रौद्योगिकी
PAPER NO.	VI
COURSE CODE	UAHIN–503
LACTURE	45
CREDITS & MARKS	CREDITS - 4 & MARKS - 80

हिन्दी में सूचना प्रौद्योगिकी

इकाई– I

- सूचना प्रौद्योगिकी : अर्थ, परिभाषा, स्वरूप और विकास
- सूचना प्रौद्योगिकी : समस्याएँ ,सीमाएँ और चुनौतियाँ
- सूचना प्रौद्योगिकी : सकारात्मक और नकारात्मक प्रभाव

इकाई– II

- सूचना प्रौद्योगिकी का व्यवहार क्षेत्र : समान्य परिचय
- सूचना प्रौद्योगिकी का जनसंचार के क्षेत्र में योगदान और महत्व (हिन्दी पत्रकारिता: प्रिंट मीडिया, इलेक्ट्रॉनिक मीडिया के संदर्भ में)
- सूचना प्रौद्योगिकी : शिक्षा के क्षेत्र में उपादेयता

इकाई–III

- सूचना प्रौद्योगिकी : हिन्दी भाषा और देवनगीरी लिपि का वैश्विक प्रयोग
- सूचना प्रौद्योगिकी : हिन्दी सॉफ़्टवेयर परिचय, अनुप्रयोग और महत्व
- सूचना प्रौद्योगिकी के क्षेत्र में हिन्दी भाषा और देवनागरी लिपि के वैश्विक प्रसार में विविध संस्थानों की भूमिका/योगदान (राजभाषा विभाग, केन्द्रीय हिन्दी संस्थान,आगरा, सी–डैक पुणे, भारतीय प्रौद्योगिकी संस्थान)

इकाई– IV

- इन्टरनेट और हिन्दी (यूनिकोड फॉण्ट परिवर्तक, देवनागरी लिपि टाइपिंग टूल, हिन्दी में ईमेल, नेट पर हिन्दी विज्ञापन, हिन्दी की साहित्यिक ई–पत्रिकाएँ, हिन्दी ब्लॉग)
- भारत में डिजिटलाइज़ेशन और हिन्दी
- सूचना प्रौद्योगिकी के क्षेत्र में हिन्दी आधारित रोजगार की संभावनाएँ

सूचना: प्रकल्प –20 अंक

(पाठ्यक्रम से संबंधित किसी भी विषय पर 15 से 20 पृष्ठों का प्रकल्प तैयार करना अपेक्षित है।)

संदर्भ ग्रंथ सूची–

1. आधुनिक जनसंचार और हिन्दी – हरिमोहन, तक्षशिला प्रकाशन, दिल्ली
2. कंप्यूटर के भाषिक अनुप्रयोग – विजय कुमार मल्होत्रा, वाणी प्रकाशन, दिल्ली
3. कंप्यूटर और हिन्दी – हरिमोहन, तक्षशिला प्रकाशन, दिल्ली
4. पत्रकारिता से मीडिया तक – मनोज कुमार, वैभव प्रकाशन, रायपुर
5. जनसंचार परिदृश्य – डॉ. नीलम राठी, रजनी राठी, उत्कर्ष प्रकाशन, दिल्ली
6. प्रयोजनमूलक हिन्दी – डॉ. पी. लता, लोकभारती प्रकाशन,इलाहाबाद
7. प्रयोजनमूलक हिन्दी – रमेश जैन, नेशनल पब्लिशिंग हाउस, दिल्ली
8. जनसंचार और हिन्दी पत्रकारिता – डॉ. अर्जुन तिवारी, वाणी प्रकाशन, दिल्ली
9. प्रयोजनमूलक हिन्दी – डॉ. विनोद गोदरे, वाणी प्रकाशन,दिल्ली
10. वर्चुअल रियलिटी और इन्टरनेट – जगदीश्वर चतुर्वेदी, अनामिका पब्लिशर्स, दिल्ली
11. मीडिया भूमंडलीकरण और समाज – संपादक : संजय द्विवेदी, यश पब्लिकेशन, दिल्ली
12. वैश्विक परिदृश्य में साहित्य,मीडिया और समाज: सं. डॉ.उमापति दीक्षित,डॉ .अनिल सिंह, कला एवं धर्म शोध – संस्थान,वाराणसी
13. जनसंचार और मीडिया लेखन – डॉ. दत्तात्रय मुरुमकर, प्रकाशन संस्थान, दिल्ली
14. अनुवाद का समकाल – डॉ. मोहसिन ख़ान, लोकभारती प्रकाशन, इलाहाबाद
15. हिन्दी पत्रकारिता और साहित्य –रामअवतार शर्मा, नमन प्रकाशन, दिल्ली
17. भूमंडलीकरण और हिन्दी–कल्पना वर्मा,राजकमल प्रकाशन,नई दिल्ली
18. इंटरनेट विज्ञान –नीता मेहता,साहित्य रत्नाकर,कानपुर
19. इलेक्ट्रॉनिक्स मीडिया एवं सूचना प्रौद्योगिकी–डॉ. यू. सी.गुप्ता,साहित्य रत्नाकर,कानपुर
20. संचार भाषा हिन्दी –डॉ. सूर्यप्रसाद दीक्षित,राजकमल प्रकाशन,नई दिल्ली
21. समकालीन साहित्य और भूमंडलीकरण – सं.डॉ.अनिल सिंह,न्यूमैन पब्लिकेशन,मुंबई
21. सूचना प्रौद्योगिकी और जन-माध्यम – प्रो. हरिमोहन, तक्षशिला प्रकाशन, नई दिल्ली

नमूना प्रश्न पत्र

Semester – V | Course – IV

समय : 2:30 घंटे | पूर्णांक : 80

सूचना : 1. अंतिम प्रश्न अनिवार्य है।
2. शेष चार प्रश्नों में से किन्हीं तीन के उत्तर लिखिए।
3. सभी प्रश्नों के लिए समान अंक है।

प्रश्न 1. सूचना प्रौद्योगिकी का अर्थ, परिभाषा, स्वरूप स्पष्ट कीजिए। 20

अथवा

सूचना प्रौद्योगिकी की उपयोगिता और महत्व को दर्शाएँ।

प्रश्न 2. सूचना प्रौद्योगिकी का व्यवहार क्षेत्र सामान्य परिचय की चर्चा कीजिए। 20

अथवा

सूचना प्रौद्योगिकी का शिक्षा के क्षेत्र में योगदान और उपादेयता स्पष्ट करें।

प्रश्न 3. सूचना प्रौद्योगिकी में हिंदी भाषा के प्रसार एवं प्रयोग पर प्रकाश डालिए। 20

अथवा

हिन्दी भाषा, देवनागरी लिपि के प्रसार क्षेत्र में विविध संस्थानों की भूमिका दर्शाएँ।

प्रश्न 4. भारत में डिज़िटलाइजेशन के विकास को बताते हुए उसकी उपयोगिता सिद्ध करें। 20

अथवा

हिन्दी में सूचना प्रौद्योगिकी विविध क्षेत्रों में रोज़गार की संभावनाओं को स्पष्ट करें।

प्रश्न 5 किन्हीं दो पर टिप्पणियाँ लिखिए। 20

क) सूचना प्रौद्योगिकी की समस्याएँ

ख) इलेक्ट्रॉनिक मीडिया

ग) हिन्दी सॉफ़्टवेयर परिचय

घ) देवनागरी लिपि टाइपिंग टूल

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) VI
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	VI
PAPER NAME	SOCIAL MEDIA सोशल मीडिया
PAPER NO.	VI
COURSE CODE	UAHIN–603
LACTURE	45
CREDITS & MARKS	CREDITS – 4 & MARKS - 80

सोशल मीडिया

इकाई– I

- सोशल मीडिया: अर्थ, स्वरूप और विकास
- सोशल मीडिया का व्यवहार क्षेत्र और महत्व
- सोशल मीडिया: चुनौतियाँ और संभावनाएँ

इकाई– II

- सोशल मीडिया में हिन्दी भाषा एवं देवनागरी लिपि का प्रयोग तथा हिन्दी का बदलता रूप (फ़ेसबुक, व्हाट्सअप, ट्विटर, मैसेन्जर, इन्स्टाग्राम, यूट्यूब)
- सोशल मीडिया: शिक्षा के क्षेत्र में उपादेयता
- सोशल मीडिया: हिन्दी का प्रयोग और रोज़गार की संभावनाएँ

इकाई– III

- सोशल मीडिया के प्रभाव(राजनीतिक,सामाजिक,आर्थिक, धार्मिक और सांस्कृतिक,)
- सोशल मीडिया: बदलता भारतीय परिवेश (बाल, युवाओं, महिलाओं और वृद्धों के संदर्भ में)
- सोशल मीडिया का जीवन – मूल्यों पर प्रभाव

इकाई– IV

- सोशल मीडिया और क़ानून
- सोशल मीडिया और मुक्त अभिव्यक्ति तथा दायित्वबोध
- सोशल मीडिया की वैश्विक-व्याप्ति

सूचना: प्रकल्प – 20 अंक

(पाठ्यक्रम से संबंधित किसी भी विषय पर 15 से 20 पृष्ठों का प्रकल्प तैयार करना अपेक्षित है।)

संदर्भ ग्रंथ सूची–

1. सोशल नेटवर्किंग: नए समय का संवाद – संपादक: संजय द्विवेदी, यश पब्लिकेशन्स, दिल्ली
2. नए ज़माने की पत्रकारिता – सौरभ शुक्ला, विस्डम विलेज पब्लिकेशन्स, गुड़गांव एवं दिल्ली
4. उत्तरआधुनिक मीडिया तकनीक – हर्षदेव, वाणी प्रकाशन, नई दिल्ली
5. नयी संचार प्रौद्योगिकी पत्रकारिता – कृष्ण कुमार रत्तू, हरियाणा ग्रंथ अकादेमी
6. कम्प्युटरी सूचना प्रणाली का विकास – राम बंसल,वाणी प्रकाशन, नई दिल्ली
7. जनसंचारिकी सिद्धांत और अनुप्रयोग – डॉ.रामलखन मीणा, कल्पना पब्लिशर, दिल्ली
8. भारत में जनसंचार और प्रसारण मीडिया – मधुकर लेले, राजकमल प्रकाशन, दिल्ली
9. जनसंचार सिद्धांत और अनुप्रयोग – विष्णु राजगढ़िया, राधाकृष्ण प्रकाशन, नई दिल्ली
10. संचार माध्यम लेखन – गौरीशंकर रैना, वाणी प्रकाशन, नई दिल्ली
11. जनसंचार माध्यमों में हिंदी – चंद्रकुमार, क्लासिक पब्लिशिंग कंपनी, नई दिल्ली
12. आधुनिक जनसंचार और हिंदी – डॉ. हरिमोहन, तक्षशीला प्रकाशन, नई दिल्ली
13. मीडिया समग्र – डॉ. अर्जुन तिवारी, वाणी प्रकाशन, दिल्ली
14. सोशल मीडिया के विविध आयाम – सं. डॉ. मोहम्मद फरियाद, स्वराज प्रकाशन,नई दिल्ली
15.सोशल मीडिया– योगेश पटेल,पुस्तक महल,नई दिल्ली

नमूना प्रश्न पत्र

Semester – VI | Course – IV

समय : 2:30 घंटे | पूर्णांक : 80

सूचना : 1. अंतिम प्रश्न अनिवार्य है।
2. शेष चार प्रश्नों में से किन्हीं तीन के उत्तर लिखिए।
3. सभी प्रश्नों के लिए समान अंक है।

प्रश्न1. सोशल मीडिया के स्वरूप को स्पष्ट करते हुए उसके विकास को समझाइए। 20

अथवा

सोशल मीडिया की समस्याएँ, चुनौतियाँ, सीमाएँ और संभावनाएँ पर प्रकाश डालिए।

प्रश्न 2. सोशल मीडिया की शिक्षा के क्षेत्र में उपादेयता और संभावनाएँ स्पष्ट करें। 20

अथवा

सोशल मीडिया में हिन्दी का प्रयोग और रोज़गार की संभावनाएँ दर्शाएँ।

प्रश्न 3. सोशल मीडिया का बच्चों एवं युवाओं पर पड़ने वाले प्रभाव की चर्चा कीजिए। 20

अथवा

सोशल मीडिया और बदलते जीवन मूल्य को स्पष्ट करें।

प्रश्न 4. सोशल मीडिया में मुक्त अभिव्यक्ति की स्वतंत्रता पर अपने विचार प्रकट कीजिए। 20

अथवा

सोशल मीडिया में कानून की भूमिका पर प्रकाश डालिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) सोशल मीडिया का महत्व

ख) एफ.एम.रेडियो और हिन्दी

ग) सोशल मीडिया और राजनीतिक प्रभाव

घ) सोशल मीडिया और वैश्विक परिवर्तन

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) VII
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	V
PAPER NAME	LITERARY CRITICISM : PROSODY & RHETORICS साहित्य समीक्षा : छंद एवं अलंकार
PAPER NO.	VII
COURSE CODE	UAHIN–504
LACTURE	60
CREDITS & MARKS	CREDITS - 4 & MARKS -100

साहित्य समीक्षा : स्वरूप एवं सामान्य परिचय

इकाई– I समीक्षा–

- साहित्य: स्वरूप और परिभाषा (भारतीय एवं पाश्चात्य)
- साहित्य के तत्व
- साहित्य के हेतु
- साहित्य के प्रयोजन (भारतीय एवं पाश्चात्य)

इकाई– II कला–

- स्वरूप और परिभाषा
- कलाओं का वर्गीकरण
- काव्य कला की श्रेष्ठता
- कला और साहित्य का संबंध

इकाई– III काव्य के रूप–

- महाकाव्य: भारतीय एवं पाश्चात्य मान्यताओं का परिचय
- खंडकाव्य: स्वरूप और विशेषताएँ
- मुक्तक काव्य: स्वरूप और विशेषताएँ
- गीतिकाव्य: स्वरूप और विशेषताएँ
- ग़ज़ल : स्वरूप और विशेषताएँ

इकाई– IV छंद : सामान्य परिचय, लक्षण एवं उदाहरण–

- मात्रिक छंद:– 1. चौपाई 2. रोला 3. दोहा 4. हरिगीतिका 5. उल्लाला 6. ताटंक 7. सोरठा 8. कुंडलिया
- वर्णिक छंद:– 1. इंद्रवज्रा 2. उपेंद्रवज्रा 3. द्रुतविलंबित 4. वंशस्थ 5. भुजंगी 6. तोटक 7. वसंततिलका 8. घनाक्षरी

नमूना प्रश्न पत्र

Semester – V | Course –VII

अवधि : 03:00 घंटे | पूर्णांक : 100

सूचना : 1. सभी प्रश्न अनिवार्य हैं।

2. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. साहित्य के स्वरूप को स्पष्ट करते हुए उसके तत्वों पर प्रकाश डालिए। 20

अथवा

साहित्य की परिभाषा देते हुए उसके भारतीय प्रयोजनों को स्पष्ट कीजिए।

प्रश्न 2. कला की परिभाषा देते हुए काव्य कला की श्रेष्ठता स्पष्ट कीजिए। 20

अथवा

कला और साहित्य के संबंध को समझाइए।

प्रश्न 3. महाकाव्य संबंधी भारतीय मान्यताओं का परिचय दीजिए। 20

अथवा

मुक्तक काव्य का स्वरूप स्पष्ट करते हुए उसकी विशेषताओं पर प्रकाश डालिए।

प्रश्न 4. रोला तथा तोटक छंदों का लक्षण तथा उदाहरण सहित सामान्य परिचय दीजिए। 20

अथवा

भुजंगी तथा वंशस्थ छंदों का लक्षण तथा उदाहरण सहित सामान्य परिचय दीजिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) साहित्य के हेतु

ख) कलाओं का वर्गीकरण

ग) गीतिकाव्य की विशेषताएँ

घ) घनाक्षरी छंद लक्षण एवं उदाहरण

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) VII
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	VI
PAPER NAME	LITERARY CRITICISM:PROSODY & RHETORICS, साहित्य समीक्षा : छंद एवं अलंकार
PAPER NO.	VII
COURSE CODE	UAHIN–604
LACTURE	60
CREDITS & MARKS	CREDITS - 4 & MARKS - 100

साहित्य समीक्षा

इकाई– I शब्द शक्ति–

- शब्द शक्ति : अर्थ, परिभाषा और स्वरूप
- शब्द शक्ति के प्रकार : (अभिधा, लक्षणा एवं व्यंजना का सामान्य परिचय)

इकाई– II रस–

- रस : अर्थ, परिभाषा एवं स्वरूप
- रस के अवयव
- रस के भेद : सामान्य परिचय

इकाई– III गद्य के विविध रूप–

- उपन्यास : परिभाषा, स्वरूप एवं प्रमुख तत्व
- कहानी : परिभाषा, स्वरूप एवं प्रमुख तत्व
- रेखाचित्र, संस्मरण, जीवनी और आत्मकथा का तात्विक विवेचन

इकाई– IV अलंकार सामान्य परिचय, लक्षण एवं उदाहरण–

- शब्दालंकार:– 1. अनुप्रास 2. यमक 3. श्लेष 4. वक्रोक्ति
  5. वीप्सा 6. पुनरुक्ति प्रकाश
- अर्थालंकार:– 1. उपमा 2. रूपक 3. अतिशयोक्ति 4. उत्प्रेक्षा
  5. विभावना 6. प्रतीप 7. दीपक 8. संदेह 9. विरोधाभास

संदर्भ ग्रंथ सूची–

1. रस सिद्धांत – डॉ. नगेंद्र, नेशनल पब्लिकेशन हाऊस, एडिशन
2. काव्यशास्त्र – भगीरथ मिश्र, विश्वविद्यालय प्रकाशन, वाराणसी
3. भारतीय काव्यशास्त्र : नई व्याख्या – डॉ.राममूर्ति त्रिपाठी, साहित्य भवन प्रा. लि. इलाहाबाद
4. हिंदी साहित्य समीक्षा – श्रीमूर्ति सुब्रह्मराय, हिंदी साहित्य सम्मलेन, प्रयाग
5. साहित्य समीक्षा – रामरतन भटनागर, किताब महल, इलाहाबाद
6. साहित्य समीक्षा – कालिदास कपूर, इंडियन प्रेस लिमिटेड, प्रयाग
7. कला की ज़रूरत – राजकमल प्रकाशन–अन्सर्ट फिशर, अनुवाद – रमेश उपाध्याय
8. हिंदी का गद्य पर्व – नामवर सिंह, राजकमल प्रकाशन, दिल्ली
9. आलोचना और विचारधारा नामवर सिंह –आशीष त्रिपाठी (संपा.), राजकमल प्रकाशन, दिल्ली
10. हिंदी आलोचना का दूसरा पाठ – निर्मला जैन, राजकमल प्रकाशन, दिल्ली
11. आचार्य रामचंद्र शुक्ल : आलोचना के नए मानदंड –भवदेय पांडेय, राजकमल प्रकाशन,दिल्ली
12. हिंदी आलोचना का विकास – मधुरेश, राजकमल प्रकाशन, दिल्ली
13. सांस्कृतिक आलोचना और हजारीप्रसाद द्विवेदी –सं.रामकिशोर त्रिपाठी, राजकमल प्रकाशन, दिल्ली
14. भारतीय काव्यशास्त्र के नये क्षितिज – राममूर्ति त्रिपाठी, राजकमल प्रकाशन, दिल्ली।
15. हिंदी समीक्षा और आचार्य शुक्ल नामवर सिंह – सं.ज्ञानेंनद्र कुमार संतोष, राजकमल प्रकाशन, दिल्ली
16. काव्य परिचय – राजेंद्र प्रसाद श्रीवास्तव, पुस्तक संस्थान 109/ 50–ए, नेहरूनगर, कानपुर
17. काव्यशास्त्र के मानदंड – रामनिवास गुप्त, वाणी प्रकाशन, दिल्ली
18. भारतीय काव्य विमर्श – राममूर्ति त्रिपाठी, वाणी प्रकाशन, दिल्ली
19. साहित्यालोचन के सिद्धांत – रवींद्र कुमार जैन, नेशनल पब्लिकेशन हाऊस, दिल्ली
20. पाश्चात्य काव्यशास्त्र : इतिहास, सिद्धान्त और वाद – डॉ. भगीरथ मिश्र, विश्वविद्यालय, प्रकाशन, वाराणसी
21. शास्त्रीय समीक्षा के सिद्धांत (द्वितीय भाग) – गोविंद त्रिगुणायत, एस चंद एंड कंपनी (प्रा.) लि. रामनगर, नई दिल्ली
22. काव्य के तत्व – आचार्य देवेंद्रनाथ शर्मा – लोकभारती प्रकाशन, इलाहाबाद
24. साहित्य विवेचन – क्षेमचंद्र 'सुमन', योगेंद्र कुमार मल्लिक, आत्माराम एंड संस, दिल्ली
25. साहित्य–विविधा – रमेशचंद्र लवानिया – अमित प्रकाशन,गाजियाबाद
26. हिन्दी ग़ज़ल और ग़ज़लकार –डॉ. मधु खराटे,साहित्य रत्नाकर,कानपुर
27. ग़ज़ल का काव्यशास्त्र–डॉ.महेश गुप्ता,साहित्य रत्नाकर,कानपुर

नमूना प्रश्न पत्र

Semester – VI | Course –VII

अवधि : 03:00 घंटे | पूर्णांक : 100

सूचना : 1. सभी प्रश्न अनिवार्य हैं।
2. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. शब्द शक्ति का अर्थ समझाते हुए लक्षणा और व्यंजना शब्दशक्ति का सोदाहरण परिचय दीजिए। 20

अथवा

शब्द शक्ति की परिभाषा देते हुए उसके प्रमुख प्रकारों का सोदाहरण परिचय दीजिए।

प्रश्न 2. रस की परिभाषा देते हुए उसके विभिन्न अवयवों का सोदाहरण परिचय दीजिए। 20

अथवा

रस की विभिन्न परिभाषाओं की चर्चा करते हुए करुण एवं शांत रस का सोदाहरण परिचय दीजिए।

प्रश्न 3. पाश्चात्य मान्यताओं के आधार पर कहानी के तत्त्वों की चर्चा कीजिए। 20

अथवा

जीवनी का अर्थ समझाते हुए उसके प्रमुख तत्वों का विवेचन कीजिए।

प्रश्न 4. अनुप्रास तथा श्लेष अलंकारों के लक्षण स्पष्ट करते हुए उनके उदाहरण लिखिए। 20

अथवा

दीपक तथा उत्प्रेक्षा अलंकारों के लक्षणों को समझाते हुए उनके उदाहरण लिखिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) अभिधा शक्ति और उसका महत्व
ख) शृंगार रस
ग) उपन्यास के तत्व
घ) उपमा अलंकार लक्षण एवं उदाहरण

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) VIII
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	V
PAPER NAME	LINGUISTICS: HINDI LANGUAGE AND GRAMMAR भाषा विज्ञान : हिन्दी भाषा और व्याकरण
PAPER NO.	VIII
COURSE CODE	UAHIN–505
LACTURE	60
CREDITS & MARKS	CREDITS - 4 & MARKS - 100

भाषा विज्ञान : हिन्दी भाषा और व्याकरण

इकाई – I

- भाषा की परिभाषा और उसकी विशेषताएँ
- भाषा के विविध रूप
- भाषा परिवर्तन के प्रमुख कारण

इकाई – II

- भाषा विज्ञान : परिभाषा और उपयोगिता
- भाषा विज्ञान की प्रमुख शाखाओं का सामान्य परिचय –
  (ध्वनि विज्ञान, शब्द विज्ञान, रूप विज्ञान, वाक्य विज्ञान, अर्थ विज्ञान)

इकाई – III

- वर्ण विचार : उच्चारण की दृष्टि से हिन्दी ध्वनियों का वर्गीकरण
- कारक के भेद एवं उसकी विभक्तियाँ
- संज्ञा : रूपांतर के आधार

इकाई – IV

- सर्वनाम : कारक रचना
- विशेषण : रूपांतर के आधार
- क्रिया : रूपांतर के आधार
  (वाच्य, काल, लिंग, पुरुष और वचन के आधार पर)

नमूना प्रश्न पत्र

Semester – V | Course –VIII

अवधि : 03:00 घंटे | पूर्णांक : 100

सूचना : 1. सभी प्रश्न अनिवार्य हैं।

2. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. भाषा के विविध रूपों की चर्चा कीजिए। 20

अथवा

भाषा परिवर्तन के प्रमुख कारणों की चर्चा कीजिए।

प्रश्न 2. भाषा विज्ञान की परिभाषा देते हुए उसकी उपयोगिता पर प्रकाश डालिए। 20

अथवा

भाषा विज्ञान की प्रमुख शाखाओं का सामान्य परिचय दीजिए ।

प्रश्न 3. उच्चारण की दृष्टि से हिन्दी स्वर ध्वनियों के वर्गीकरण को सोदाहरण समझाइए। 20

अथवा

कारक के भेदों पर प्रकाश डालते हुए उसकी विभक्तियों को सोदाहरण लिखिए।

प्रश्न 4. सर्वनामों की कारक रचना को सोदाहरण स्पष्ट कीजिए। 20

अथवा

क्रिया में होनेवाले रूपांतर को स्पष्ट कीजिए।

प्रश्न 5. निम्न में से किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) परिनिष्ठित भाषा

ख) ध्वनि विज्ञान

ग) उच्चारण स्थान के आधार पर व्यंजनों का वर्गीकरण

घ) वचन के आधार पर संज्ञा शब्दों में रूपांतर

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) VIII
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	VI
PAPER NAME	LINGUISTICS : HINDI LANGUAGE AND GRAMMAR भाषा विज्ञान : हिन्दी भाषा और व्याकरण
PAPER NO.	VIII
COURSE CODE	UAHIN–605
LACTURE	60
CREDITS & MARKS	CREDITS - 4 & MARKS - 100

भाषा विज्ञान : हिन्दी भाषा और व्याकरण

इकाई – I

- प्राचीन एवं मध्यकालीन भारतीय आर्य भाषाओं का सामान्य परिचय –
  क) वैदिक संस्कृत, ख) लौकिक संस्कृत, ग) पालि, घ) प्राकृत, ङ) अपभ्रंश
- आधुनिक भारतीय आर्य भाषाओं का सामान्य परिचय–
  क) सिन्धी, ख) मराठी, ग) पंजाबी, घ) गुजराती, ङ) बांग्ला

इकाई – II

- हिन्दी भाषा की उत्पत्ति और विकास
- हिन्दी की प्रमुख बोलियों का सामान्य परिचय –
  क) ब्रजभाषा, ख) अवधी, ग) भोजपुरी, घ) खड़ी बोली
- खड़ी बोली हिन्दी के विविध रूप –
  क) हिन्दी, ख) हिंदुस्तानी, ग) उर्दू , घ) दक्खिनी

इकाई – III

- हिन्दी का शब्द समूह
- देवनागरी लिपि : विशेषताएँ एवं महत्व
- संधि : अर्थ, स्वरूप तथा प्रमुख भेदों का सामान्य परिचय

इकाई – IV

- वाक्य रचना –
  क) वाक्य की परिभाषा, अर्थ और रचना की दृष्टि से वाक्य के प्रकार
  ख) हिन्दी वाक्य रचना में अध्याहार और पदक्रम संबंधी सामान्य नियम
- समास : अर्थ, स्वरूप तथा प्रमुख भेदों का सामान्य परिचय

संदर्भ ग्रंथ सूची–

1. भाषा विज्ञान – डॉ. भोलानाथ तिवारी, किताब महल, इलाहाबाद
2. हिन्दी भाषा और लिपि – डॉ. धीरेन्द्र वर्मा, हिंदुस्तानी एकेडेमी, प्रयाग
3. भाषा विज्ञान एवं भाषाशास्त्र – डॉ. कपिलदेव द्विवेदी, विश्वविद्यालय प्रकाशन, वाराणसी
4. हिन्दी भाषा का इतिहास – डॉ. भोलानाथ तिवारी, वाणी प्रकाशन, दिल्ली
5. भाषा विज्ञान की भूमिका – देवेन्द्रनाथ शर्मा, दीप्ति शर्मा, राधाकृष्ण प्रकाशन, दिल्ली
6. व्यावहारिक हिन्दी व्याकरण – श्यामचन्द्र कपूर, प्रभात प्रकाशन, दिल्ली
7. व्यावहारिक हिन्दी व्याकरण एवं रचना – डॉ. संतोष चौधरी, कनक सक्सेना, आस्था प्रकाशन, जयपुर
8. मानक हिन्दी व्याकरण और रचना – डॉ. हरिवंश तरुण, प्रकाशन संस्थान, नई दिल्ली
9. हिन्दी व्याकरण – पं. कामता प्रसाद गुरु, नागरीप्रचारिणी सभा, काशी
10. आधुनिक भाषा विज्ञान के सिद्धान्त – डॉ. राम किशोर शर्मा, लोकभारती प्रकाशन, नई दिल्ली
11. हिन्दी व्याकरण और रचना – वासुदेवनंदन प्रसाद, भारती भवन पब्लिशर्स एंड डिस्ट्रीब्यूटर्स, नई दिल्ली
12. हिन्दी शब्दानुशासन – आचार्य किशोरीदास वाजपेयी, नागरीप्रचारिणी सभा, वाराणसी
13. आधुनिक भाषा विज्ञान – डॉ. राजमणि शर्मा, वाणी प्रकाशन, दिल्ली
14. हिन्दी भाषा इतिहास और संरचना – डॉ. हरिश्चंद्र पाठक, तक्षशीला प्रकाशन, नई दिल्ली
15. मानक हिन्दी व्याकरण – डॉ. पृथ्वीनाथ पाण्डेय, जयभारती प्रकाशन, इलाहाबाद
16. सामान्य भाषा विज्ञान – डॉ. बाबूराम सक्सेना, हिन्दी साहित्य सम्मेलन, प्रयाग
17. हिन्दी संज्ञा सरंचना और कुछ नियम– डॉ. प्रीति सोहनी,साहित्य रत्नाकर,कानपुर
18. भारतीय साहित्य सिद्धान्त– डॉ. तारकनाथ बाली,किताब प्रकाशन,नई दिल्ली

नमूना प्रश्न पत्र

Semester – VI | Course –VIII

अवधि : 03:00 घंटे | पूर्णांक : 100

सूचना : 1. सभी प्रश्न अनिवार्य हैं।
2. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. मध्यकालीन आर्य भाषाओं का सामान्य परिचय दीजिए। 20

अथवा

आधुनिक भारतीय आर्य भाषाओं का सामान्य परिचय दीजिए।

प्रश्न 2. हिन्दी की प्रमुख बोलियों का सामान्य परिचय दीजिए। 20

अथवा

खड़ी बोली हिन्दी के प्रमुख रूपों की चर्चा कीजिए।

प्रश्न 3. हिन्दी के शब्द समूह पर प्रकाश डालिए। 20

अथवा

देवनागरी लिपि की विशेषताएँ लिखिए।

प्रश्न 4. वाक्य की परिभाषा देते हुए अर्थ और रचना की दृष्टि से वाक्यों के प्रकार लिखिए। 20

अथवा

समास का स्वरूप स्पष्ट करते हुए उसके प्रमुख भेदों का सामान्य परिचय दीजिए।

प्रश्न 5. निम्न में से किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) लौकिक संस्कृत

ख) ब्रजभाषा

ग) अध्याहार

घ) देवनागरी लिपि का महत्व

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) XI
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	V
PAPER NAME	IDEOLOGICAL BACKGROUND OF MODERN HINDI LITERATURE आधुनिक हिन्दी साहित्य की वैचारिक पृष्ठभूमि
PAPER NO.	IX
COURSE CODE	UAHIN–606
LACTURE	45
CREDITS & MARKS	CREDITS - 4 & MARKS - 80

आधुनिक हिंदी साहित्य की वैचारिक पृष्ठभूमि

इकाई– I

- भारतीय नवजागरण आंदोलन और हिंदी साहित्य पर उसका प्रभाव
  (सामाजिक दृष्टि से होने वाले वैचारिक एवं व्यावहारिक बदलाव के विशेष संदर्भ में)
- भारतीय नवजागरण आंदोलन
  (ब्रह्म समाज, प्रार्थना समाज, रामकृष्ण मिशन, थियोसोफ़िकल सोसाइटी, सत्यशोधक समाज का सामान्य परिचय एवं मान्यताएँ)
- आर्य समाज के सामाजिक-दार्शनिक सिद्धांतों का हिंदी कविता एवं उपन्यास पर प्रभाव

इकाई– II

- गांधीवाद : सामान्य परिचय एवं प्रमुख सिद्धान्त
- गांधीवादी चिंतन का हिंदी कविता पर प्रभाव
- गांधीवादी चिंतन का हिंदी कथा साहित्य पर प्रभाव

इकाई– III

- मार्क्सवाद : सामान्य परिचय एवं प्रमुख सिद्धान्त
- मार्क्सवाद : हिंदी कविता और हिंदी कथा साहित्य पर प्रभाव
- मनोविश्लेषणवाद और हिन्दी कथा साहित्य

इकाई– IV

- राष्ट्रीय चेतना के विकास में हिंदी पत्र–पत्रिकाओं का योगदान
  (कविवचन सुधा, हरिश्चंद्र चन्द्रिका, भारतमित्र, आनंद कादंबिनी, सरस्वती, प्रभा,चांद, माधुरी और मतवाला के विशेष संदर्भ में)

सूचना: प्रकल्प – 20 अंक

(पाठ्यक्रम से संबंधित किसी भी विषय पर 15 से 20 पृष्ठों का प्रकल्प तैयार करना अपेक्षित है।)

नमूना प्रश्न पत्र

Semester – V | Course – IX

अवधि : 02:30 घंटे | पूर्णांक : 80

सूचना : 1. अंतिम प्रश्न अनिवार्य हैं।
2. शेष 4 प्रश्नों में से किन्हीं 3 प्रश्नों के उत्तर लिखें।
3. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. ब्रह्म समाज तथा प्रार्थना समाज का सामान्य परिचय देते हुए उनकी मान्यताओं पर प्रकाश डालिए। 20

अथवा

आर्य समाज के सामाजिक एवं दार्शनिक सिद्धान्त का हिन्दी कविता पर हुए प्रभाव को रेखांकित कीजिए।

प्रश्न 2. गांधीवादी चिंतन के हिन्दी कविता पर हुए प्रभाव को सोदाहरण समझाइए। 20

अथवा

गांधीवादी चिंतन की हिन्दी उपन्यास में किस प्रकार अभिव्यक्ति हुई है? चर्चा कीजिए।

प्रश्न 3. मार्क्सवाद के हिन्दी कविता पर हुए प्रभाव को सोदाहरण लिखिए। 20

अथवा

मनोविश्लेषणवाद से प्रभावित हिन्दी कथा साहित्य पर प्रकाश डालिए।

प्रश्न 4. राष्ट्रीय चेतना के विकास में 'सरस्वती' और 'मतवाला' पत्रिकाओं के योगदान को रेखांकित कीजिए। 20

अथवा

'हरिश्चंद्र चन्द्रिका' और 'चाँद' पत्रिकाओं ने राष्ट्रीय चेतना के विकास में अपना महत्त्वपूर्ण योगदान दिया हैं, स्पष्ट कीजिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) सत्यशोधक समाज
ख) गांधीवादी चिंतन का स्वरूप
ग) मार्क्सवाद का स्वरूप
घ) प्रभा पत्रिका

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) IX
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	VI
PAPER NAME	IDEOLOGICAL BACKGROUND OF MODERN HINDI LITERATURE आधुनिक हिन्दी साहित्य की वैचारिक पृष्ठभूमि
PAPER NO.	IX
COURSE CODE	UAHIN–606
LACTURE	45
CREDITS & MARKS	CREDITS - 4 & MARKS - 80

आधुनिक हिंदी साहित्य की वैचारिक पृष्ठभूमि

इकाई– I

- स्त्री विमर्श : स्वरूप एवं मान्यताएं
- स्त्री चेतना का हिंदी कविता पर प्रभाव
- स्त्री चेतना का हिन्दी कथा साहित्य पर प्रभाव

इकाई– II

- दलित विमर्श : स्वरूप एवं मान्यताएं
- दलित चेतना का हिंदी कविता पर प्रभाव
- दलित चेतना का हिन्दी कथा साहित्य पर प्रभाव

इकाई– III

- आदिवासी विमर्श : हिन्दी कविता एवं कथा-साहित्य पर प्रभाव
- पर्यावरण विमर्श : हिन्दी कविता पर प्रभाव
- किन्नर विमर्श और हिन्दी कथा साहित्य

इकाई– IV

- स्वातंत्र्योत्तर जन चेतना और हिन्दी पत्र-पत्रिकाएँ
  (नवभारत, नईदुनिया, साप्ताहिक हिन्दुस्तान, इंडियाटुडे, हंस,सारिका, दिनमान, साहित्य कुंज (ई-पत्रिका), समालोचन (ई-पत्रिका) के विशेष संदर्भ में)

सूचना: प्रकल्प – 20 अंक

(पाठ्यक्रम से संबंधित किसी भी विषय पर 15 से 20 पृष्ठों का प्रकल्प तैयार करना अपेक्षित है।)

संदर्भ ग्रंथ सूची–

1. सृजन का अंतर्पाठ उत्तर आधुनिक विमर्श – कृष्णदत्त पालीवाल, सामायिक प्रकाशन, नई दिल्ली
2. अम्बेडकर संचयन (२खंड) संकलन \सम्पादन रामजी यादव – सामायिक प्रकाशन, नई दिल्ली
3. ज्योतिबा फुले संचयन संकलन\सम्पादन रामजी यादव – सामायिक प्रकाशन, नई दिल्ली
4. आदिवासी लेखन : एक उभरती चेतना, रमणिका गुप्ता – सामायिक प्रकाशन, नई दिल्ली
5. आदिवासी समाज और साहित्य – रमणिका गुप्ता, सामायिक प्रकाशन, नई दिल्ली
6. हिंदी दलित साहित्य : एक मूल्यांकन – प्रमोद कोवप्रत, वाणी प्रकाशन, नई दिल्ली
7. दलित दर्शन की वैचारिकी – बी. आर. विप्लवी, वाणी प्रकाशन, नई दिल्ली
8. समकालीन आलोचना विमर्श – अवधेश सिंह, वाणी प्रकाशन, नई दिल्ली
9. मार्क्सवाद और साहित्य – शिवकुमार मिश्र, वाणी प्रकाशन, नई दिल्ली
10. मार्क्सवादी साहित्य चिंतन – शिवकुमार मिश्र, वाणी प्रकाशन, नई दिल्ली
11. समकालीन हिंदी साहित्य : विविध विमर्श – प्रो. श्रीराम शर्मा, वाणी प्रकाशन, नई दिल्ली
12. सत्य के साथ मेरे प्रयोग – महात्मा गाँधी, प्रकाशन नई दिल्ली
13. गाँधी जी की देन – डॉ. राजेंद्र प्रसाद, प्रभात प्रकाशन नई दिल्ली
14. महिला सशक्तिकरण : दशा और दिशा – योगेंद्र शर्मा, राजकमल प्रकाशन, नई दिल्ली
15. स्त्री अलक्षित – श्रीकांत यादव, राजकमल प्रकाशन समूह, नई दिल्ली
16. नारी चेतना के आयाम – अलका प्रसाद, राजकमल प्रकाशन समूह, नई दिल्ली
17. स्वाधीनता का स्त्री पक्ष – अनामिका, राजकमल प्रकाशन समूह, नई दिल्ली
18. स्त्री चिंतन की चुनौतियाँ – रेखा कस्तवार, राजकमल प्रकाशन समूह, नई दिल्ली
19. आधुनिक हिंदी कथा साहित्य और मनोविज्ञान – डॉ. देवराज उपाध्याय
20. प्रगतिवादी समीक्षक और डॉ. रामविलस शर्मा – डॉ. मोहसिन ख़ान, लेखनी प्रकाशन, दिल्ली
23. थर्ड जेंडर विमर्श – शरद सिंह (संपा), विकास प्रकाशन, कानपुर
24. थर्ड जेंडर : कथा आलोचना – डॉ. फ़ीरोज़ (संपा.), विकास प्रकाशन, कानपुर
25. किन्नर विमर्श : दशा और दिशा – डॉ. विनय कुमार पाठक विकास प्रकाशन, कानपुर
26. भारतीय समाज में किन्नरों का यथार्थ – आशीष कुमार (संपा.), विकास प्रकाशन, कानपुर
27. किन्नर विमर्श : साहित्य के आईने में – डॉ. इक़रार अहमद, विकास प्रकाशन, कानपुर
28. थर्ड जेंडर : अतीत और वर्तमान – डॉ. फ़ीरोज़ (संपा.), विकास प्रकाशन, कानपुर
29. थर्ड जेंडर और साहित्य – डॉ. फ़ीरोज़ (संपा.), विकास प्रकाशन, कानपुर
30. सिनेमा की निगाह में थर्ड जेंडर – डॉ. फ़ीरोज़ (संपा.), विकास प्रकाशन, कानपुर
31.सत्य के प्रयोग –मोहनदास करमचंद गांधी, प्रकाशन संस्थान,नई दिल्ली
32. गांधी की भूमि से – राजकिशोर, प्रकाशन संस्थान,नई दिल्ली
33. आदिवासी संगर्ष गाथा –विनोद कुमार, प्रकाशन संस्थान,नई दिल्ली
34. स्त्रीवादी विमर्श–क्षमा शर्मा,राजकमल प्रकाशन,दिल्ली
35. गांधीवाद और हिन्दी काव्य – भक्त राम शर्मा,किताबघर प्रकाशन, नई दिल्ली

36.आदिवासी केन्द्रित हिन्दी साहित्य– डॉ. उषा किर्ती राणावत,शैलजा प्रकाशन,कानपुर
37. समकालीन हिन्दी साहित्य में पर्यावरण विमर्श–डॉ. सुमेश,अमन प्रकाशन,कानपुर
38. हिन्दी साहित्य में आदिवासी विमर्श–डॉ. पं. बन्ने,अमन प्रकाशन,कानपुर
39. भारतीय साहित्य में पर्यावरण संरक्षण–डॉ. सुमन सिंह,रोशनी पब्लिकेशन,कानपुर
40. आधुनिक हिन्दी साहित्य की वैचारिक पृष्टभूमि–सं. प्रवीण चंद्र बिस्ट
41. दलित साहित्य की दशा –दिशा–कार्तिक चौधरी,अप्रअधिकरण प्रकाशन,दिल्ली
42. बीसवीं सदी की अंतिम द्विदशक की हिंदी कहानी में दलित जीवन -डॉ. गौतम सोनकांबळे, साहित्य संस्थान,दिल्ली
43. ऊर्जा संकट और हमारा भविष्य–गुणाकर मुले, राजकमल प्रकाशन, दिल्ली
44. पर्यावरण शिक्षा– सुधा सिंह,राजकमल प्रकाशन, दिल्ली
45. वायुमंडलीय प्रदूषण–हरिनारायण श्रीवास्तव,राजकमल प्रकाशन, दिल्ली
46. लोक आस्था और पर्यावरण–पंकज चतुर्वेदी,परिकल्पना प्रकाशन, दिल्ली
47. स्त्री अस्मिता और समकालीन साहित्य– डॉ. अनिल सिंह,न्यूमैन,पब्लिकेन,परभणी
48. हिन्दी साहित्य में आदिवासी एवं स्त्री विमर्श – डॉ.सविता चौधरी,साहित्य रत्नाकर,कानपुर
49. हिन्दी साहित्य में नारी अस्मिता के विविध रूप –डॉ. सुमन सिंह, साहित्य रत्नाकर,कानपुर
50. हिन्दी दलित कहानी : विविध आयाम–डॉ. नारायण,साहित्य रत्नाकर,कानपुर

नमूना प्रश्न पत्र

Semester – VI | Course – IX

अवधि : 02:30 घंटे | पूर्णांक : 80

सूचना : 1. अंतिम प्रश्न अनिवार्य हैं।
2. शेष 4 प्रश्नों में से किन्हीं 3 प्रश्नों के उत्तर लिखें।
3. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. स्त्री चेतना ने हिन्दी कथा साहित्य को किस प्रकार प्रभावित किया है, स्पष्ट कीजिए। 20

अथवा

स्त्री चेतना से हिन्दी कविता किस प्रकार प्रभावित हुई है, स्पष्ट कीजिए।

प्रश्न 2. दलित चेतना के हिन्दी कविता पर हुए प्रभाव को सोदाहरण समझाइए। 20

अथवा

दलित चेतना के हिन्दी कथा साहित्य पर हुए प्रभाव को दर्शाइए।

प्रश्न 3. समकालीन हिन्दी उपन्यासों में आदिवासी विमर्श की अभिव्यक्ति किस प्रकार हुई है, स्पष्ट कीजिए। 20

अथवा

समकालीन किन्नर केन्द्रित कथा साहित्य में किन्नर-जीवन पर प्रकाश डालिए।

प्रश्न 4. 'हंस' में स्वातंत्र्योत्तर जन-चेतना को किस प्रकार वाणी मिली है, स्पष्ट कीजिए। 20

अथवा

'समालोचन' (ई-पत्रिका) तथा 'साहित्य कुंज'(ई-पत्रिका) ने स्वातंत्र्योत्तर जन-चेतना को अभिव्यक्त करने में अपनी महत्त्वपूर्ण भूमिका निभाई है, स्पष्ट कीजिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) स्त्री विमर्श के संदर्भ
ख) दलित चेतना का स्वरूप
ग) पर्यावरण विमर्श और हिन्दी कविता
घ) नवभारत

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) IX
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	V
PAPER NAME	MASS MEDIA, संचार माध्यम
PAPER NO.	IX
COURSE CODE	UAHIN–506
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CREDITS & MARKS	CREDITS - 4 & MARKS - 80

संचार माध्यम

इकाई– I जनसंचार माध्यम–

- जनसंचार : अर्थ, परिभाषा, अवधारणा एवं स्वरूप
- जनसंचार : तत्त्व एवं विशेषताएँ
- जनसंचार : प्रक्रिया, उपयोगिता, महत्व एवं बदलता स्वरूप

इकाई– II मुद्रण कला सामान्य परिचय–

- मुद्रण कला का अर्थ एवं स्वरूप एवं विशेषताएँ
- मुद्रण कला का इतिहास एवं विकास
- प्रूफ़ शोधन : अर्थ, स्वरूप, प्रूफ़ शोधक के गुण एवं कर्तव्य

इकाई– III इलेक्ट्रॉनिक दृश्य, श्रव्य जनसंचार माध्यम–

- रेडियो : अवधारणा, विकास, कार्यक्रम एवं उद्घोषक के गुण–कर्तव्य
- सिनेमा : स्वरूप, विकास एवं पटकथा लेखन
- टेलीविज़न : स्वरूप, विकास एवं धारावाहिक लेखन

इकाई– IV अत्याधुनिक जनसंचार माध्यम : उपयोग एवं दिशाएँ–

- वेब पत्रकारिता अवधारणा एवं विशेषताएँ
- वेब पत्रकारिता तकनीक, उपयोगिता एवं भविष्य
- प्रमुख वेब संस्करण : समाचार पत्र, पत्रिकाएँ, रेडियो एवं समाचार चैनल

सूचना: प्रकल्प – 20 अंक

(पाठ्यक्रम से संबंधित किसी भी विषय पर 15 से 20 पृष्ठों का प्रकल्प तैयार करना अपेक्षित है।)

नमूना प्रश्न पत्र

Semester – VI | Course – IX

अवधि : 02:30 घंटे | पूर्णांक : 80

सूचना : 1. अंतिम प्रश्न अनिवार्य हैं।
2. शेष 4 प्रश्नों में से किन्हीं 3 प्रश्नों के उत्तर लिखें।
3. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. जनसंचार की अवधारणा एवं स्वरूप पर प्रकाश डालिए। 20

अथवा

जनसंचार की प्रक्रिया को स्पष्ट कीजिए।

प्रश्न 2. मुद्रण कला का अर्थ एवं स्वरूप एवं विशेषताएँ स्पष्ट करें। 20

अथवा

प्रूफ़ शोधक के गुण एवं कर्तव्य स्पष्ट करें।

प्रश्न 3. सिनेमा का स्वरूप और विकास दर्शाएँ। 20

अथवा

रेडियो उद्घोषक के गुण–कर्तव्य स्पष्ट करें।

प्रश्न 4. वेब पत्रकारिता अवधारणा एवं विशेषताएँ लिखिए। 20

अथवा

वेब पत्रकारिता तकनीक, उपयोगिता दर्शाइए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) जनसंचार के तत्त्व

ख) मुद्रण कला की विशेषताएँ

ग) धारावाहिक लेखन

घ) वेब संस्करण समाचार पत्र

NAME OF PROGRAM	T. Y. B. A. (C.B.C.S.) IX
NAME OF THE COURSE	T.Y.B.A. HINDI
SEMESTER	VI
PAPER NAME	MASS MEDIA, संचार माध्यम
PAPER NO.	IX
COURSE CODE	UAHIN–606
LACTURE	45
CREDITS & MARKS	CREDITS - 4 & MARKS - 80

संचार माध्यम

इकाई– I जनसम्पर्क–

- जनसम्पर्क : अर्थ, परिभाषा, उद्देश्य और महत्व
- जनसम्पर्क : उद्भव, विकास, क्षेत्र एवं साधन
- जनसम्पर्क : संभावनाएँ और चुनौतियाँ

इकाई– II विज्ञापन–

- विज्ञापन : अर्थ परिभाषा, स्वरूप, महत्व और विशेषताएँ
- विज्ञापन : उद्देश्य, प्रकार और सामाजिक उपयोगिता
- विज्ञापन : उपभोक्ता, एजेंसियाँ, नैतिकता और क़ानून

इकाई– III वृत्तचित्र और लघुफ़िल्म–

- वृत्तचित्र : अर्थ एवं स्वरूप, सामान्य परिचय, महत्व एवं उपयोगिता
- लघुफ़िल्म : अर्थ एवं स्वरूप, सामान्य परिचय, महत्व एवं उपयोगिता
- वृत्तचित्र एवं लघुफ़िल्म के उद्देश्य और प्रकार

इकाई– IV मीडिया : सरोकार एवं अंतर्संबंध–

- मीडिया : सामाजिक मुद्दे और समस्याएँ
- मीडिया : उत्तरदायित्व और राष्ट्रीय विकास
- मीडिया : आचार संहिता और बाज़ारवाद

सूचना: प्रकल्प – 20 अंक

(पाठ्यक्रम से संबंधित किसी भी विषय पर 15 से 20 पृष्ठों का प्रकल्प तैयार करना अपेक्षित है।)

संदर्भ ग्रंथ सूची–

1. सूचना प्रौद्योगिकी और समाचार पत्र – रवीन्द्र शुक्ल, राधाकृष्ण प्रकाशन, नई दिल्ली
2. सूचना प्रौद्योगिकी और जन-माध्यम – प्रो. हरिमोहन, तक्षशिला प्रकाशन, नई दिल्ली
3. सोशल मीडिया में साहित्य का बदलता स्वरूप –आरती सिंह, डॉ. विभा ठाकुर (सं.), स्वराज प्रकाशन, नई दिल्ली
4. मीडिया लेखन – सुमित मोहन, वाणी प्रकाशन, नई दिल्ली
5. मीडिया लेखन कला – निशांत सिंह, ओमेगा पब्लिकेशन, नई दिल्ली
6. आधुनिक जन–संचार और हिन्दी – प्रो. हरिमोहन, तक्षशिला प्रकाशन, नई दिल्ली
7. मीडिया और हिन्दी भाषा का स्वरूप – डॉ. मनीष गोहिल, साधना प्रकाशन, कानपुर
8. मीडिया कालीन हिन्दी स्वरूप एवं संभावनाएँ – डॉ. अर्जुन चव्हाण, राधाकृष्ण प्रकाशन, नई दिल्ली
9. कंप्यूटर और हिन्दी – प्रो. हरिमोहन, तक्षशीला प्रकाशन, नई दिल्ली
10. दूरसंचार और सूचना प्रौद्योगिकी – डी. डी. ओझा, सत्यप्रकाश, ज्ञान गंगा प्रकाशन, दिल्ली
11. जनसंचार का समाजशास्त्र – लक्ष्मेंद्र चोपड़ा, आधार प्रकाशन, पंचकुला
12. जनसंचार एवं समाज – डॉ. मोनिका नागोरी, अंकुर प्रकाशन, उदयपुर
13. संचार से जनसंचार और जनसम्पर्क तक – बलवीर कुंदरा, के. के. पब्लिकेशन, नई दिल्ली
14. इलेक्ट्रॉनिक मीडिया एवं सायबर पत्रकारिता – राकेश कुमार, श्री. नटराज प्रकाशन, दिल्ली
15. नए जनसंचार माध्यम और हिन्दी – सं. सुधीश पचौरी, अचला शर्मा, राजकमल प्रकाशन, नई दिल्ली
16. समकालीन भारत एवं जनसंचार माध्यम – डॉ. सुधीर सोनी, युनिवर्सिटी पब्लिकेशन, जयपुर
17. जनसंचार माध्यम भाषा और साहित्य – सुधीश पचौरी, श्री. नटराज प्रकाशन, नई दिल्ली
18. इंटरनेट पत्रकारिता – सुदेश कुमार, तक्षशीला प्रकाशन, नई दिल्ली
19. इलेक्ट्रॉनिक मीडिया लेखन – डॉ. हरीश अरोड़ा, के. के. पब्लिकेशन, नई दिल्ली
20. मीडिया और साहित्य – डॉ. योगेंद्र प्रताप सिंह, साहित्य रत्नाकर, कानपुर
21. मीडिया के बदलते तेवर – अनामीशरण बबल, नटराज प्रकाशन, दिल्ली
22. वेब पत्रकारिता – श्याम माथुर, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर
23. जनसंचार माध्यमों में हिन्दी – चन्द्र कुमार, क्लासिकल पब्लिशिंग कंपनी, नई दिल्ली
24. इलेक्ट्रॉनिक मीडिया – डॉ. सुधीर सोनी, युनिवर्सिटी पब्लिकेशन, जयपुर
25. विकास संचार एवं नयी सूचना प्रौद्योगिकी – डॉ. सुधीर सोनी, युनिवर्सिटी पब्लिकेशन, जयपुर
26. रेडियो और दूरदर्शन पत्रकारिता – डॉ. हरिमोहन, तक्षशीला प्रकाशन, दरियागंज, नई दिल्ली
27. हिन्दी ब्लॉगिंग स्वरूप,व्याप्ति और संभावनाएं–सं. डॉ.मनीष कुमार,युवा साहित्य चेतना मण्डल, नई दिल्ली
28. भूमंडलीकरण के परिप्रेक्ष्य में साहित्य,सम्माज,संस्कृति और भाषा–सं.डॉ. प्रदीपकुमार सिंह
29. वेब पत्रकारिता– सं.हंसराज सुमन, नटराज प्रकाशन, दिल्ली
30. जनसंचार,जनसम्पर्क एवं विज्ञापन–डॉ. सुजाता वर्मा,साहित्य रत्नाकर,कानपुर

नमूना प्रश्न पत्र

Semester – VI | Course – IX

अवधि : 02:30 घंटे | पूर्णांक : 80

सूचना : 1. अंतिम प्रश्न अनिवार्य हैं।
2. शेष 4 प्रश्नों में से किन्हीं 3 प्रश्नों के उत्तर लिखें।
3. सभी प्रश्नों के लिए समान अंक हैं।

प्रश्न 1. जनसम्पर्क का अर्थ, परिभाषा और महत्व दर्शाइए। 20

अथवा

जनसम्पर्क की संभावनाएँ और चुनौतियों को समझाइए।

प्रश्न 2. विज्ञापन की परिभाषा एवं स्वरूप पर प्रकाश डालिए। 20

अथवा

विज्ञापन और क़ानून का सामान्य परिचय दीजिए।

प्रश्न 3. वृत्तचित्र का अर्थ स्पष्ट करते हुए उसके स्वरूप पर प्रकाश डालिए। 20

अथवा

लघु फ़िल्मों की उपयोगिता एवं महत्त्व पर प्रकाश डालिए

प्रश्न 4. मीडिया और सामाजिक समस्याओं पर प्रकाश डालिए। 20

अथवा

मीडिया के उत्तरदायित्व और राष्ट्रीय विकास के विषय में स्पष्ट कीजिए।

प्रश्न 5. किन्हीं दो विषयों पर टिप्पणियाँ लिखिए। 20

क) जनसम्पर्क के साधन

ख) विज्ञापन की सामाजिक उपयोगिता

ग) वृत्तचित्र के प्रकार

घ) लघुफ़िल्म का उद्देश्य

University of Mumbai

No. UG/31 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, the Head University Departments and Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/71 of 2018-19, dated 6th July, 2018 relating to the revised syllabus as per (CBCS) for the M.A. in Hindi (Sem. I to IV).

They are hereby informed that the recommendations made by the Board of Studies in Hindi at its meeting held on 9th April, 2019 have been accepted by the Academic Council at its meeting held on 15th April, 2019 **vide** item No. 4.26 and that in accordance therewith, the revised syllabus as per the (CBCS) for the M.A. (Sem. I & II) in Hindi has been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
3rd June, 2019

(Dr. Ajay Deshmukh)
REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.26/15/04/2019

****

No. UG/31 -A of 2019 MUMBAI-400 032 3rd June, 2019

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Humanities,
2) The Chairman, Board of Studies in Hindi,
3) The Director, Board of Examinations and Evaluation,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Director, Board of Students Development,
6) The Co-ordinator, University Computerization Centre,

(Dr. Ajay Deshmukh)
REGISTRAR

UNIVERSITY OF MUMBAI

Revised Syllabus and Pattern of Question Paper in the Subject of Hindi At the M.A. – I Examination

Choice Based CreditSystem (CBCS)

Semester I & II

(With effect from the Academic Year: 2019-2020)

UNIVERSITY OF MUMBAI

Revised Syllabus and Pattern of Question Paper in the Subject of Hindi At the

M.A.-I Examination

Choice Based Credit System (CBCS)

Semester I & II

(With effect from the Academic Year: 2019-2020)

हिन्दी अध्ययन मंडल

अध्यक्ष : डॉ. अनिल सिंह

1. डॉ. करुणाशंकर उपाध्याय(सदस्य)
2. डॉ. हूबनाथ पाण्डेय(सदस्य)
3. डॉ. विद्या शिंदे (सदस्य)
4. डॉ. शीला आहुजा (सदस्य)
5. डॉ. चित्रा गोस्वामी(सदस्य)
6. डॉ. संतोष मोटवानी(सदस्य)
7. डॉ. प्रकाश धुमाल(सदस्य)
8. डॉ. गौतम सोनकांबले(सदस्य)
9. डॉ. मोहसिन ख़ान(सदस्य)

पाठ्यक्रम समिति

1. डॉ. करुणाशंकर उपाध्याय (समन्वयक)
2. डॉ. विष्णु सरवदे (सदस्य)
3. डॉ. दत्तात्रय मुरुमकर (सदस्य)
4. डॉ. संतोष मोटवानी (सदस्य)
5. डॉ. बालकवि सुरंजे (सदस्य)
6. डॉ. उमेश शुक्ल (सदस्य)
7. डॉ. सुनील चव्हाण (सदस्य)
8. डॉ. महेश दवंगे (सदस्य)

मुंबई विश्वविद्यालय, मुंबई

एम. ए (प्रथम वर्ष) सेमेस्टर I एवं II

M.A. Syllabus According to Choice Based Credit System

Semester - I (प्रथम सत्र)

Course Code : PAHIN 101

प्रश्न पत्र - १

हिंदी साहित्य का इतिहास

(History of Hindi Literature)

कुल श्रेयांक**(Credit) = 6**

इकाई एक **श्रेयांक -२**

१. इतिहास दृष्टि एवं साहित्येतिहास लेखन

२. हिंदी साहित्य के इतिहास लेखन की परंपरा एवं पुनर्लेखन की समस्याएँ

३. हिंदी साहित्य का इतिहास : काल विभाजन एवं नामकरण

४. आदिकाल : परिवेश

: सिद्ध साहित्य, नाथ साहित्य, जैन साहित्य, रासो साहित्य

: अमीर खुसरो एवं विद्यापति

इकाई दो और तीन **श्रेयांक - २**

५. भक्तिकाल : परिवेश

: भक्ति आंदोलन का विकास

: संत काव्य : परंपरा एवं प्रवृत्तियाँ

: सूफ़ी काव्य : परंपरा एवं प्रवृत्तियाँ

: रामभक्ति काव्यधारा : परंपरा एवं प्रवृत्तियाँ

: कृष्णभक्ति काव्यधारा का विकास एवं प्रवृत्तियाँ

: भक्तिकाव्य की प्रासंगिकता

इकाई चार **श्रेयांक -२**

६. रीतिकाल : रीतिकालीन परिवेश

: रीतिबद्ध काव्य, रीतिसिद्ध काव्य एवं रीतिमुक्त काव्य की प्रवृत्तियाँ

Semester - II (द्वितीय सत्र)

Course Code : PAHIN 102

प्रश्न पत्र - २

हिंदी साहित्य का इतिहास (आधुनिक काल)

(History of Hindi Literature -Modern Age)

कुल श्रेयांक**(Credit) = 6**

इकाई एक **श्रेयांक - १**

१. आधुनिक कालीन परिवेश

इकाई दो **श्रेयांक - २**

२. आधुनिक हिंदी कविता का प्रवृत्तिगत अध्ययन :

भारतेंदु युग, द्विवेदी युग, छायावाद,

प्रगतिवाद, प्रयोगवाद, नई कविता,

नवगीत, साठोत्तरी कविता, समकालीन कविता

इकाई तीन **श्रेयांक - २**

३. हिंदी गद्य साहित्य :

हिंदी साहित्य की प्रमुख गद्य विधाओं का क्रमिक विकास -

उपन्यास, कहानी, नाटक, निबंध

इकाई चार **श्रेयांक - १**

आलोचना, यात्रा-वृत्तांत, डायरी, पत्र, जीवनी,

आत्मकथा, रेखाचित्र, संस्मरण

संदर्भ ग्रंथ : (प्रश्न पत्र १ और २)

१. हिंदी साहित्य का इतिहास - आ. रामचंद्र शुक्ल

२. हिंदी साहित्य का इतिहास - संपादक डॉ. नगेंद्र

३. हिंदी साहित्य का वैज्ञानिक इतिहास - डॉ. गणपतिचंद्र गुप्त

४. हिंदी साहित्य का इतिहास - डॉ. लक्ष्मीसागर वार्ष्णेय

५. हिंदी साहित्य का दूसरा इतिहास - डॉ. बच्चन सिंह

६. हिंदी साहित्य की प्रवृत्तियाँ - डॉ. जयकिशन प्रसाद खंडेलवाल

७. हिंदी साहित्य और उसकी प्रवृत्तियाँ - डॉ. गोविंदराम शर्मा

१० आधुनिक हिंदी साहित्य का इतिहास - डॉ. बच्चन सिंह

११ हिंदी साहित्य का सुबोध इतिहास - बाबू गुलाबराय

१२ हिंदी साहित्य की भूमिका - डॉ. हजारीप्रसाद द्विवेदी

१३ हिंदी साहित्य का आलोचनात्मक इतिहास - डॉ. रामकुमार वर्मा

१४ हिंदी साहित्य एक परिचय - डॉ. त्रिभुवन सिंह

१५ हिंदी साहित्य और संवेदना का इतिहास - डॉ. रामस्वरूप चतुर्वेदी

१६ हिंदी रीति साहित्य का इतिहास - डॉ. भगीरथ मिश्र

१७ रीतियुगीन काव्य - डॉ. कृष्णचंद्र वर्मा

१८ रीतिकाव्य की भूमिका - डॉ. नगेंद्र

१९ आधुनिक हिंदी साहित्य का आदिकाल - श्री नारायण चतुर्वेदी

२० हिंदी साहित्य का प्रवृत्तिपरक इतिहास - डॉ. सभापति मिश्र

२१ हिंदी साहित्य का इतिहास - डॉ. माधव सोनटक्के

२२ हिंदी साहित्य का अद्यतन इतिहास - डॉ. मोहन अवस्थी

२३ हिंदी साहित्य का सही इतिहास - डॉ. चंद्रभानु सोनवणे / डॉ. सूर्यनारायण रणसूभे

२४ आधुनिक हिंदी कविता का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय

२५ आधुनिक हिंदी कविता में काव्य चिंतन - डॉ. करुणाशंकर उपाध्याय

२६ साहित्य और संस्कृति के सरोकार - डॉ. करुणाशंकर उपाध्याय

२७ आधुनिक हिंदी साहित्य : वाद, प्रवृत्तियाँ एवं विमर्श - डॉ. दत्तात्रय मुरुमकर

२८ हिंदी साहित्य का आधा इतिहास - डॉ. सुमन राजे

२९ हिंदी साहित्य की नवीन विधाएँ - डॉ. कैलाशचंद्र भाटिया

३० हिंदी साहित्य का इतिहास : नए विचार नई दिशाएँ - डॉ. सुरेशकुमार जैन

३१ हिंदी साहित्य का इतिहास - डॉ. उद्धव भंडारे

३२ हिंदी साहित्य का इतिहास - डॉ. सज्जनराम केणी

३३ भक्ति साहित्य में विश्वबंधुत्व की भावना - सं. डॉ. अनिल सिंह

३४ भक्ति साहित्य मे परमानंद सागर- डॉ. सुमन सिंह

३५ दिनकर का कुरुक्षेत्र -डॉ. मोहसिन ख़ान

३६ प्रगतिवादी समीक्षक डॉ. रमविलास शर्मा- डॉ. मोहसिन ख़ान

Semester - I (प्रथम सत्र)

Course Code : PAHIN 103

प्रश्न पत्र - ३

काव्यशास्त्र एवं साहित्यालोचन

(Poetics and Literary Criticism)

कुल श्रेयांक**(Credit) = 6**

खंड- क (भारतीय काव्यशास्त्र एवं हिंदी आलोचना)

इकाई एक **श्रेयांक - २**

१. रस सिद्धांत : रस का स्वरूप, रस के अवयव, रस निष्पत्ति, साधारणीकरण

२. अलंकार सिद्धांत : मूल स्थापनाएँ, अलंकारों का वर्गीकरण

३. रीति सिद्धांत : रीति की अवधारणा, काव्यगुण, रीति एवं शैली, रीति सिद्धांत की प्रमुख स्थापनाएँ

इकाई दो **श्रेयांक - १**

४. आचार्य रामचंद्र शुक्ल, आचार्य नंददुलारे वाजपेयी, आचार्य हजारीप्रसाद द्विवेदी

खंड - ख (पाश्चात्य काव्यशास्त्र : सिद्धांत और विचारक)

इकाई तीन **श्रेयांक -१**

१. सिद्धांत और वाद : अभिजात्यवाद, स्वच्छंदतावाद, मार्क्सवाद

इकाई चार **श्रेयांक - २**

२. विचारक

१. प्लेटो के काव्य सिद्धांत

२. अरस्तू का अनुकरण सिद्धांत, त्रासदी एवं विरेचन सिद्धांत

३. लोंजाइनस : उदात्त संबंधी मान्यताएँ

Semester - II (द्वितीय सत्र)

Course Code : PAHIN 104

प्रश्न पत्र - ४

काव्यशास्त्र एवं साहित्यालोचन

(Poetics and Literary Criticism)

कुल श्रेयांक**(Credit) = 6**

खंड - क (भारतीय काव्यशास्त्र एवं हिंदी आलोचना)

इकाई एक **श्रेयांक - २**

१. वक्रोक्ति सिद्धांत : अवधारणा, वक्रोक्ति एवं अभिव्यंजनावाद

२. ध्वनि सिद्धांत : स्वरूप, प्रमुख रचनाएँ, ध्वनि काव्य के प्रमुख भेद, गुणीभूत व्यंग्य

३. औचित्य सिद्धांत : प्रमुख स्थापनाएँ, औचित्य के भेद

इकाई दो **श्रेयांक - १**

४. डॉ. रामविलास शर्मा, डॉ. नगेंद्र, डॉ. नामवर सिंह

खंड - ख (पाश्चात्य काव्यशास्त्र : सिद्धांत और विचारक)

इकाई तीन **श्रेयांक - १**

१. सिद्धांत और वाद : अस्तित्ववाद, संरचनावाद, उत्तर आधुनिकतावाद

इकाई चार **श्रेयांक - २**

२. विचारक : १. मैथ्यू आर्नल्ड - आलोचना का स्वरूप और प्रकार्य

२. टी.एस.इलियट - परंपरा की परिकल्पना और वैयक्तिक प्रज्ञा, निर्वैयक्तिकता का सिद्धांत, वस्तुनिष्ठ समीकरण

३. आई.ए.रिचर्ड्स - व्यावहारिक आलोचना, रागात्मक अर्थ संवेगों का संतुलन, संप्रेषण

संदर्भ ग्रंथ : (प्रश्न पत्र ३ और ४)

१. भारतीय साहित्य शास्त्र - डॉ. बलदेव उपाध्याय
२. भारतीय काव्यशास्त्र की परंपरा - डॉ. नगेंद्र
३. साहित्य का मूल्यांकन - डॉ. रामचंद्र तिवारी
४. रस सिद्धांत : स्वरूप और विश्लेषण - डॉ.आनंदप्रकाश दीक्षित
५. रस सिद्धांत - डॉ. नगेंद्र
६. काव्यतत्व विमर्श - डॉ. राममूर्ति त्रिपाठी
७. काव्यशास्त्र - डॉ. भगीरथ मिश्र
८. साहित्य शास्त्र - डॉ. कमलाप्रसाद पांडेय
९. भारतीय समीक्षा सिद्धांत - डॉ. सूर्यनारायण द्विवेदी
१०. ध्वनि सिद्धांत और हिंदी के प्रमुख आचार्य - डॉ. टी.एन.राय
११. आचार्य शुक्ल के समीक्षा सिद्धांत - डॉ. रामलाल सिंह
१२. रामचंद्र शुक्ल और हिंदी आलोचना - डॉ. रामविलास शर्मा
१३. आलोचक का दायित्व - डॉ. रामचंद्र तिवारी
१४. हिंदी आलोचना का विकास - नंदकिशोर नवल
१५. नामवर के विमर्श - डॉ. सुधीश पचौरी
१६. पाश्चात्य काव्य सिद्धांत - डॉ. शांतिस्वरूप गुप्त
१७. पाश्चात्य काव्यशास्त्र - देवेंद्रनाथ शर्मा
१८. पाश्चात्य काव्यचिंतन - डॉ. निर्मला जैन
१९. उत्तर आधुनिकता : कुछ विचार - सं. देवीशंकर नवीन
२०. उत्तर आधुनिकता : साहित्यिक विमर्श - सं.डॉ. सुधीश पचौरी
२१. समीक्षा के विविध आधार -सं. डॉ. रामजी तिवारी
२२. पाश्चात्य काव्य चिंतन - डॉ. करुणाशंकर उपाध्याय
२३. छंदोलंकार प्रदीपिका - विश्वबंधु शर्मा
२४. काव्य चिंतन की पश्चिमी परंपरा - डॉ. निर्मला जैन
२५. हिंदी आलोचना का सैद्धांतिक आधार - कृष्णदत्त पालीवाल
२६. पाश्चात्य काव्यशास्त्र के प्रतिमान - डॉ. हरीश अरोड़ा
२७. आई.ए.रिचर्ड्स के समीक्षा सिद्धांत - डॉ. विष्णु सरवदे

Semester - I (प्रथम सत्र)

Course Code : PAHIN 105

प्रश्न पत्र - ५

भाषा विज्ञान एवं हिंदी भाषा

(Linguistics and Hindi Language)

कुल श्रेयांक**(Credit) = 6**

खंड : क

इकाई एक **श्रेयांक -२**

१. भाषा : भाषा की परिभाषा, अभिलक्षण, भाषा व्यवस्था और भाषा व्यवहार, भाषा संरचना और भाषिक प्रकार्य

२. भाषा विज्ञान : भाषा विज्ञान का नामकरण, परिभाषा, स्वरूप औरव्याप्ति भाषा विज्ञान का अध्ययन क्षेत्र, अध्ययन की दिशाएँ, भाषा विज्ञान के प्रकार -अनुप्रयुक्त और व्यतिरेकी भाषाविज्ञान

इकाई दो **श्रेयांक - १**

३. स्वन विज्ञान : परिभाषा, स्वरूप, वाग अवयव और उनके कार्य, स्वनिम की विशेषताएँ, स्वनिम के भेद - खंड्य स्वनिम, खंडयेत्तर स्वनिम, स्वन परिवर्तन की दिशाएँ, स्वन परिवर्तन के कारण, हिंदी स्वरों तथा व्यंजनों का वर्गीकरण

खंड : ख

इकाई तीन **श्रेयांक - २**

१. हिंदी की ऐतिहासिक पृष्ठभूमि : प्राचीन भारतीय आर्य भाषाएँ - वैदिक तथा लौकिक संस्कृत और उसकी विशेषताएँ

: मध्यकालीन भारतीय आर्य भाषाएँ - पालि, प्राकृत, शौरसेनी, अर्धमागधी, अपभ्रंश और

उनकी विशेषताएँ

: आधुनिक भारतीय भाषाओँ का सामान्य परिचय - मराठी, गुजराती,राजस्थानी,पंजाबी,तेलुगु, कन्नड़, तमिल ,मलयालम

इकाई चार **श्रेयांक - १**

२. हिंदी का वाक्य विन्यास : पद, पदक्रम, वाक्य के भेद (अर्थ एवं रचना के आधार पर)

Semester - II (द्वितीय सत्र)

Course Code : PAHIN 106

प्रश्न पत्र - ६

भाषा विज्ञान एवं हिंदी भाषा

(Linguistics and Hindi Language)

कुल श्रेयांक**(Credit) = 6**

खंड : क

इकाई एक **श्रेयांक - २**

१. रूप विज्ञान : रूप विज्ञान का स्वरूप, शब्द और रूप, अर्थ तत्व और संबंध तत्व, संबंध तत्व के प्रकार, रूप परिवर्तन की दिशाएँ एवं कारण, रूपिम और संरूप, रूपिम के भेद

२. वाक्य विज्ञान : परिभाषा, अभिहितान्वयवाद और अन्विताभिधानवाद, वाक्य परिवर्तन की दिशाएँ और कारण

इकाई दो **श्रेयांक - १**

३. अर्थ विज्ञान : अवधारणा, शब्द और अर्थ का संबंध, अर्थ परिवर्तन की दिशाएँ, अर्थ परिवर्तन के कारण

खंड : ख

इकाई तीन **श्रेयांक - २**

१. हिंदी की रूप रचना : १. हिंदी की शब्द रचना, धातु, उपसर्ग, प्रत्यय, समास

२. लिंग, वचन, कारक के संदर्भ में संज्ञा, सर्वनाम, विशेषण और क्रिया का रूपांतरण

इकाई चार **श्रेयांक - १**

२. देवनागरी लिपि : नामकरण, उद्भव और विकास, विशेषताएँ, मानक रूप एवं त्रुटियाँ

संदर्भ ग्रंथ : (प्रश्न पत्र ५ और ६)

१. भाषा विज्ञान - डॉ. भोलानाथ तिवारी
२. भाषा विज्ञान एवं भाषा शास्त्र - डॉ. कपिलदेव द्विवेदी
३. हिंदी भाषा का उद्भव और विकास - डॉ. उदयनारायण तिवारी
४. हिंदी भाषा - डॉ. भोलानाथ तिवारी
५. भाषिकी, हिंदी भाषा तथा भाषा शिक्षण - डॉ. अंबादास देशमुख
६. भाषा विज्ञान के अधुनातन आयाम - डॉ. अंबादास देशमुख
७. सामान्य भाषा विज्ञान सैद्धांतिक विवेचन - डॉ. विद्यासागर दयाल
८. वर्ण विज्ञान - श्री. प्रभात रज्जन सरकार
९. भाषाशास्त्र तथा हिंदी भाषा की रूपरेखा - डॉ. देवेंद्र कुमार शास्त्री
१०. हिंदी व्याकरण प्रकाश - डॉ. महेंद्र कुमार राना
११. भाषा विज्ञान की रूपरेखा - द्वारका प्रसाद सक्सेना
१२. नागरी लिपि : रूप और सुधार - मोहन ब्रज
१३. हिंदी उद्भव विकास और रूप -हरदेव बाहरी
१४. भाषा और भाषिका - डॉ. देवीशंकर द्विवेदी
१५. सामान्य भाषा विज्ञान - डॉ. बाबूराम सक्सेना
१६. हिंदी भाषा एवं भाषा विज्ञान - डॉ. महावीरसरन जैन
१७. आधुनिक भाषा विज्ञान के सिद्धांत - डॉ. रामकिशोर शर्मा
१८. भाषा - सं. राजमल बोरा
१९. भाषा विज्ञान और हिंदी भाषा स्वरूप का विकास - डॉ. देवेंद्र सिंह
२०. भाषा विज्ञान - रमेश रावत
२१. भाषा और सूचना प्रद्यौगिकी - डॉ. अमर सिंह वधान
२२. भाषा प्रौद्योगिकी एवं भाषा प्रबंधन - रामगोपाल शर्मा
२३. हिंदी भाषा : कल और आज - पूरनचंद टंडन
२४. हिंदी भाषा, व्याकरण और रचना - डॉ. अर्जुन तिवारी
२५. भारतीय भाषा विज्ञान - आचार्य किशोरदास वाजपेयी
२६. आधुनिक भाषा विज्ञान - राजमणि शर्मा
२७. हिंदी भाषा : इतिहास और स्वरूप - राजमणि शर्मा
२८. भाषा और प्रौद्योगिकी - डॉ. विनोद प्रसाद
२९. भाषा शिक्षण - रवींद्रनाथ श्रीवास्तव

३०. हिंदी भाषा का इतिहास - डॉ. भोलानाथ तिवारी
३१. हिंदी भाषा की संरचना - डॉ. भोलानाथ तिवारी
३२. राजभाषा हिंदी - कैलाशचंद्र भाटिया
३३. भाषा की उत्पत्ति, रचना और विकास - विनोद दिवाकर
३४. हिंदी व्याकरण - कामता प्रसाद गुरु
३५. हिंदी वर्तनी का विकास - अनिता गुप्ता
३६. हिंदी का विश्व संदर्भ - डॉ. करुणाशंकर उपाध्याय
३७. हिन्दी भाषा एक अवाध प्रवाह- डॉ. सुमन सिंह
३८. देवनागरी विमर्श-सं.शैलेंद्रकुमार शर्मा

Semester - I (प्रथम सत्र)

Course Code : PAHIN 107

प्रश्न पत्र - ७

प्राचीन और मध्यकालीन काव्य

(Ancient and Medieval Poetry)

कुल श्रेयांक**(Credit) = 6**

***प्राचीन और मध्यकालीन काव्य :**संपादन - हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय,मुंबई
राधाकृष्ण प्रकाशन, दरियागंज, नई दिल्ली-11002

इकाई एकश्रेयांक - २

***बीसल देव रास**

व्याख्या हेतु छंद : 6 ,11,16,19,26,30,32,36,38,
39,41,45,52,60,65,69,71,74,
82,96,105,108,113,124,125कुल = 25

इकाई दोश्रेयांक - २

*** कबीर**

व्याख्या हेतु पद :1 ,3,8 ,11 ,14 ,21 ,39 ,41 ,43 ,47,57 ,64
66 ,79 ,87,94,97,117 ,130,134 ,139
147 ,156 ,163 ,168 कुल = 25

इकाई तीन और चारश्रेयांक - २

***पद्मावत**

व्याख्या हेतु खंड : १. सिंहल द्वीप वर्णन खंड
२. नागमती वियोग खंड

Semester - II (द्वितीय सत्र)

Course Code : PAHIN 108

प्रश्न पत्र - ८

प्राचीन और मध्यकालीन काव्य

(Ancient and Medieval Poetry)

कुल श्रेयांक**(Credit) = 6**

***प्राचीन और मध्यकालीन काव्य :**संपादन - हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय,मुंबई राधाकृष्ण प्रकाशन, दरियागंज, नई दिल्ली-11002

इकाई एक **श्रेयांक - २**

*भ्रमर गीत सार

व्याख्या हेतु पद : 1,4,7,9,11,16,26,38,42,51,57,
64,90,95,105,115,131,138,143,157,
177,196,200,279,316कुल = 25

इकाईदो और तीन **श्रेयांक -३**

*श्रीरामचरितमानस - अयोध्याकाण्ड

व्याख्या हेतु दोहे : 216से240

कुल = 25

इकाई चार **श्रेयांक - १**

*मीराँबाई

व्याख्या हेतु पद : 1,3,18,19,20,22,23,31,33,34,36,
37,38,39,41,46,49,53,56,69,70,
76,90,156,159 कुल = 25

संदर्भ ग्रंथ : (प्रश्न पत्र ७ और ८)

१. कबीर की विचारधारा - डॉ. गोविंद त्रिगुणायत
२. कबीर ग्रंथावली - डॉ. एल. बी. राम 'अनंत'
३. कबीर : व्यक्तित्व एवं सिद्धांत - डॉ. सरनाम सिंह
४. कबीर का रहस्यवाद - डॉ. रामकुमार वर्मा
५. कबीर साहित्य की परख - आचार्य परशुराम चतुर्वेदी
६. जायसी एवं उनका काव्य - डॉ. शिवसहाय पाठक
७. जायसी का पद्मावत : काव्य और दर्शन - डॉ. गोविंद त्रिगुणायत
८. जायसी - डॉ. विजयदेव नारायण साही
९. तुलसीदास : आधुनिक वातायन से - डॉ. रमेश कुंतल 'मेघ'
१०. जायसी का काव्य शिल्प - डॉ. दर्शनलाल सेठी
११. तुलसीदास और उनका युग - डॉ. राजपति दीक्षित
१२. रामचरितमानस में अलंकार योजना - डॉ. वचनदेव कुमार
१३. मध्यकालीन कवि और कविता - डॉ. रतनकुमार पांडेय
१४. कालजयी संत तुलसीदास - डॉ. उमापति दीक्षित
१५. तुलसी काव्य में विविध आयाम - डॉ. उमापति दीक्षित
१६. मध्यकालीन काव्य : चिंतन और संवेदना - डॉ. करुणाशंकर उपाध्याय
१७. विविधा - डॉ. करुणाशंकर उपाध्याय
१८. साहित्य और संस्कृति के सरोकार - डॉ. करुणाशंकर उपाध्याय
१९. रीतिकालीन काव्य परंपरा में पद्मावत - डॉ. द्वारिकानाथ राय
२०. मध्ययुगीन हिंदी साहित्य में नारी भावना - डॉ. उषा पांडेय
२१. रीति परंपरा के प्रमुख आचार्य - डॉ. सत्यदेव चौधरी
२२. हिंदी काव्य में शृंगार परंपरा और बिहारी - डॉ. गणपतिचंद्र गुप्त
२३. हिंदी रीतिकालीन काव्य पर संस्कृत काव्य का प्रभाव - डॉ. दयानंद शर्मा
२४. मीरा और मीरा - महादेवी वर्मा
२५. भक्तिमती मीराबाई : जीवन और काव्य - लालबहादुर सिंह चौहान
२६. कबीर एवं तुकाराम का तुलनात्मक अध्ययन - डॉ. बालकवि सुरंजे
२७. वाल्मीकि एवं तुलसी के नारी पात्र - डॉ. संतोष मोटवानी
२८. भक्ति साहित्य में विश्वबंधुत्व की भावना - सं. डॉ. अनिल सिंह
२९. रहीम काव्य मेँ पुराख्यान - डॉ. मोहसीन खान

Examination

1. External Examination (Semester and Examination) Total Marks – 60

2. Internal Examination (आंतरिक परीक्षण) Total Marks – 40

पुस्तक समीक्षा / प्रकल्प	- २० अंक
प्रस्तुतीकरण / रचनात्मक कार्य	- १० अंक
कक्ष शिक्षण के दौरान सहभागिता	- ०५ अंक
शिष्टाचार एवं समग्र आचरण	- ०५ अंक

एम. ए. (प्रथम वर्ष) सेमेस्टर I एवं II

प्रश्नपत्र का प्रारूप

Course पाठ्यक्रम १ से ६ तक

प्रश्न १ - पूछे गए ४ प्रश्नों में से २ प्रश्नों के उत्तर अपेक्षित	- ४० अंक
प्रश्न २ - पूछे गए ४ टिप्पणियों में से २ के उत्तर अपेक्षित	- १० अंक
प्रश्न ३ - अ) ०५ अतिलघूत्तरी प्रश्न	- ०५ अंक
ब) ०५ बहु विकल्पीय प्रश्न	- ०५ अंक
	कुल योग - ६० अंक

Course पाठ्यक्रम ७ एवं ८

प्रश्न १ -संदर्भ सहित व्याख्या (तीनों पुस्तकों में से) ०२ प्रश्नों के उत्तर अपेक्षित	- २० अंक
प्रश्न २ -दीर्घोत्तरी प्रश्न (तीनों पुस्तकों से) ०२ प्रश्नों के उत्तर अपेक्षित	- ३० अंक
प्रश्न ३ -अ) अतिलघूत्तरी प्रश्न (तीनों पुस्तकों से)	- ०५ अंक
ब) बहु विकल्पीय प्रश्न	- ०५ अंक

एम. ए. प्रथम एवं द्वितीय वर्ष

प्रत्येक प्रश्न पत्र पर चार व्याख्यान प्रति सप्ताह

१६ × ४ = ६४ व्याख्यान

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University of Mumbai

No. UG/34 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, the Head University Departments and Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/71 of 2018-19, dated 6th July, 2018 relating to the revised syllabus as per (CBCS) for the M.A. in Hindi (Sem. I to IV).

They are hereby informed that the recommendations made by the Board of Studies in Hindi at its meeting held on 9th April, 2019 have been accepted by the Academic Council at its meeting held on 15th April, 2019 **vide** item No. 4.27 and that in accordance therewith, the revised syllabus as per the (CBCS) for the M.A. (Sem. III & IV) in Hindi has been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Ajay Deshmukh)
REGISTRAR

MUMBAI – 400 032
17th June, 2019

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.27/15/04/2019

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No. UG/34 -A of 2019 MUMBAI-400 032 17th June, 2019

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Humanities,
2) The Chairman, Board of Studies in Hindi,
3) The Director, Board of Examinations and Evaluation,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Director, Board of Students Development,
6) The Co-ordinator, University Computerization Centre,

(Dr. Ajay Deshmukh)
REGISTRAR

UNIVERSITY OF MUMBAI
Revised Syllabus and Pattern of Question Paper in the Subject of Hindi At the M.A. - II Examination

Choice Based CreditSystem (CBCS)

Semester III & IV

(With effect from the Academic Year :2019-2020)

UNIVERSITY OF MUMBAI

Revised Syllabus and
Pattern of Question Paper in the
Subject of
Hindi
at the
M.A. – II
Examination
Choice Based CreditSystem (CBCS)
Semester III and IV
(With effect from the Academic Year :2019-2020)

हिन्दी अध्ययन मंडल

अध्यक्ष : डॉ. अनिल सिंह

1. डॉ. करुणाशंकर उपाध्याय(सदस्य)
2. डॉ. हूबनाथ पाण्डेय(सदस्य)
3. डॉ. विद्या शिंदे (सदस्य)
4. डॉ. शीला आहुजा (सदस्य)
5. डॉ. चित्रा गोस्वामी(सदस्य)
6. डॉ. संतोष मोटवानी(सदस्य)
7. डॉ. प्रकाश धुमाल(सदस्य)
8. डॉ. गौतम सोनकांबले(सदस्य)
9. डॉ. मोहसिन ख़ान(सदस्य)

UNIVERSITY OF MUMBAI

Revised Syllabus andPattern of Question Paper in the Subject of Hindi at the

M.A. – II

Examination

CHOICE BASED CREDIT SYSTEM (CBCS)

Semester III and IV

(With effect from the AcademicYear : 2019-2020)

पाठ्यक्रम समिति

1.डॉ. करुणाशंकर उपाध्याय (समन्वयक)

2.डॉ. विष्णु सरवदे (सदस्य)

3.डॉ. दत्तात्रय मुरुमकर (सदस्य)

4.डॉ. संतोष मोटवानी (सदस्य)

5.डॉ. बालकवि सुरंजे (सदस्य)

6.डॉ. उमेश शुक्ल (सदस्य)

7.डॉ. सुनील चव्हाण (सदस्य)

8.डॉ. महेश दवंगे (सदस्य)

मुंबई विश्वविद्यालय, मुंबई

एम. ए. (द्वितीय वर्ष) सेमेस्टर **III** and **IV**

M.A. Syllabus According to Choice Based Credit System

Semester - III (तृतीय सत्र)

Course Code : PAHIN 109

प्रश्न पत्र - ९

आधुनिक गद्य

(Modern Prose)

कुल श्रेयांक**(Credit) = 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक -२**

१. गोदान (उपन्यास) - प्रेमचंद

राजकमल प्रकाशन, नई दिल्ली

इकाई तीन - **श्रेयांक -२**

२. कल्पलता (निबंध) - हजारीप्रसाद द्विवेदी

राजकमल प्रकाशन, नई दिल्ली

(**चयनित निबंध**- नाख़ून क्यों बढ़ते है, आम फिर बौरा गये, शिरीष के फूल, भगवान महाकाल का कुंठ नृत्य, महात्मा के महाप्रयाण के बाद, ठाकुरजी की बटोर, संस्कृतियों का संगम, समालोचक की डाक, महिलाओं की लिखी कहानियाँ, केतुदर्शन)

इकाई चार - **श्रेयांक -२**

३. कथा मंजरी (कहानियाँ) - संपादक - महेंद्र कुलश्रेष्ठ

राजपाल प्रकाशन, नई दिल्ली

(सभी कहानियाँ)

संदर्भ ग्रंथ : (प्रश्न पत्र - ९)

१. हिंदी साहित्य का इतिहास - आ. रामचंद्र शुक्ल
२. हिंदी उपन्यास का इतिहास - डॉ. गोपाल राय
३. हिंदी उपन्यास स्थिति और गति - चंद्रकांत बांदीवडेकर
४. शांतिनिकेतन से शिवालिक - डॉ. शिवप्रसाद सिंह
५. दूसरी परंपरा की खोज - डॉ. नामवर सिंह
६. व्योमकेश दरवेश, हजारीप्रसाद द्विवेदी - विश्वनाथ त्रिपाठी
७. प्रेमचंद - नंददुलारे वाजपेयी
८. प्रेमचंद और उनका युग - डॉ. रामविलास शर्मा
९. कहानी : समकालीन चुनौतियाँ - शंभु गुप्त
१०. हिंदी कहानियों की शिल्प विधि का विकास - डॉ. सत्यपाल चुघ
११. समकालीन कहानी : नया परिप्रेक्ष्य - डॉ. पुष्पपाल सिंह
१२. कहानी का इतिहास - गोपाल राय
१३. साहित्य, समय और संवेदना - डॉ. दत्तात्रय मुरुमकर
१४. हिंदी साहित्य संवेदनाओं की विवेचना - डॉ. सचिन गपाट
१५. समकालीन कहानी संवेदना का साक्षी - सं. डॉ. मनप्रीत कौर
१६. आंचलिकता और हिंदी उपन्यास - सं. डॉ. अनिल सिंह
१७. साहित्य और मानवतावाद - सं. डॉ. अनिल सिंह
१८. ललित निबंध : विधा की बात - डॉ.हूबनाथ

Semester - III (तृतीय सत्र)

Course Code : PAHIN 110

प्रश्न पत्र - १०

आधुनिक काव्य

(Modern Poetry)

कुल श्रेयांक**(Credit) = 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक - २**

१. कामायनी - जयशंकर प्रसाद

लोकभारती प्रकाशन, इलाहाबाद

(चिंता, श्रद्धा और इड़ा)

इकाई तीन **श्रेयांक - २**

२. आँगन के पार द्वार - अज्ञेय

भारतीय ज्ञानपीठ प्रकाशन, नई दिल्ली

(बना दे चितेरे, चिड़िया ने, अंतःसलिला, असाध्यवीणा)

इकाई चार **श्रेयांक - २**

३. प्रतिनिधि कविताएँ - मुक्तिबोध - सं. अशोक वाजपेयी

राजकमल प्रकाशन, नई दिल्ली

(भूल ग़लती, अंधेरे में, ब्रह्मराक्षस)

संदर्भ ग्रंथ : (प्रश्न पत्र - १०)

१. कामायनी का पुनर्मूल्यांकन - डॉ. रामस्वरूप चतुर्वेदी
२. कामायनी एक पुनर्विचार - मुक्तिबोध
३. कामायनी के अध्ययन की समस्याएँ - डॉ. नगेंद्र
४. कामायनी मूल्यांकन और मूल्यांकन - डॉ. इंद्रनाथ मदान
५. आधुनिक कविता का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय
६. अज्ञेय की कविता एक मूल्यांकन - डॉ. चंद्रकांत बांदिवडेकर
७. अज्ञेय की काव्यतितीर्षा - डॉ. नंदकिशोर आचार्य
८. अज्ञेय की कविता परंपरा और प्रयोग - रमेश ऋषिकल्प
९. प्रसाद निराला अज्ञेय - डॉ. रामस्वरूप चतुर्वेदी
१०. मुक्तिबोध की काव्यदृष्टि - डॉ. सुरेश रितुपर्ण
११. निराला और मुक्तिबोध : चार लंबी कविताएँ - नंदकिशोर नवल
१२. मुक्तिबोध : ज्ञान और संवेदना - डॉ. नंदकिशोर नवल
१३. मुक्तिबोध की कविताएँ - डॉ. अशोक चक्रधर
१४. अज्ञेय, चिंतन और साहित्य - प्रेमधन
१५. आधुनिक हिंदी प्रबंध काव्य में मिथक और नारी - डॉ. शीला आहूजा

Semester - III(तृतीय सत्र)
Course Code : PAHIN 111

प्रश्न पत्र - ११

विविध विमर्श एवं साहित्य

(Various Discourse and Literatutre)

कुल श्रेयांक**(Credit) = 6**

पाठ्य पुस्तकें

इकाई एक और दो **श्रेयांक - २**

१. झूला नट - उपन्यास (स्त्री विमर्श) - मैत्रेयी पुष्पा
राजकमल प्रकाशन, नयी दिल्ली

इकाई तीन **श्रेयांक - २**

२. अब और नहीं - कविता संग्रह (दलित विमर्श) - ओमप्रकाश वाल्मीकि
राधाकृष्ण प्रकाशन, नयी दिल्ली

चयनित कविताएँ :- (जो मेरा कभी नहीं हुआ, जाति, अँगूठे का निशान,
काले दिनों में, विस्फोट, मक़ड जाल, ज़हर, कथावाचक,
शब्द चुप नहीं हैं, अब और नहीं) = कुल १० कविताएँ

इकाई चार **श्रेयांक - २**

३. धूणी तपे तीर - उपन्यास (आदिवासी विमर्श) - हरिराम मीणा
साहित्य उपक्रम

संदर्भ ग्रंथ : (प्रश्न पत्र - ११)

१. हिंदी साहित्य का आधा इतिहास - डॉ. सुमन राजे
२. हिंदी उपन्यास का स्त्री - पाठ - डॉ. रोहिणी अग्रवाल
३. स्त्री लेखन : स्वप्न और संकल्प - डॉ. रोहिणी अग्रवाल
४. हिंदी कथा साहित्य का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय
५. आवाँ विमर्श - डॉ. करुणाशंकर उपाध्याय
६. चित्रा मुद्गल के कथा साहित्य में संघर्ष और संचेतना - अंजु दुआ जैमिनी
७. स्त्री - विमर्श की उत्तर गाथा - अनामिका
८. भारतीय दलित आंदोलन का इतिहास - मोहनदास नैमिशराय
९. दलित साहित्य का सौंदर्यशास्त्र - ओमप्रकाश वाल्मीकि
१०. दलित साहित्य : अनुभव संघर्ष एवं यथार्थ - ओमप्रकाश वाल्मीकि
११. मुख्यधारा और दलित साहित्य - ओमप्रकाश वाल्मीकि
१२. मात्र देह नहीं है औरत - मृदुला सिन्हा
१३. आदिवासी लेखन : एक उभरती चेतना - रमणिका गुप्ता
१४. आदिवासी साहित्य यात्रा - सं. रमणिका गुप्ता
१५. स्त्री - विमर्श का कालजयी इतिहास - सं. संजय गर्ग
१६. अस्मिता बोध के विविध आयाम - कविता भाटिया
१७. हिंदी साहित्य में वर्णित सांप्रदायिकता का स्वरूप - डॉ. दत्तात्रय मुरुमकर
१८. पिंजरे के परिदृश्य का बाहर का आत्मकथन - डॉ. दत्तात्रय मुरुमकर
१९. भूमंडलीकरण और हिंदी कहानी - डॉ. दत्तात्रय मुरुमकर
२०. दलित साहित्य संवेदनाओं का अनुशीलन - डॉ. हणमंतराव पाटील, डॉ.सचिन गपाट
२१. इक्कीसवींसदी के प्रथम दशक की आंबेडकरवादी कविता का अनुशीलन-
-डॉ.प्रकाश कृष्णदेव धुमाल
२२. कथाकार जगदीशचंद्र - डॉ. संतोष मोटवानी
२३. स्त्री अस्मिता और समकालीन साहित्य - सं. डॉ. अनिल सिंह

Semester - III(तृतीय सत्र)
Course Code : PAHIN 112.1

अंतः अनुशासनिक अध्ययन

(Inter Disciplinary Study)

प्रश्न पत्र - १२.१

भारतीय साहित्य

(Indian Literature)

कुल श्रेयांक**(Credit) = 6**

इकाई एक और दो **श्रेयांक - २**

१. छह बीघा ज़मीन (उपन्यास)- फ़क़ीरमोहन सेनापति
साहित्य अकादमी, नई दिल्ली

इकाई तीन **श्रेयांक - २**

२. दो खिड़कियाँ (साहित्यिक संग्रह) - अमृता प्रीतम
राजकमल प्रकाशन, नई दिल्ली

इकाई चार श्रेयांक - २

३. नागमंडल (नाटक)- गिरीश कारनाड
राजकमल प्रकाशन, नई दिल्ली

संदर्भ : (प्रश्न पत्र - १२.१)

१. भारतीय साहित्य की भूमिका - डॉ. रामविलास शर्मा
२. परंपरा का मूल्यांकन - डॉ. रामविलास शर्मा
३. भारतीय साहित्य - सं. मूलचंद गौतम
४. भारतीय साहित्य : स्थापनाएँ और प्रस्तावनाएँ - के. सच्चिदानंद
५. अप्रतिम भारत - सं. डॉ. करुणाशंकर उपाध्याय
६. अतुल्य भारत - सं. वीरेंद्र याज्ञनिक
७. भारतीय साहित्य : आशा और आस्था - डॉ. आरसु

Semester - III(तृतीय सत्र)
Course Code : PAHIN 112.2

अंतः अनुशासनिक अध्ययन

(Inter Disciplinary Study)

प्रश्न पत्र - १२.२

लोकसाहित्य

(Folk Literature)

कुल श्रेयांक**(Credit) = 6**

इकाई एक **श्रेयांक - २**

१. 'लोक' शब्द की व्युत्पत्ति एवं अर्थ, लोकतत्त्व अर्थ एवं स्वरूप विवेचन, लोकसाहित्य का स्वरूप - परिभाषाएँ एवं विशेषताएँ - लोकसाहित्य और शिष्टसाहित्य में साम्य-भेद (लोकसाहित्य का क्षेत्र)

२. लोकवार्ता - परिभाषा एवं स्वरूप विवेचन, लोकवार्ता और लोकसाहित्य का संबंध

इकाई दो **श्रेयांक - २**

३. लोकसाहित्य का महत्त्व - सामाजिक, आर्थिक, नैतिक, धार्मिक, सांस्कृतिक, भाषाशास्त्रीय दृष्टियों से लोकसाहित्य के अधययन का महत्त्व

४. लोकगीत - परिभाषाएँ, विशेषताएँ और प्रेरणास्रोत, लोकगीत और शिष्टगीत में अंतर - लोकगीतों के वर्गीकरण की पद्धतियाँ, निम्नलिखित लोकगीतों का परिचय - सोहर, मुंडन, यज्ञोपवीत, विवाह, गौना आदि संस्कारों से संबंधित गीत, कजली होली, सावनगीत, करवाचौथ के गीत, पवाडा, लावनी

इकाई तीन **श्रेयांक -१**

५. लोकगाथा - परिभाषा, विशेषताएँ एवं स्वरूप, उत्पत्तिविषयक सिद्धांत, वर्गीकरण, किसी एक लोकगाथा का सामान्य परिचय

६. लोकनाट्य - परिभाषा, विशेषताएँ एवं स्वरूप, लोकनाट्य और शास्त्रीय नाटक में अंतर - भारतीय लोकनाट्य परंपरा का परिचय - रामलीला, रासलीला, यक्षगान, यात्रा, भवाई, खयाल, माच, नौटंकी, कुचिपुड़ी, तमाशा, ललित, गोंधळ

इकाई चार **श्रेयांक - १**

७. प्रवीण लोकसाहित्य - लोक सुभाषित, लोकोक्तियाँ, मुहावरे, कहावतें, पहेलियाँ, मुकरियाँ, सूक्तियाँ, ढकोसले, चुटकुले, मंत्र, टोना आदि का परिचय

८. लोकसाहित्य में सामाजिक - सांस्कृतिक एवं धार्मिक जीवन का चित्रण| महाराष्ट्र के लोकसाहित्य में सामाजिक सांस्कृतिक एवं धार्मिक झाँकियाँ

संदर्भ :

१. लोकसाहित्य की भूमिका - डॉ. कृष्णदेव उपाध्याय

२. लोकसाहित्य सिद्धांत और प्रयोग - डॉ. श्रीराम शर्मा

३. लोकवार्ता और लोकगीत - डॉ. सत्येंद्र

४. लोकसाहित्य का अध्ययन - डॉ. त्रिलोचन पांडेय

५. महाराष्ट्र का हिंदी लोकनाट्य - डॉ. कृष्ण दिवाकर

६. लोकगीतों का विकासात्मक अध्ययन - डॉ. कुलदीप

७. लोकगीतों की सांस्कृतिक पृष्ठभूमि - डॉ. विद्या चौहान

८. हमारे संस्कार गीत - राजरानी वर्मा

९. लोकनाट्य परंपरा और पंक्तियाँ - डॉ. महेंद्र भनावत

१०. भारत के लोकनाट्य - डॉ. शिवकुमार

११. लोकसाहित्य - इंद्रदेव सिंह

१२. लोकसाहित्य विमर्श - डॉ. श्याम परमार

Semester - III (तृतीय सत्र)
Course Code : PAHIN 112.3
(अंतः अनुशासनिक अध्ययन)

प्रश्न पत्र -१२.३

मराठी संतों का हिंदी काव्य
(Hindi Poetry of Marathi Saints)
कुल श्रेयांक **(Credit)= 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक - ३**

१. **संत नामदेव की हिन्दी पदावली** - संपा. डॉ. भगीरथ मिश्र, डॉ. राजनारायण मौर्य

प्रकाशक- हिन्दी विभाग पुणे विश्वविद्यालय, पुणे- 411007

(पद संख्या - ०१, ०३, ०९, १२, १५, १८, १९, २३, ३२, ४२, ४८, ५१, ६४, ६५, ७४, ७६,९२, ९६, ९७, १०५) कुल = २० पद

इकाई तीन और चार **श्रेयांक -३**

२. **तुकाराम पदावली** - प्रा. वेदकुमार 'वेदांलकार'

विकास प्रकाशन, उस्मानाबाद

(पद संख्या -९, ३६ ,५१, ६०, ७० ,८५, १०८, ११४ , १५१, १६४, १९६, २०१, २०३, २७८, २९३, ३०२, ३३३, ३७९, ४१७, ४४६) कुल = २० पद

संदर्भ ग्रंथ : (प्रश्न पत्र -१२.३)

१. संत नामदेव और हिंदी पद साहित्य - डॉ. रामचंद्र मिश्र
२. हिंदी निर्गुण काव्य का प्रारंभ और संत नामदेव की कविता - डॉ. शं. के. आडकर
३. हिंदी और मराठी वैष्णव संत साहित्य का तुलनात्मक अध्ययन - डॉ. न. चिं. जोगळेकर
४. हिंदी और मराठी का निर्गुण संत काव्य - डॉ. प्रभाकर माचवे
५. मराठी का भक्ति साहित्य - डॉ. भी. गो. देशपांडे
६. मराठी संतों का सामाजिक कार्य - डॉ. वि. भा. कोलते
७. मराठी संतों की हिंदी वाणी - संपा. डॉ. आनंद प्रकाश दीक्षित
८. मराठी संत काव्याची सामाजिक फलश्रुति - श्री. गं.बा. सरदार
९. पाँच संत कवि - श्री. शं. गो. तुळपुळे
१०. मराठी संतों की हिंदी वाणी - डॉ. यु. म. पठाण
११. महाराष्ट्र के नाथपंथी कवियों का हिंदी काव्य - डॉ. अशोक कामत
१२. महाराष्ट्र के प्रमुख साधना संप्रदाय - डॉ. र. वा. बिवलकर
१३. हिन्दी के विकास में मराठी संतों का योगदान - डॉ. सी. एल. प्रभ

Semester - III (तृतीय सत्र)
Course Code : PAHIN 113.1
प्रश्न पत्र - 13.1

विशेष अध्ययन - जयशंकर प्रसाद

(Special Study – Jaishankar Prasad)

कुल श्रेयांक **(Credit)= 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक -२**

१. तितली (उपन्यास) - जयशंकर प्रसाद

लोकभारती प्रकाशन, इलाहाबाद

इकाई तीन **श्रेयांक -२**

२. जनमेजय का नागयज्ञ (नाटक) - जयशंकर प्रसाद

लोकभारती प्रकाशन, इलाहाबाद

इकाई चार **श्रेयांक -२**

३. प्रतिनिधि कहानियाँ (कहानी) - जयशंकर प्रसाद

राजकमल प्रकाशन, नई दिल्ली

(**चयनित कहानियाँ :** आकाशदीप**,** ममता, चूड़ीवाला, आँधी, मधुवा, घीसू, पुरस्कार, इंद्रजाल, छोटा जादूगर, गुंडा)

संदर्भ ग्रंथ : (प्रश्न पत्र -१३.१)

१. जयशंकर प्रसाद - आ. नन्ददुलारे वाजपेयी
२. आधुनिक साहित्य - आ. नन्ददुलारे वाजपेयी
३. जयशंकर प्रसाद वस्तु और कला - डॉ. रामेश्वरलाल खंडेलवाल
४. नाटककार जयशंकर प्रसाद - संपादक डॉ. सत्येन्द्र तनेजा
५. हिन्दी नाटक : उद्भव और विकास - डॉ. दशरथ ओझा
६. प्रसाद का काव्य - डॉ. प्रेमशंकर
७. हिन्दी कथा साहित्य का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय
८. आधुनिक हिंदी कविता का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय
९. गद्य सुमन - सं. डॉ. अनिल सिंह

Semester - III (तृतीय सत्र)
Course Code : PAHIN 113.2

प्रश्न पत्र -१३.२

विशेष अध्ययन - जैनेन्द्र
(Special Study – Jainendra)

कुल श्रेयांक **(Credit)= 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक -२**

१. त्यागपत्र - (उपन्यास)- जैनेंद्र कुमार
भारतीय ज्ञानपीठ, नई दिल्ली

इकाई तीन **श्रेयांक -२**

२. मुक्तिबोध - (उपन्यास)- जैनेन्द्र
भारतीय ज्ञानपीठ, नई दिल्ली

इकाई चार **श्रेयांक -२**

३. जैनेन्द की सर्वश्रेष्ठ कहानियाँ -सं. लीलाधर मंडलोई
भारतीय ज्ञानपीठ, नई दिल्ली

(**चयनित कहानियाँ** : **एक रात, खेल, अपना अपना भाग्य, रुकिया बुढ़िया, बाहुबली, जाह्नवी, पत्नी, पाजेब, दो सहेलियाँ, इनाम)**

संदर्भ ग्रंथ : (प्रश्न पत्र -१३.१)

१. निबन्धकार : जैनेन्द्र कुमार - डॉ. विष्णु सरवदे
२. हिन्दी उपन्यास : स्थिति और गति - डॉ. चंद्रकांत बांदिवडेकर
३. जैनेन्द्र के उपन्यास मर्म के तलाश - डॉ. चंद्रकांत बांदिवडेकर
४. हिन्दी कथा साहित्य का पुर्नपाठ - डॉ. करूणाशंकर उपाध्याय
५. आधुनिकता और हिन्दी उपन्यास - डॉ. इंद्रनाथ मदान
६. हिन्दी उपन्यास एक अंतरयात्रा - डॉ. रामदरश मिश्र
७. हिन्दी उपन्यास का इतिहास - डॉ. गोपाल राय
८. भूंमडलीकरण और हिन्दी उपन्यास - डॉ. पुष्पपाल सिंह

Semester - III (तृतीय सत्र)
Course Code : PAHIN 113.3

प्रश्न पत्र -१३.३

विशेष अध्ययन - कमलेश्वर
(Special Study – Kamleshwar)

कुल श्रेयांक **(Credit)= 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक -२**

१. डाक बंगला (उपन्यास)- कमलेश्वर

राजपाल एंड संस, नई दिल्ली

इकाई तीन **श्रेयांक -२**

२. दस प्रतिनिधि कहानियाँ - कमलेश्वर

किताबघर प्रकाशन, नई दिल्ली

(चयनित कहानियाँ- कोहरा, राजा निरंबसिया, चप्पल, गर्मियों के दिन, खोई हुई दिशाएँ, नीली झील, इंतजार, दिल्ली में एक मौत, बयान)

इकाई चार **श्रेयांक -२**

३. कितने पाकिस्तान (उपन्यास)- कमलेश्वर

राजपाल एंड संस प्रकाशन, दिल्ली

संदर्भ ग्रंथ : (प्रश्न पत्र -१३.२)

१. हिन्दी कथा साहित्य का पुर्नपाठ - डॉ. करूणाशंकर उपाध्याय
२. कथाकार कमलेश्वर - डॉ. विष्णु सरवदे
३. आधुनिकता और हिन्दी उपन्यास - डॉ. इंद्रनाथ मदान
४. हिन्दी उपन्यास एक अंतरयात्रा - डॉ. रामदरश मिश्र
५. हिन्दी उपन्यास का इतिहास - डॉ. गोपाल राय
६. कमलेश्वर का कथा साहित्य - डॉ. मंजुला देसाई

Semester - III (तृतीय सत्र)
Course Code : PAHIN 113.4

प्रश्न पत्र -१३.४

विशेष अध्ययन - चित्रा मुद्गल
(Special Study –Chitra Mudgal)

कुल श्रेयांक **(Credit)= 6**

पाठय - पुस्तकें :

इकाई एक और दो **श्रेयांक -२**

१. एक ज़मीन अपनी (उपन्यास) - चित्रा मुद्गल
राजकमल प्रकाशन, नईदिल्ली

इकाई तीन **श्रेयांक -२**

२. पोस्ट बॉक्स नं. 203 नालासोपारा (उपन्यास) - चित्रा मुद्गल
सामयिक प्रकाशन, नई दिल्ली

इकाई चार **श्रेयांक -२**

३. पेंटिंग अकेली है (कहानी संग्रह) - चित्रा मुद्गल
सामयिक प्रकाशन, नई दिल्ली

संदर्भ ग्रंथ : (प्रश्न पत्र -१३.३)

१. चित्रा मुद्गल : एक अध्ययन - डॉ. के. वजना
२. चित्रा मुद्गल के कथा साहित्य में संघर्ष और संचेतना - डॉ. अंजु दुआ जैमिनी
३. आवां विमर्श - डॉ. करुणाशंकर उपाध्याय
४. हिंदी कथा साहित्य का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय
५. विविधा - डॉ. करुणाशंकर उपाध्याय
६. साहित्य और संस्कृति के सरोकार - डॉ. करुणाशंकर उपाध्याय
७. सृजन के अनछुए संदर्भ - सं. डॉ. करुणाशंकर उपाध्याय
८. हिंदी साहित्य : मूल्यांकन और मूल्यांकन - डॉ. करुणाशंकर उपाध्याय
९. हिंदी उपन्यास का स्त्री-पाठ - डॉ. रोहिणी अग्रवाल
१०. स्त्री-लेखन : स्वप्न और संकल्प - डौ. रोहिणी अग्रवाल
११. समकालीन कहानी : नया परिप्रेक्ष्य - डॉ. पुष्पपाल सिंह
१२. आधी दुनिया का सच - डॉ. कुमुद शर्मा
१३. स्त्री-विमर्श की उत्तर-गाथा - अनामिका
१४. मात्र देह नहीं है औरत - मृदुला सिन्हा
१५. अपने होने का अर्थ - रेखा किस्तवार
१६. अस्मिता बोध के विविध आयाम - कविता भाटिया
१७. हिंदी कथा साहित्य : एक दृष्टि - डॉ. सत्यकेतु संस्कृत
१८. 21वीं शती का हिंदी उपन्यास - डॉ. पुष्पपाल सिंह
१९. भूमंडलीकरण और हिंदी उपन्यास - डॉ. पुष्पपाल सिंह
२०. हिंदी उपन्यास का इतिहास - डॉ. गोपाल राय
२१. समकालीन साहित्य और भूमंडलीकरण - सं. डॉ. अनिल सिंह

Semester - III (तृतीय सत्र)
Course Code : PAHIN 113.5

प्रश्न पत्र -१३.५

विशेष अध्ययन - मोहनदास नैमिशराय
(Special Study – Mohandas Naimishrai)

कुल श्रेयांक **(Credit)= 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक -२**

१. ज़ख़्म हमारे (उपन्यास) - मोहनदास नैमिशराय

वाणी प्रकाशन, नई दिल्ली

इकाई तीन **श्रेयांक -२**२.

चुनी हुई कहानियाँ (कहानी संग्रह) - मोहनदास नैमिशराय

अनन्य प्रकाशन, नई दिल्ली

(चयनित कहानियाँ : आवाज़ें, नया पड़ोसी, बरसात, आधा सेर घी,सिमटा हुआ आदमी,इज़्ज़त, यात्रा, बात सिर्फ़ इतनी सी, शोध के बहाने, हेरिटेज)

इकाई चार **श्रेयांक -२**

३. हेलो कॉमरेड (नाटक) - मोहनदास नैमिशराय

राजकमल प्रकाशन, नईदिल्ली

संदर्भ ग्रंथ : (प्रश्न पत्र -१३.४)

१. साहित्य और संस्कृति के सरोकार - डॉ. करुणाशंकर उपाध्याय
२. भारतीय दलित आंदोलन का इतिहास - मोहनदास नैमिशराय
३. दलित साहित्य का सौंदर्य-शास्त्र - ओमप्रकाश वाल्मीकि
४. दलित साहित्य : अनुभव, संघर्ष और यथार्थ - ओमप्रकाश वाल्मीकि
५. हिन्दी कथा साहित्य का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय
६. हिंदी दलित साहित्य का वैश्विक स्वरूप - डॉ. विष्णु सरवदे
७. हिंदी दलित कहानियों का वैश्विक स्वरूप - डॉ. विष्णु सरवदे
८. पिजरें के परिदृश्य के बाहर का आत्मकथन - डॉ. दत्तात्रय मुरुमकर
९. दलित साहित्य का सौन्दर्यशास्त्र और दलित कविता - डॉ. विष्णु सरवदे

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 114.1
प्रश्न पत्र -१४.१

तुलनात्मक साहित्य (सैद्धांतिक)
Comparative Study – Theoratical
कुल श्रेयांक (Credit)= 6

इकाई एक **श्रेयांक - १**

१. तुलनात्मक साहित्य का स्वरूप
- १.१. अर्थ, परिभाषा एवं व्युत्पत्ति
- १.२. तुलनात्मक साहित्यिक अध्ययन की परंपरा
  - १.२.१. भारतीय
  - १.२.२. पाश्चात्य

इकाई दो **श्रेयांक - १**

२.१. तुलनात्मक अध्ययन के तत्व

२.२. तुलनात्मक साहित्य के प्रमुख स्कूल

इकाई तीन **श्रेयांक - २**

३. तुलनात्मक अध्ययन के सिद्धांत
- ३.१. तुलनात्मक साहित्यिक अध्ययन के प्रतिमान
- ३.२. तुलनात्मक अध्ययन की उपयोगिता एवं महत्त्व
- ३.३. तुलनात्मक अध्ययन की समस्याएँ
- ३.४. तुलनात्मक साहित्य के मूल्य

इकाई चार **श्रेयांक - २**

४. तुलनात्मक साहित्य की प्रविधि एवं प्रभाव
- ४.१. तुलनात्मक साहित्य की प्रविधि
- ४.२. तुलनात्मक अध्ययन की दिशाएँ
- ४.३. तुलनात्मक साहित्य में कथ्य-मीमांसा
- ४.४. तुलनात्मक साहित्य में रूप एवं शिल्प-मीमांसा
- ४.५. तुलनात्मक साहित्यिक अध्ययन का प्रभाव-क्षेत्र

संदर्भ ग्रंथ : (प्रश्न पत्र १४.१)

१. तुलनात्मक साहित्य का विश्वकोष - सं. डॉ. `पांडेय' शशिभूषण `शीतांशु'
२. तुलनात्मक साहित्य की प्रविधि - डॉ. इंदुनाथ चौधरी
३. साहित्य-दर्शन - आचार्य जानकीवल्लभ शास्त्री
४. तुलनात्मक साहित्य की भूमिका - डॉ. इंदुनाथ चौधरी
५. तुलनात्मक साहित्य : नये सिद्धांत और उपयोजन - आनंद पाटील (अनु. चंद्रलेखा)
६. तुलनात्मक भारतीय साहित्य : अवधारणा और मूल्य - प्रो. ऋषभदेव शर्मा
७. भारतीय साहित्य की भूमिका - डॉ. रामविलास शर्मा
८. परंपरा का मूल्यांकन - डॉ. रामविलास शर्मा
९. भारत : इतिहास और संस्कृति - गजानन माधव मुक्तिबोध
१०. भारतीय साहित्य : स्थापनाएँ और प्रस्तावनाएँ - के. सच्चिदानंद
११. आधुनिक साहित्य - नंददुलारे वाजपेयी

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 114.2

प्रश्न पत्र -१४.२

मराठी से हिंदी में अनूदित साहित्य का अध्ययन

(Study of Hindi Literature Translated form Marathi)

कुल श्रेयांक **(Credit)= 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक - २**

१. वाइरस (उपन्यास) - जयंत विष्णु नार्लीकर
(पेपर बैक) राजकमल प्रकाशन, नई दिल्ली

इकाई तीन **श्रेयांक - २**

२. यह जनता अमर है (विंदाकरंदीकर की कविताएँ) - अनुवादचंद्रकांतबांदिवडेकर
संवाद प्रकाशन, मेरठ (उ.प्र)

(**चयनित कविताएँ :**माड़ वृक्षों, पश्चिम सागर, जाड़े की
गुनगुनी धूप चुकी दिशाएँ फिर भी, हे ब्रह्ममन्त, बकी,
जबरदस्त, विद्रोही आत्माएँ, लेकिन श्रेय तुम्हारा ही है,
यह जनता अमर है।)

इकाई चार **श्रेयांक -२**

३. घासीराम कोतवाल (नाटक) - विजय तेंडुलकर, अनुवाद - वसंत देव
(पेपर बैक)राजकमल प्रकाशन, नई दिल्ली

संदर्भ ग्रंथ : (प्रश्न पत्र १४.२)

१. आधुनिक कविता का पुनर्पाठ - डॉ. करुणाशंकर उपाध्याय
२. आत्मचरित (मराठी) - डॉ. जयंत नार्लीकर
३. तुलनात्मक साहित्य : सैद्धांतिक परिप्रेक्ष्य - सं. डॉ. हनुमान प्रसाद शुक्ल
४. मराठी साहित्य परिदृश्य - डॉ. चंद्रकांत बांदिवडेकर
५. भारतीय साहित्य की भूमिका - डॉ. रामविलास शर्मा
६. सृजन का अंतर्पाठ - डॉ. कृष्णदत्त पालीवाल
७. भारतीय साहित्य - मूलचंद गौतम
८. रंगमंच का सौन्दर्यशास्त्र - देवेन्द्रराज अंकुर
९. रंगमंच के सिद्धांत - महेश आनंद, देवेन्द्रराज अंकुर
१०. घासीराम कोतवाल की शिल्पविधि - दिल्ली विश्वविद्यालय का प्रकाशन
११. शब्दसृष्टि का चंद्रकांत बांदिवडेकर विशेषांक - संपा. प्रा. मनोहर, डॉ. विजया
१२. हिंदी तथा मराठी साहित्य का तुलनात्मक अध्ययन - डॉ. मिर्ज़ा असदबेग़
१३. हिंदी साहित्य तथा भाषा को महाराष्ट्र की देन - डॉ. रणजीत जाधव
१४. हिंदी और मराठी उपन्यास कोश - डॉ. हरिदास
१५. विविधा - डॉ. करुणाशंकर उपाध्याय
१६. अप्रतिम भारत - स. डॉ. करुणाशंकर उपाध्याय
१७. साहित्य और संस्कृति के सरोकार - डॉ. करुणाशंकर उपाध्याय
१८. हिंदी साहित्य : मूल्यांकन और मूल्यांकन - डॉ. करुणाशंकर उपाध्याय
१९. अतुल्य भारत - सं. वीरेन्द्र याज्ञनिक
२०. भारतीय साहित्य : आशा और आस्था - डॉ. आरसु
२१. भारतीय उपन्यास की दिशाएँ - डॉ. सत्यकाम

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 114.3

प्रश्न पत्र -१४.३

उर्दू से हिंदी में अनूदित साहित्य का अध्ययन

(Study of **Urdu Literature Translated** in **Hindi)**

कुल श्रेयांक **(Credit)= 6**

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक - २**

उमराव जान 'अदा' (उपन्यास)- मिर्ज़ा हादी 'रूस्वा'

राजकमल प्रकाशन, नई दिल्ली

इकाई तीन **श्रेयांक-२**

भारतीय उर्दू कहानियाँ (कहानी) - संपा. नासिरा शर्मा

लोकभारती प्रकाशन, इलाहाबाद

(**चयनित कहानियाँ** : वह-रशीदजहाँ, पूरे चाँद की रात-कृशन चंदर, नन्हीं की नानी-इस्मत चुगताई, लाजवंती- रजिंदर सिंह बेदी, बंद दरवाज़े - कर्तार सिंह दुग्गल, कठिन डगरिया-बलवंत सिंह, तमाशाघर- इकबाल मजीद, भेड़िए-ज़किया मश्हदी,रास्ते बंद हैं सब-असरार गांधी, दूसरी औरत- खुर्शीदअख्तर फारजी)

इकाई चार **श्रेयांक - २**

मेरी आवाज़ सुनो (कविता) - कैफ़ी आज़मी

राजकमल प्रकाशन, नई दिल्ली

(चयनित कविताएँ :कैसे ले आउँ रखिया मैं भैया, घनश्याम, घनश्याम, श्याम, श्यामरे,कर चले हम फ़िदा जानो-तन साथियो, आई अबके साल दिवाली, बदल जाए अगर माली, ऐ महलों में रहनेवालो, मेरी आवाज़ सुनो, माँ है मोहब्बत का नाम, आज़ादी हमारे घर आई, झूमे बाली धान की, ज़िंदगी है ज़िंदगी)

सदंर्भ ग्रंथ : (प्रश्न पत्र - 14.3)

१. समकालीन लेखिका नासिरा शर्मा का कथा साहित्य - डॉ. ज्योति गजभिये
२. उपन्यास की संरचना - गोपाल राय
३. औरतें पाकिस्तान बनाम हिन्दुस्थान - विश्वमित्र शर्मा
४. उर्दू पर खुलता दरीचा - डॉ. गोपीचंद नारंग
५. उर्दू साहित्य की परम्परा - डॉ. जानकी प्रसाद शर्मा
६. उर्दू साहित्य का देवनागरी में लिपिकरण - डॉ. वागीश शुक्ल

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 114.4
प्रश्न पत्र -१४.४
प्रवासी हिंदी साहित्य
(Diasporic Hindi Literature)

पाठ्य पुस्तकें :

इकाई एक और दो **श्रेयांक -२**

*अपना मन उपवन (उपन्यास) - अभिमन्यु अनंत

सामयिक प्रकाशन, नई दिल्ली

इकाई तीन **श्रेयांक -२**

*वह रात और अन्य कहानियाँ (कहानी) - डॉ. उषाराजे सक्सेना

सामयिक प्रकाशन, नई दिल्ली

(**चयनित कहानियाँ:**सांस्कृतिक एलोरा, तीन तिलंगे, शर्ली सिंपसन शुतुरमुर्ग है, डैडी, सलीमा तो सिर्फ शादी करना चाहती थी, चुनौती, अस्सी हूरें, शीराज मुनव्वर और जूलियाना, रिश्ते, सवेरा, वह रात)

इकाई चार **श्रेयांक -२**

*अमरीका हड्डियों में जम जाता है (काव्यसंग्रह) - डॉ. अंजना संधीर

प्रिय साहित्यसदन प्रकाशन, नई दिल्ली

(**चयनित कविताएँ:**अमरीका हड्डियों में जम जाता है, अमरीका एक विशाल जुआ घर है,
जैकसनहाइट्स, अमरीका तुझे क्या कहूँ, देसी न्यूयॉर्कर, टाइम स्क्वेअर,
विदेशी पनघट, ये अप्सराएँ, ये ग्रीनकार्ड होल्डर, शीशों का घर मेनहटन,
दिमाग के इस देश में, प्रेम में अंधी लड़की)

संदर्भ ग्रंथ : (प्रश्न पत्र -१४.४)

१. हिन्दी का प्रवासी साहित्य - डॉ. कमलकिशोर गोयनका
२. प्रवासी संसार - डॉ. राकेश पाण्डेय
३. हिन्दी के प्रवासी साहितय की परंपरा - डॉ. स्वर्णलता ठन्ना
४. कौनसी जमीन अपनी - डॉ. सुधाओम ढींगरा
५. प्रवासी साहित्य जोहान्सबर्ग से आगे - डॉ. कमलकिशोर गोयनका
६. प्रवासी भारतीय लेखक - डॉ. अंजना संधीर
७. हिन्दी का विश्व संदर्भ - डॉ. करूणाशंकर उपाध्याय
८. मॉरिशस का सृजनात्मक हिन्दी साहित्य - सं. विमलेश कांति वर्मा
९. पश्चिमी देशों की प्रवासी कहानियाँ - डॉ. राकेश पाण्डेय
१०. गिरमिटिया गाथा - डॉ. राकेश पाण्डेय
११. हिन्दी विश्व - डॉ. राकेश पाण्डेय
१२. मॉरिशस भारतीय संस्कृति की तीर्थ - डॉ. राकेश पाण्डेय

Semester - IV(चतुर्थ सत्र)

कौशल आधारित पाठ्यक्रम

Skilled Based Syllabus

Course Code : PAHIN 115.1

प्रश्न पत्र -१५.१

जनसंचार माध्यम

(Mass Communication)

कुल श्रेयांक **(Credit)= 6**

इकाई एक **श्रेयांक - १**

१. जनसंचार की अवधारणा : अर्थ, परिभाषा और महत्व

२. संचार प्रक्रिया के तत्व

इकाई दो **श्रेयांक - २**

३. सामाजिक विकास में जनसंचार की भूमिका

४. जनसंचार माध्यमों का विकास : अ. मुद्रित जनसंचार माध्यम
आ. श्रव्य जनसंचार माध्यम
इ. दृश्य जनसंचार माध्यम
ई. नव इलेक्ट्रॉनिक जनसंचार माध्यम

इकाई तीन **श्रेयांक - २**

५. जनसंचार माध्यम और विज्ञापन

६. जनसंचार माध्यमों की भाषा : क. मुद्रित माध्यमों की भाषा
ख. श्रव्य माध्यमों की भाषा
ग. दृक-श्रव्य माध्यमों की भाषा

इकाई चार **श्रेयांक - १**

७. जनसंचार माध्यमों में हिंदी का प्रयोग

८. साहित्यिक विधाओं का दृक-श्रव्य रूपान्तर

संदर्भ ग्रंथ : (प्रश्न पत्र - १५.१)

१. जनसंचार माध्यम - गौरीशंकर रैना
२. मीडिया लेखन - सुमित मोहन
३. नये जनसंचार माध्यम और हिन्दी - सुधीर पचौरी, अंचला नागर,
४. मीडिया और जनसंवाद - वर्तिका नंदा
५. जनसंचार सिद्धांत और अनुप्रयोग - विष्णु राजगढ़ियाँ
६. टेलीविजन की कहानी - डॉ. श्याम कश्यप
७. मीडिया और बाजारवाद - संपा. रामशरण जोशी
८. कसौटी पर मीडिया - मुकेश कुमार
९. भारत में जनसंचार और प्रसारण मीडिया - मधुकर लेले
१०. जनसंचार और मीडिया लेखन - डॉ. दत्तात्रय मुरुमकर
११. वैश्विक परिदृश्य में साहित्य, मीडिया और समाज - सं. उमापति दीक्षित, डॉ. अनिल सिंह
१२. कथा - पटकथा - संवाद - डॉ.हूबनाथ पांडेय
१३. सिनेमा - समाज, साहित्य - डॉ. हूबनाथ पांडेय
१४. समांतर सिनेमा - डॉ.हूबनाथ पांडेय

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 115.2

प्रश्न पत्र -१५.२

प्रयोजन मूलक हिंदी

(Functional Hindi)

कुल श्रेयांक **(Credit)= 6**

इकाई एक **श्रेयांक -२**

१. प्रयोजन मूलक हिन्दी - अवधारणा एवं स्वरूप, ऐतिहासिक परिप्रेक्ष्य

२. हिन्दी के विविध रूप - सर्जनात्मक भाषा, संचार भाषा, संपर्क भाषा, राजभाषा

इकाई दो और तीन **श्रेयांक -३**

३. राजभाषा हिन्दी - संकल्पना एवं स्वरूप

४. राजभाषा संबंधी संवैधानिक प्रावधान -

अनुच्छेद ३४३ से ३५१ तक
राष्ट्रपति के निर्देश
राजभाषा आयोग
संसदीय समितियाँ
राजभाषा समितियाँ
भाषा नीति संबंधी सरकारी संकल्प
राजभाषा नीति के क्रियान्वयन की समस्याएँ

इकाई चार श्रेयांक -१

५. वैश्वीकरण और हिन्दी - विदेशों में हिन्दी पत्रकारिता

संदर्भ ग्रंथ : (प्रश्न पत्र -१५.२)

१. खड़ी बोली का आंदोलन - डॉ. शितिकंठ मिश्र
२. भारतीय राष्ट्रभाषा की सीमाएँ - डॉ. सत्यव्रत
३. राजभाषा के संदर्भ में हिन्दी आंदोलन का इतिहास - डॉ. उदयनारायण दुबे
४. राजभाषा हिन्दी - डॉ. कैलाशचंद्र भाटिया
५. प्रयोजन मूलक हिन्दी - डॉ. विनोद गोदरे
६. प्रयोजन मूलक हिन्दी : संरचना एवं अनुप्रयोग - डॉ. रामप्रकाश, डॉ. दिनेश गुप्त
७. प्रयोजन मूलक हिन्दी : सिद्धांत एवं व्यवहार - डॉ. रघुनंदन प्रसाद शर्मा
८. कम्प्यूटर के भाषिक अनुप्रयोग - डॉ. विजय कुमार मल्होत्रा
९. भाषा और प्रौद्योगिकी - डॉ. विनोद कुमार प्रसाद
१०. हिन्दी का विश्वसंदर्भ - डॉ. करुणाशंकर उपाध्याय
११. अनुवाद सिद्धांत की रूपरेखा - डॉ. सुरेशकुमार
१२. अनुवादविज्ञान - डॉ. भोलानाथ तिवारी
१३. अनुवाद सिद्धांत और व्यवहार - एस. के. शर्मा
१४. अनुवाद विज्ञान - सिद्धांत और अनुप्रयोग - संपा. डॉ. नगेंद्र
१५. अनुवाद सिद्धांत और प्रयोग - डॉ. जी. गोपीनाथन
१६. अनुवाद कला - सिद्धांत और प्रयोग - डॉ. कैलाशचंद्र भाटिया
१७. अनुवाद सिद्धांत और समस्याएँ - डॉ. रवींद्रनाथ श्रीवास्तव, डॉ. कृष्णकुमार गोस्वामी
१८. अनुवाद बोध - संपा. डॉ. गार्गी गुप्त
१९. काव्यानुवाद की समस्याएँ साहित्य का अनुवाद - डॉ. भोलानाथ तिवारी, महेंद्र चतुर्वेदी
२०. अनुवाद, भाषाएँ : समस्याएँ - डॉ. एन. ई. विश्वनाथ अय्यर
२१. अनुवाद और मशीनी अनुवाद - वृषभ प्रसाद जैन
२२. अनुवाद कला - डॉ. एन. ई. विश्वनाथ अय्यर
२३. समकालीन साहित्य और भूमंडलीकरण - सं. डॉ. अनिल सिंह

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 115.3

प्रश्न पत्र -१५.३

पत्रकारिता

(Journalism)

कुल श्रेयांक **(Credit)= 6**

इकाई एक **श्रेयांक - १**

१. पत्रकारिता : अर्थ एवं स्वरूप

२. पत्रकारिता के माध्यमगत रूप - मुद्रित पत्रकारिता एवं इलेक्ट्रानिक पत्रकारिता का सामान्य परिचय

इकाई दो **श्रेयांक - २**

३. पत्रकारिता के विषयगत रूप - खोजी पत्रकारिता, महिला पत्रकारिता, बाल पत्रकारिता, क्रीड़ा पत्रकारिता, साहित्यिक पत्रकारिता, फिल्म पत्रकारिता, फोटो पत्रकारिता, पीत पत्रकारिता का सामान्य परिचय

४. पत्रकारिता का उद्भव एवं विकास

इकाई तीन **श्रेयांक - २**

५. पत्रकारिता और सृजनात्मक लेखन - संपादकीय, फीचर, साक्षात्कार, समीक्षा, व्यंग्य लेख

६. मुद्रित पत्रकारिता के आयाम - समाचार के स्रोत, समाचार संकलन, समाचार लेखन, समाचार संपादन, प्रूफ-शोधन

७. इलेक्ट्रानिक पत्रकारिता - रेडियो, टेलीविजन और इंटरनेट पत्रकारिता

इकाई चार **श्रेयांक - १**

८. प्रेस आचार संहिता एवं मुक्त प्रेस की अवधारणा

९. संपादक के गुण और दायित्व

१०. संवाददाता की योग्यता एवं कार्य पद्धति

संदर्भ ग्रंथ : (प्रश्न पत्र - १५.३)

१. खड़ी बोली का आंदोलन - डॉ. शितिकंठ मिश्र
२. भारतीय राष्ट्रभाषा की सीमाएँ - डॉ. सत्यव्रत
३. राजभाषा के संदर्भ में हिन्दी आंदोलन का इतिहास - डॉ. उदयनारायण दुबे
४. राजभाषा हिन्दी - डॉ. कैलाशचंद्र भाटिया
५. प्रयोजन मूलक हिन्दी - डॉ. विनोद गोदरे
६. प्रयोजन मूलक हिन्दी : संरचना एवं अनुप्रयोग - डॉ. रामप्रकाश, डॉ. दिनेश गुप्त
७. प्रयोजन मूलक हिन्दी : सिद्धांत एवं व्यवहार - डॉ. रघुनंदन प्रसाद शर्मा
८. कम्प्यूटर के भाषिक अनुप्रयोग - डॉ. विजय कुमार मल्होत्रा
९. भाषा और प्रौद्योगिकी - डॉ. विनोद कुमार प्रसाद
१०. हिन्दी का विश्वसंदर्भ - डॉ. करुणाशंकर उपाध्याय

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 115.4

प्रश्न पत्र - 15.4

मीडिया लेखन

(Media Writing)

कुल श्रेयांक (**Credit)**6

इकाई एक **श्रेयांक - २**

१. माध्यमोपयोगी लेखन का स्वरूप और प्रमुख प्रकार

२. श्रव्य माध्यम लेखन (विविध कायक्रमों का परिचय एवं लेखन)

- २.१ रेडियो का संक्षिप्त परिचय
- २.२. रेडियो के विभिन्न कार्यक्रम
- २.३. समाचार लेखन व निर्माण तथा वाचन
- २.४. रेडियो नाटक
- २.५. उद्घोषणा लेखन
- २.६. फीचर - लेखन
- २.७. रिपोर्ताज लेखन
- २.८. धारावाहिक लेखन

इकाई दो **श्रेयांक - २**

३. श्रव्य-दृश्य माध्यम - फिल्म, टेलीविजन और वीडियो

- फिल्म
- टेलीविजन
- दृश्य माध्यमों की भाषा
- पटकथा लेखन
- टेलीड्रामा
- डॉक्यूमेन्टरी
- संवाद लेखन
- टी. वी. नाटक लेखन

४. फिल्म और टी. वी. के कथानक लेखन में अन्तर

इकाई तीन **श्रेयांक - १**

५. पटकथा एवं संवाद लेखन

५.१. पटकथा क्या है?

५.२. कहानी क्या है?

५.३. पटकथा के लिए कहानी कैसी हो

५.४. स्क्रीन प्ले लेखन

५.५. संवाद क्या है?

५.६. संवाद के प्रकार

५.७. संवाद के काम

५.८. संवाद और पात्र

५.९. संवाद की भाषा

५.१० संवाद, ध्वनि प्रभाव और अंगिक भाषा

इकाई चार **श्रेयांक -१**

६. विज्ञापन लेखन

विज्ञापन माध्यमों का चयन

प्रेस विज्ञापन

समाचार पत्र

समाचार - पत्रीय विज्ञापन : गुण व लाभ तथा सीमाएँ

पत्रिका विज्ञान : गुण व लाभ तथा सीमाएँ

इलेक्ट्रॉनिक मीडिया

गंवेषण और विज्ञापन

विज्ञापन एजेंसी

विज्ञापन और कानून

पॉपुलर कल्चर और विज्ञापन

विज्ञापन और स्त्री

विज्ञापन और बच्चे

कॉपी लेखन

संदर्भ ग्रंथ : (प्रश्न पत्र -१५.४)

१. जनसंचार माध्यम - गौरीशंकर रैना
२. मीडिया लेखन - सुमित मोहन
३. नये जनसंचार माध्यम और हिन्दी - सुधीर पचौरी, अंचला नागर,
४. मीडिया और जनसंवाद - वर्तिका नंदा
५. जनसंचार सिद्धांत और अनुप्रयोग - विष्णु राजगढ़ियाँ
६. टेलीविजन की कहानी - डॉ. श्याम कश्यप
७. मीडिया और बाजारवाद - संपा. रामशरण जोशी
८. कसौटी पर मीडिया - मुकेश कुमार
९. जनसंचार और मीडिया लेखन - डॉ. दत्तात्रय मुरुमकर
१०. कथा पटकथा - मन्नु भण्डारी
११. पटकथा एक परिचय - मनोहर श्याम जोशी
१२. टेलीविजन लेखन - असगर वज़ाहत
१३. पटकथा लेखन - निर्देशिका - असगर वज़ाहत
१४. टेलीविजन की भाषा - हरिश्चंद्र बर्नवाल
१५. टेलीविजन पटकथा लेखन - विनोद तिवारी

Semester - IV(चतुर्थ सत्र)
Course Code : PAHIN 115.5

प्रश्न पत्र -१५.५

सिनेमा अध्ययन एवं लेखन
(Cinema Study and Writing)

कुल श्रेयांक (**Credit**)6

इकाई एक **श्रेयांक - १**

१. भारतीय सिनेमा : उद्भव और विकास

च. मूक सिनेमा

छ. बोलती फ़िल्में

ज. स्वातंत्र्योत्तर सिनेमा

झ. आपातकाल के बाद सिनेमा

त्र. भूमंडलीकरण के बाद सिनेमा

इकाई दो **श्रेयांक - २**

२. विकास यात्रा और प्रक्रिया

ट. सिनेमा की विकास-यात्रा, पॉपुलर सिनेमा, आर्ट सिनेमा, हॉलीवुड सिनेमा

ठ. पॉपुलर सिनेमा, स्टंट फ़िल्में, बाल फ़िल्में, एनीमेशन फ़िल्में, ट्रैजेडी, कॉमेडी, हॉरर, रूदन हास्य (Sreio-comic) डॉक्यूमेंट्री, फीचर फ़िल्म

ड. सिनेमा पटकथा और संवाद-लेखन-कथा, पटकथा, डॉक्यूमेंट्री की पटकथा, संवाद, फीचर फ़िल्म की पटकथा, संवाद, शूटिंग स्क्रिप्ट

त. फ़िल्मी गीत-लेखन-टाइटल गीत, एकल गीत, समूह गीत, लोक गीत, साहित्यिक गीत, आइटम गीत

इकाई तीन **श्रेयांक - २**

३. फ़िल्म-निर्देशन विभाग

अ. मुख्य सहायक निर्देशक - कार्य, गुण और महत्त्व

आ. सहायक निर्देशक -१ सहायक निर्देशक -२ कंटीन्यूटी ब्यॉय

इ. प्रोडक्शन डिजाइनर, कला-निर्देशक ड्रॉप शीट, म्युजिक क्यू शीट

ई.कास्टिंग डायरेक्टर, नृत्य निर्देशक, संगीत निर्देशक, एक्शन डायरेक्टर, मेकअप मैन

४. कैमरामैन, लाइटिंग

उ. लोकेशन-इंडोर, आउटडोर, लोकेशन-हंटिंग

ऊ. फ़िल्म संपादन, संपादन : कार्य, गुण, महत्त्व

ए. प्रोडक्शन कंट्रोलर, सिनेमा का बजट

ऐ. सिनेमा की मार्केटिंग और प्रचार

इकाई चार **श्रेयांक - १**

५. फ़िल्म निर्माण कला

त. दृश्यांकन (Screen play)

थ. कास्टिंग

द. लोकेशन

ध. कला निर्देशन

न. छाया चित्रण

प. संपादन निर्देशन

फ. स्पेशल इफेक्ट

ब. ध्वनि मुद्रण

भ. संगीत

म. डबिंग

य. वितरण एवं प्रदर्शन

संदर्भ ग्रंथ : (प्रश्न पत्र - १५.५)

१. नये दौर का सिनेमा - प्रियदर्शन

२. फिल्म निर्देशन - कुलदीप सिन्हा

३. भारतीय सिने सिद्धांत - डॉ. अनुपम ओझा

४. टेलीफिल्म निर्माण कला - विवेकानंद

५. समान्तर सिनेमा - डॉ. हूबनाथ पाण्डेय

६. इक्कीसवीं सदी का हिन्दी सिनेमा - डॉ. निर्मला भारती

७. कथा - पटकथा - संवाद - डॉ.हूबनाथ पांडेय

८. सिनेमा - समाज, साहित्य - डॉ. हूबनाथ पांडेय

Semester - IV(चतुर्थ सत्र)

Course Code : PAHIN 115.6

प्रश्न पत्र -१५.६

अनुवाद

(Translation)

कुल श्रेयांक**(Credit)= 6**

इकाई एक **श्रेयांक - १**

१. अनुवाद : परिभाषा एवं स्वरूप, आवश्यकता एवं महत्त्व

२. अनुवाद कला एवं विज्ञान

इकाई दो **श्रेयांक - २**

३. अनुवाद के सिद्धांत

४. अनुवाद की प्रक्रिया

५. अनुवाद के भेद

इकाई तीन **श्रेयांक - २**

६. अनुवाद के उपकरण

७. अनुवाद के क्षेत्र एवं समस्याएँ

इकाई चार **श्रेयांक - १**

८. अनुवाद का सामाजिक एवं सांस्कृतिक पक्ष

९. अनुवादक की योग्यताएँ

संदर्भ ग्रंथ : (प्रश्न पत्र - १५.६)

१. अनुवाद सिद्धांत की रूपरेखा - डॉ. सुरेशकुमार
२. अनुवादविज्ञान - डॉ. भोलानाथ तिवारी
३. अनुवाद सिद्धांत और व्यवहार - एस. के. शर्मा
४. अनुवाद विज्ञान - सिद्धांत और अनुप्रयोग - संपा. डॉ. नगेंद्र
५. अनुवाद सिद्धांत और प्रयोग - डॉ. जी. गोपीनाथन
६. अनुवाद कला - सिद्धांत और प्रयोग - डॉ. कैलाशचंद्र भाटिया
७. अनुवाद सिद्धांत और समस्याएँ - डॉ. रवींद्रनाथ श्रीवास्तव, डॉ. कृष्णकुमार गोस्वामी,
८. अनुवाद बोध - संपा. डॉ. गार्गी गुप्त
९. काव्यानुवाद की समस्याएँ साहित्य का अनुवाद - डॉ. भोलानाथ तिवारी, महेंद्र चतुर्वेदी
१०. अनुवाद, भाषाएँ : समस्याएँ - डॉ. एन. ई. विश्वनाथ अय्यर
११. अनुवाद और मशीनी अनुवाद - वृषभ प्रसाद जैन
१२. अनुवाद कला - डॉ. एन. ई. विश्वनाथ अय्यर
१३. अनुवाद का समकाल - डॉ. मोहसिन ख़ान

Semester - IV(चतुर्थ सत्र)

Course Code : PAHIN 116

प्रश्न पत्र -१६

प्रकल्प लेखन

(Project Writing)

कुल श्रेयांक**(Credit)= 10**

अंक विभाजन - 60 अंक प्रकल्प के लिए

40 अंक मौखिकी के लिए

सूचना :मुंबई विश्वविद्यालय का हिन्दी अध्ययन मंडल प्रकल्प के विषय उपलब्ध कराएगा। मुंबई विश्वविद्यालय, अन्य विश्वविद्यालय तथा महाविद्यालयों के हिन्दी विभाग के प्राध्यापक प्रकल्प प्रस्तुत करने वाले छात्रों की मौखिकी लेने के लिए उपस्थित रहेगें। विषय विशेषज्ञ के रूप में उपस्थित रहने वाले परीक्षक का मानधन संबंधित संस्थान को देय होगा। एक प्राध्यापक सारे केंद्रों को मिलाकर अधिकतम दस छात्रों का ही मार्गदर्शन कर सकेंगें।

प्रकल्प लेखन के लिए निर्धारित शोध विषय :

१.	आदिकाल का नामकरण व काल विभाजन
२.	सिद्ध साहित्य का महत्त्व
३.	नाथ संप्रदाय का प्रदेय
४.	हिंदी महाकाव्य परंपरा में पृथ्वीराज रासो का स्थान
५.	वीर गाथा काव्य का वैशिष्ट्य
६.	आदिकाल की विशिष्ट रचना: संदेश रासक
७.	अमीर खुसरो का हिंदी साहित्य में प्रदेय
८.	आदिकालीन जैनकाव्य का महत्त्व

९.	आदिकालीन साहित्य में गोरखबानी का स्थान
१०.	वीरगाथा काव्य की भाषिक विशेषता
११.	भक्तिकाव्य का उदभव और विकास
१२.	विद्यापति का साहित्यिक प्रदेय
१३.	भक्तिकाल की उद्भवकालीन परिस्थितियाँ
१४.	भक्तिकाल के प्रमुख आचार्यों का योगदान
१५.	भक्तिकाव्य की सामान्य विशेषताएँ
१६.	कबीर के व्यक्तित्व और कृतित्व का सामान्य परिचय
१७.	कबीर काव्य के सामाजिक सरोकार
१८.	कबीर काव्य में दार्शनिकता और रहस्यवाद
१९.	कबीर की भक्तिभावना और उसकी व्याप्ति
२०.	कबीर काव्य का भाषिक अनुप्रयोग और शिल्प
२१.	कबीर काव्य की प्रासंगिकता
२२.	कबीर काव्य का भाषिक अनुप्रयोग और शिल्प
२३.	सूफ़ी काव्यधारा और जायसी
२४.	जायसी के व्यक्तित्व एवं कृतित्व का सामान्य परिचय
२५.	जायसी का महाकाव्यात्मक लेखन
२६.	जायसी कृत पद्मावत का महाकाव्यत्व
२७.	जायसी रचित प्रबंध काव्यों का महत्त्व
२८.	पद्मावत का प्रेमदर्शन
२९.	पद्मावत में चित्रित लोक संस्कृति
३०.	पद्मावत के प्रमुख पुरुष पात्र
३१.	पद्मावत के प्रमुख नारी पात्र
३२.	जायसी का रहस्यवाद और दार्शनिक चिंतन
३३.	जायसी का शृंगार वर्णन और विरहभावना-
३४.	पद्मावत में ऐतिहासिकताऔर समन्वयकल्प
३५.	जायसी की भाषा और शिल्पगत प्रयुक्तियाँ
३६.	जायसी का साहित्यिक प्रदेय
३७.	पद्मावत की प्रासंगिकता
३८.	कृष्ण काव्य परंपरा और सूरदास
३९.	सूरदास के व्यक्तित्व एवं कृतित्व का सामान्य परिचय

४०.	सूर के काव्य में भक्ति और दर्शन
४१.	सूर का भ्रमरगीतसार और उसका प्रतिपाद्य
४२.	भ्रमरगीतसार परंपरा में सूर कृत भ्रमरगीत सार का महत्त्व
४३.	सूर काव्य में गीत और संगीत
४४.	सूर का भाषिक और शैल्पिक अनुप्रयोग
४५.	सूर का काव्यात्मक प्रदेय
४६.	सूर काव्य की प्रासंगिकता
४७.	कृष्ण काव्य परंपरा में सूर का स्थान
४८.	रामकाव्यधारा में गोस्वामी तुलसीदास का आगमन
४९.	तुलसीदास के व्यक्तित्व और कृतित्व का सामान्य परिचय
५०.	रामचरितमानस का महाकाव्यत्व
५१.	तुलसी के काव्य में भक्ति और दर्शन
५२.	तुलसीदास की समन्वय भावना
५३.	तुलसीदास के काव्य में सामाजिक संपृक्ति और लोकधर्म
५४.	रामचरितमानस के प्रमुख पुरुष पात्र
५५.	रामचरितमानस के प्रमुख नारी पात्र
५६.	तुलसीदास के काव्य में रामराज्य की संकल्पना
५७.	तुलसीदास का भाषिक और शैल्पिक अनुप्रयोग
५८.	तुलसीदास का साहित्यिक प्रदेय
५९.	तुलसीदास की प्रासंगिकता
६०.	रामकाव्य परंपरा में तुलसीदास का स्थान
६१.	हिंदी साहित्य में तुलसीदास का स्थान
६२.	रीतिकाव्य परंपरा में भूषण का आगमन
६३.	रीतिकाव्य का प्रमुख वैशिष्ट्य
६४.	कवि भूषण के व्यक्तित्व एवं कृतित्व का सामान्य परिचय
६५.	वीरकाव्य परंपरा और कवि भूषण
६६.	भूषण के काव्य का वैशिष्ट्य
६७.	रीतिकाव्य में भूषण का स्थान
६८.	भक्तिकाव्य परंपरा में मीराबाई का आगमन
६९.	मीराबाई के व्यक्तित्व एवं कृतित्व का सामान्य परिचय
७०.	मीराबाई के काव्य में भक्ति और चिंतन

७१.	मीराबाई का साहित्यिक प्रदेय
७२.	नारीवाद के संदर्भ में मीराकाव्य की विद्रोही चेतना-
७३.	भक्तिकाव्य में मीराबाई का अवदान
७४.	भक्तिकाव्य की प्रासंगिकता और मीराबाई
७५.	हिंदी साहित्य के इतिहास में भक्तिकाव्य का महत्त्व
७६.	हिंदी साहित्य के इतिहास में रीतिकाव्य का महत्त्व
७७.	भारतीय काव्यशास्त्र के क्षेत्र में रस सिद्धांत का महत्त्व
७८.	रस सिद्धांत : विभिन्न व्याख्याएँ
७९.	साधारणीकरण और रस सिद्धांत
८०.	रस सिद्धांत के आधुनिक व्याख्याता
८१.	रस सिद्धांत की प्रासंगिकता
८२.	भारतीय काव्यशास्त्र के क्षेत्र में अलंकार सिद्धांत का महत्त्व
८३.	अलंकार का स्वरूप और प्रभेद
८४.	प्रमुख अलंकारवादी आचार्य
८५.	भारतीय काव्यशास्त्र के क्षेत्र में रीति सिद्धांत का महत्त्व
८६.	रीति सिद्धांत का स्वरूप विश्लेषण
८७.	प्रमुख रीतिवादी आचार्य
८८.	भारतीय काव्यशास्त्र के क्षेत्र में ध्वनि सिद्धांत का महत्त्व
८९.	ध्वनि सिद्धांत का स्वरूप विश्लेषण
९०.	प्रमुख ध्वनिवादी आचार्य
९१.	भारतीय काव्यशास्त्र के क्षेत्र में औचित्य सिद्धांत का महत्त्व
९२.	औचित्य सिद्धांत का स्वरूप विश्लेषण
९३.	प्रमुख औचित्यवादी आचार्य
९४.	आचार्य रामचंद्र शुक्ल के समीक्षा सिद्धांत
९५.	आचार्य शुक्ल की आलोचनात्मक कृतियों का परिचय
९६.	हिंदी आलोचना को आचार्य रामचंद्र शुक्ल का प्रदेय
९७.	आचार्य रामचंद्र शुक्ल और भक्तिकाव्य
९८.	आचार्य रामचंद्र शुक्ल और छायावाद
९९.	आचार्य रामचंद्र शुक्ल की सैद्धांतिक आलोचना
१००	आचार्य रामचंद्र शुक्ल की व्यावहारिक आलोचना
१०१	आचार्य हजारीप्रसाद द्विवेदी के समीक्षा सिद्धांत

१०२	आचार्य हजारीप्रसाद द्विवेदी और कबीर
१०३	आचार्य हजारीप्रसाद द्विवेदी का ऐतिहासिक लेखन
१०४	आचार्य हजारीप्रसाद द्विवेदी का समीक्षात्मक प्रदेय
१०५	आचार्य नंददुलारे वाजपेयी के आलोचना सिद्धांत
१०६	आचार्य नंददुलारे वाजपेयी और आधुनिक साहित्य
१०७	आचार्य नंददुलारे वाजपेयी और छायावाद
१०८	आचार्य नंददुलारे वाजपेयी का आलोचनात्मक अवदान
१०९	डॉ. रामविलास शर्मा के समीक्षा सिद्धांत
११०	डॉ. रामविलास शर्मा की व्यावहारिक आलोचना
१११	डॉ रामविलास शर्मा कि निराला से सम्बन्धित आलोचना
११२	डॉ रामविलास शर्मा का समीक्षात्मक प्रदेय
११३	डॉ. नामवर सिंह के समीक्षा सिद्धांत
११४	डॉ. नामवर सिंह और कविता के नए प्रतिमान
११५	डॉ. नामवर सिंह का समीक्षात्मक प्रदेय
११६	प्लेटो के जीवन, व्यक्तित्व एवं कृतित्व का परिचय
११७	प्लेटो के प्रमुख समीक्षा सिद्धांत
११८	पाश्चात्य काव्यशास्त्र के क्षेत्र में प्लेटो का महत्त्व
११९	अरस्तू के जीवन,कृतित्व का परिचय व्यक्तित्व और
१२०	अरस्तू के प्रमुख समीक्षा सिद्धांत
१२१	पाश्चात्य काव्यशास्त्र के क्षेत्र में अरस्तू का महत्त्व
१२२	लोंजाइनस के जीवन, व्यक्तित्व एवं कृतित्व का परिचय
१२३	लोंजाइनस के प्रमुख समीक्षा सिद्धांत
१२४	पाश्चात्य काव्यशास्त्र में लोंजाइनस का महत्त्व
१२५	आभिजात्यवाद का स्वरूप वैशिष्टय
१२६	आभिजात्यवाद के आधार पर होमर के महाकाव्यों का विश्लेषण
१२७	स्वछंदतावाद का स्वरूप वैशिष्टय
१२८	स्वछंदतावाद के आधार पर किसी काव्यकृति का विश्लेषण
१२९	मार्क्सवाद के प्रमुख सिद्धांत
१३०	प्रमुख मार्क्सवादी विचारक
१३१	मार्क्सवाद के आधार पर किसी कृति का विश्लेषण
१३२	मैथ्यू आर्नल्ड के काव्य सिद्धांत

१३३	मैथ्यू आर्नल्ड का समीक्षात्मक प्रदेय
१३४	टी.एस.इलियट के जीवन, व्यक्तित्व और कृतित्व का परिचय
१३५	इलियट के समीक्षा सिद्धांत
१३६	पाश्चात्य काव्यशास्त्र के क्षेत्र में इलियट का महत्त्व
१३७	आई.ए.रिचर्ड्स के जीवन, व्यक्तित्व एवं कृतित्व का परिचय
१३८	आई.ए. रिचर्ड्स के समीक्षा सिद्धांत
१३९	पाश्चात्य काव्यशास्त्र के क्षेत्र में आई.ए.रिचर्ड्स का योगदान
१४०	मनोविश्लेषणवाद का स्वरूप वैशिष्टय
१४१	मनोविश्लेषणवाद के आधार पर किसी कृति का विश्लेषण
१४२	मनोविश्लेषणवाद के प्रमुख चिंतक
१४३	संरचनावाद का स्वरूप वैशिष्ट्य
१४४	प्रमुख संरचनावादी विचारक
१४५	संरचनावाद के आधार पर किसी कृति का विश्लेषण
१४६	उत्तर आधुनिकतावाद का स्वरूप वैशिष्ट्य
१४७	प्रमुख उत्तर आधुनिकतावादी चिंतक
१४८	उत्तर आधुनिकता और विसंरचनावाद
१४९	विसंरचनावाद के आधार पर किसी कृति का विश्लेषण
१५०	डॉ. नगेंद्र के जीवन, व्यक्तित्व एवं कृतित्व का परिचय
१५१	डॉ. नगेंद्र के समीक्षा सिद्धांत
१५२	भारतीय काव्यशास्त्र को डॉ. नगेंद्र की देन
१५३	विश्व काव्यशास्त्र की अवधारणा और डॉ. नगेन्द्र
१५४	फांस उपन्यास में किसानों की समस्याएँ
१५५	अकाल में उत्सव उपन्यास में किसान समस्याएँ
१५६	नई सदी की हिंदी कहानियों में किन्नर विमर्श
१५७	नई सदी की उर्दू कहानियों में सामाजिक समस्याएँ
१५८	21 वीं सदी कि मराठी कहानियों में किसान
१५९	उपन्यासकार यू. आर. अनंतमूर्ति
१६०	ग्लोबल गाँव के देवता उपन्यास में आदिवासी चेतना
१६१	मछुआरे(पिल्लै तकषी शिवशंकर)उपन्यास में मछुआरे समुदाय का यथार्थ
१६२	बारामासी उपन्यास में किसान यथार्थ
१६३	किन्नर कथा उपन्यास में किन्नर समस्याएँ

१६४	आचार्य नाटक में समकालीन साहित्यिक यथार्थ (इंदिरा दागी)
१६५	कुच्ची का कानून में स्त्री विमर्श
१६६	सूर बंजारन उपन्यास में स्त्री विमर्श
१६७	यहीं कहीं था घर उपन्यास में स्त्री विमर्श
१६८	मेरे आक़ा उपन्यास में स्त्री विमर्श
१६९	सलाम कहानी संग्रह में दलित चेतना
१७०	नये समय का कोरस उपन्यास में स्त्री विमर्श
१७१	नई सदी के भारतीय साहित्य की चुनौतियाँ
१७२	अपना मोर्चा उपन्यास:एक अध्ययन
१७३	21वीं सदी के हिंदी नाटक एवं सामाजिक समस्याएँ
१७४	महुआ चरित उपन्यास में स्त्री विमर्श
१७५	आधुनिक कविता कि पृष्ठभूमि, उद्भव एवं वर्गीकरण
१७६	कामायनी का दार्शनिक एवं सांस्कृतिक परिप्रेक्ष्य
१७७	कामायनी की चरित्र योजना
१७८	कामायनी की प्रतीकात्मकता
१७९	कामायनी का काव्य रूप
१८०	कामायनी का महाकाव्यत्व
१८१	कामायनी का काव्य शिल्प
१८२	जयशंकर प्रसाद एवं उनकी कामायनी
१८३	कामायनी का दर्शन
१८४	कामायनी के स्त्री पात्र
१८५	आधुनिक कविता और 'कामायनी'
१८६	कामायनीका ऐतिहासिक तथा मनोवैज्ञानिक आधार
१८७	आधुनिक हिंदी काव्य में जयशंकर प्रसाद का महत्त्व
१८८	छायावादोत्तर काव्य और महत्त्वपूर्ण वाद
१८९	प्रयोगवाद और अज्ञेय
१९०	अज्ञेय की काव्यानुभूति
१९१	अज्ञेय की काव्यशिल्प यात्रा और उनका काव्य
१९२	आँगन के पार द्वार संग्रह की कविताओं का विश्लेषणात्मक अध्ययन
१९३	आँगन के पार द्वार काव्य संग्रह का शिल्पगत विशेषण
१९४	असाध्य वीणा का कथ्य एवं शिल्प

१९५	लम्बी कविताएँ और 'असाध्य वीणा'
१९६	छायावादोत्तर हिंदी कविता में अज्ञेय का स्थान एवं महत्त्व
१९७	प्रगतिवाद और साहित्य पर उसका प्रभाव
१९८	नई कविता की विशेषताएँ
१९९	मुक्तिबोध का रचना-संसार और उनका काव्य-शिल्प
२००	'अँधेरे में' कविता का कथ्य एवं उसका महत्त्व
२०१	'अँधेरे में' कविता का शिल्पगत वैशिष्ट्य
२०२	लम्बी कविताएँ और 'अँधेरे में'
२०३	ब्रम्हराक्षस की प्रतीकात्मकता
२०४	ब्रह्मराक्षस का कथ्य
२०५	भूल ग़लती कविता का कथ्यात्मक विवेचन
२०६	मुक्तिबोध और उनकी विचारधारा
२०७	नई कविता और मुक्तिबोध
२०८	लम्बी कविताएँ और उनका रचना-विधान
२०९	लोकसाहित्यस्वरूप विवेचन तथा वर्गीकरण :
२१०	लोकसाहित्य तथा लोकवार्ता
२११	लोकवार्ता और लोकगीत
२१२	लोकगीतों का विकासात्मक अध्ययन
२१३	लोकगीतों का समाजशास्त्रीय अध्ययन
२१४	लोकगीतों की सांस्कृतिक पृष्ठभूमि
२१५	लोकगीत
२१६	संस्कार गीत
२१७	ऋतु गीत
२१८	त्यौहार संबंधी गीत
२१९	लोकगाथा सिद्धांत,परम्परा एवं स्वरूप
२२०	लोकगाथा
२२१	लोकनाट्य परंपरा तथा वर्तमान स्थिति
२२२	लोकनाट्य
२२३	भारत के लोकनाट्य
२२४	महाराष्ट्र का हिंदी लोकनाट्य

२२५	प्रकीर्ण लोक साहित्य
२२६	लोकसाहित्य और अमीर खुसरो
२२७	लोकसाहित्य में सामाजिक, सांस्कृतिक और धार्मिक जीवन का चित्रण
२२८	प्रवासी साहित्य : अवधारणा विकास एवं स्वरूप
२२९	स्त्री कहानियों का स्त्री पाठ
२३०	नारीवादी उपन्यास का यथार्थ
२३१	नारीवादी उपन्यासों में पुरुषसत्तात्मक व्यवस्था
२३२	अस्तित्व बोध के दायरे में नारीवादी कहानियाँ
२३३	आदिवासी कहानियों में आदिवासी जीवन
२३४	आदिवासी उपन्यासों में आदिवासी यथार्थ
२३५	आदिवासी उपन्यास में पर्यावरण की समस्याएँ
२३६	आदिवासी कहानियों में शोषण का रूप
२३७	अस्मितामूलक अख्यान और दलित आत्मकथा का यथार्थ
२३८	मेरा बचपन मेरे कंधो परदलित जीवन :
२३९	ज़ख़्म हमारे का अनुशीलन
२४०	सुशीला टाकभोरे की कहानियों में स्त्री जीवन
२४१	जूठन के विविध संदर्भों का अनुशीलन
२४२	मुर्दहिया का सामाजिकसांस्कृतिक परिवेश और दलित यथार्थ ,
२४३	दलित जीवन की कहानियों में दलित यथार्थ
२४४	वीरांगना झलकारी बाई का अनुशीलन
२४५	दलित कहानियों में दलित मुक्ति के प्रश्न
२४६	भारतीय दलित आंदोलन का संक्षिप्त इतिहास
२४७	शृंखला की कड़ियाँ स्त्री मुक्ति का पंचनामा :
२४८	डार से बिछुड़ी का विवेचन
२४९	छिन्नमस्ता और स्त्री शोषण का यथार्थ
२५०	अन्या से अनन्या तकनैतिकताओं पर प्रभाव :
२५१	कठगुलाब में स्त्री की दुनिया
२५२	आख़िरी कलामविविध संदर्भ :
२५३	कितने पाकिस्तानअनुशीलन :
२५४	हमारा शहर उस बरससामाजिक शैक्षिक यथार्थ :
२५५	अल्मा कबूतरी में स्त्री जीवन

२५६	सेज पर संस्कृत का यथार्थ
२५७	एक ब्रेक के बाद में भूमंडलीकृत परिवेश का विवेचन
२५८	'उसके हिस्से की धूप' में स्त्री विमर्श
२५९	'आवां' के स्त्री पात्रों का अनुशीलन
२६०	'बेघर' में स्त्री का सामाजिक मनोविज्ञान
२६१	'गोदान' का किसान और वर्तमान यथार्थ
२६२	'जंगल जहाँ शुरू होता है': विवेचन
२६३	'सलाम' कहानी संग्रह में दलित संवेदनाएँ
२६४	'विपात्र' का विवेचन
२६५	मुक्तिबोध की कहानियाँ और लंबी कविताओं में अंतर्संबंध
२६६	बूँद और समुद्र' में चित्रित मध्यवर्ग
२६७	'मैला आँचल' का अनुशीलन
२६८	'अनामदास का पोथा' का विवेचन
२६९	'शेखर एक जीवनी' का मनोवैज्ञानिक विश्लेषण (भाग एक-दो)
२७०	'परख' का मनोविश्लेषणात्मक विवेचन
२७१	दूरदर्शन के विज्ञापनों का सामाजिक प्रभाव
२७२	दूरदर्शन का धार्मिक एवं सामाजिक प्रभाव
२७३	दूरदर्शन और शैक्षिक परिवेश
२७४	दूरदर्शन की भाषा का बदलता स्वरूप
२७५	सामाजिक विकास में जनसंचार माध्यमों का महत्त्व
२७६	व्हाट्सअप का सामाजिक प्रभाव
२७७	फेसबुक का सामाजिक प्रभाव
२७८	जनसंचार माध्यमों में स्त्री का यथार्थ
२७९	रेडियो का सामाजिक प्रभाव
२८०	पत्रकारिता की सामाजिक भूमिका और वर्तमान स्थिति
२८१	जनमाध्यमों में मध्यवर्ग की भूमिका
२८२	जनमाध्यमों में वंचित वर्गों का यथार्थ
२८३	जनमाध्यमों में स्त्री प्रतिमा : आकांक्षा और यथार्थ
२८४	जनमाध्यमों में गेम और बच्चों का मनोविज्ञान
२८५	कार्टून का बच्चों पर प्रभाव
२८६	अस्मिता के प्रश्नों पर जनमाध्यमों की भूमिका

२८७	जनमाध्यमऔर बदलता सांस्कृतिक परिवेश
२८८	धार्मिक चैनलों का सामाजिक प्रभाव
२८९	धार्मिक कार्यक्रमों का सांस्कृतिक प्रभाव
२९०	जनमाध्यमों में हाशिए के वर्ग का विलोम
२९१	सिनेमा का उद्भव और विकास
२९२	भारतीय सिनेमा का उद्भव और विकास
२९३	भारतीय मूक सिनेमा
२९४	दादा साहेब फालके का भारतीय सिनेमा को अवदान
२९५	बाबूराव पेंटर का भारतीय सिनेमा को अवदान
२९६	व्ही.शांताराम और भारतीय सिनेमा
२९७	प्रभात स्टुडियो का भारतीय सिनेमा को योगदान
२९८	मदन थियेटर और भारतीय सिनेमा
२९९	अर्देशीर ईरानी का भारतीय सिनेमा को अवदान
३००	सोहराब मोदी का भारतीय सिनेमा को अवदान
३०१	पृथ्वीराज कपूर का भारतीय सिनेमा को अवदान
३०२	फिल्मकार बिमल राय
३०३	न्यू थियेटर और भारतीय सिनेमा
३०४	सागर मूवीटोन का भारतीय सिनेमा में योगदान
३०५	रणजीत स्टुडियो का भारतीय सिनेमा में योगदान
३०६	हिंदी सिनेमा और बॉम्बे टॉकिज
३०७	हिंदी सिनेमा को के. आसिफ़ का योगदान
३०८	हिंदी सिनेमा को कमाल अमरोही का योगदान
३०९	सिनेमा को जब्बार पटेल का योगदान
३१०	हिंदी सिनेमा को गोविंद निहलानी का योगदान
३११	हिंदी सिनेमा को सई परांजपे का योगदान
३१२	हिंदी सिनेमा को नंदिता दास का योगदान
३१३	हिंदी सिनेमा को मनमोहन देसाई का योगदान
३१४	हिंदी सिनेमा को प्रकाश मेहरा का योगदान
३१५	हिंदी सिनेमा को रमेश सिप्पी का योगदान
३१६	हिंदी सिनेमा को सुभाष घई का योगदान
३१७	हिंदी सिनेमा को ऋषिकेश मुख़र्जी का योगदान

३१८	हिंदी सिनेमा को बासू भट्टाचार्य का योगदान
३१९	हिंदी सिनेमा को राज कपूर का योगदान
३२०	हिंदी सिनेमा को बी. आर. चोपड़ा का योगदान
३२१	हिंदी सिनेमा को महबूब खान का योगदान
३२२	हिंदी सिनेमा को यश चोपड़ा का योगदान
३२३	हिंदी सिनेमा को रामानंद सागर का योगदान
३२४	हिंदी सिनेमा को एल. वी. प्रसाद का योगदान
३२५	हिंदी सिनेमा को सत्यजीत राय का योगदान
३२६	हिंदी सिनेमा को मृणाल सेन का योगदान
३२७	हिंदी सिनेमा को श्याम बेनेगल का योगदान
३२८	हिंदी सिनेमा को बासू चॅटर्जी का योगदान
३२९	हिंदी सिनेमा को ताराचंद बडजात्या का योगदान
३३०	हिंदी सिनेमा को नितिन बोस का योगदान
३३१	हिंदी सिनेमा को प्रकाश झा का योगदान
३३२	हिंदी सिनेमा को तपन सिन्हा का योगदान
३३३	हिंदी सिनेमा को देवानंद का योगदान
३३४	हिंदी सिनेमा को विजयानंद का योगदान
३३५	हिंदी सिनेमा को चेतनआनंद का योगदान
३३६	हिंदी सिनेमा को मनोज कुमार का योगदान
३३७	हिंदी सिनेमा को जे. पी. दत्ता का योगदान
३३८	दो बीघा ज़मीन एक मूल्यांकन -
३३९	मुग़ल - ए - आज़म : एक मूल्यांकन
३४०	मदर इंडिया : एक मूल्यांकन
३४१	पाकीज़ा : एक मूल्यांकन
३४२	देवदास - (बिमल राय) : एक मूल्यांकन
३४३	महल : एक मूल्यांकन
३४४	धरती के लाल : एक मूल्यांकन
३४५	दुनिया न माने : एक मूल्यांकन
३४६	यहूदी : एक मूल्यांकन
३४७	मधुमती : एक मूल्यांकन
३४८	सत्यकाम : एक मूल्यांकन

३४९	चुपके चुपके : एक मूल्यांकन
३५०	शोले : एक मूल्यांकन
३५१	आवारा : एक मूल्यांकन
३५२	मेरा नाम जोकर : एक मूल्यांकन
३५३	जागते रहो : एक मूल्यांकन
३५४	श्री. 420: एक मूल्यांकन
३५५	उपकार : एक मूल्यांकन
३५६	पूरब और पश्चिम : एक मूल्यांकन
३५७	शोर : एक मूल्यांकन
३५८	रोटी कपड़ा और मकान : एक मूल्यांकन
३५९	शतरंज के खिलाड़ी : एक मूल्यांकन
३६०	सद्गति : एक मूल्यांकन
३६१	उपहार : एक मूल्यांकन
३६२	खिलौना : एक मूल्यांकन
३६३	जाने भी दो यारो : एक मूल्यांकन
३६४	अर्थ : एक मूल्यांकन
३६५	स्पर्श : एक मूल्यांकन
३६६	आक्रोश : एक मूल्यांकन
३६७	अमिताभ बच्चन और हिंदी सिनेमा
३६८	नसीरुद्दीन शाह और हिंदी सिनेमा
३६९	प्राण और हिंदी सिनेमा
३७०	ओम पुरी और हिंदी सिनेमा
३७१	दिलीपकुमार और हिंदी सिनेमा
३७२	अपर्णा सेन और हिंदी सिनेमा
३७३	मधुबाला और हिंदी सिनेमा
३७४	नर्गिस और हिंदी सिनेमा
३७५	दुर्गा खोटे और हिंदी सिनेमा
३७६	नूतन और हिंदी सिनेमा
३७७	मीना कुमारी और हिंदी सिनेमा
३७८	गुरु दत्त और हिंदी सिनेमा
३७९	सुरैय्या और हिंदी सिनेमा

३८०	लता मंगेशकर और हिंदी सिनेमा
३८१	आशा भोसले और हिंदी सिनेमा
३८२	मोहम्मद रफ़ी और हिंदी सिनेमा
३८३	किशोर कुमार और हिंदी सिनेमा
३८४	मुकेश और हिंदी सिनेमा
३८५	मन्ना डे और हिंदी सिनेमा
३८६	सचिनदेव बर्मन और हिंदी सिनेमा
३८७	गुलज़ार और हिंदी सिनेमा
३८८	जावेद अख्तर और हिंदी सिनेमा
३८९	हेमंत कुमार और हिंदी सिनेमा
३९०	सलिल चौधरी और हिंदी सिनेमा
३९१	संगीतकार रवि और हिंदी सिनेमा
३९२	नौशाद और हिंदी सिनेमा
३९३	अनुवाद कला
३९४	अनुवाद का महत्त्व और आयाम
३९५	अनुवाद और भाषा
३९६	अनुवाद तकनीक
३९७	साहित्यिक अनुवाद
३९८	व्यावहारिक अनुवाद
३९९	अनुवाद और राजभाषा
४००	अनुवाद प्रक्रिया तथा अनुवाद तकनीक
४०१	अनुवाद एकपुन: सृजन
४०२	नाटक और अनुवाद
४०३	कविता और अनुवाद
४०४	उपन्यास और अनुवाद
४०५	कहानी और अनुवाद
४०६	निबंध और अनुवाद
४०७	विज्ञान और अनुवाद
४०८	इतिहास और अनुवाद
४०९	जनसंचार और अनुवाद
४१०	शिक्षा और अनुवाद

४११	अनुवाद और व्यापार
४१२	अनुवाद का सामाजिक परिप्रेक्ष्य
४१३	अनुवाद का सांस्कृतिक परिप्रेक्ष्य
४१४	लोकोक्तियाँ और मुहावरों का अनुवाद
४१५	अनुवाद की समस्याएँ
४१६	अनुवाद सिद्धांत एवं व्यवहार
४१७	अनुवादक की योग्यताएँ
४१८	अनुवाद के प्रमुख भेद और उनके प्रमुख उदाहरण
४१९	भारतेन्दु युगीन कविता की विशेषता
४२०	द्विवेदी युगीन कविता में राष्ट्रीय चेतना
४२१	छायावादी काव्य का वैशिष्ट्य
४२२	छायावादी कविता में राष्ट्रीय चेतना
४२३	प्रेमचंद पूर्व हिंदी उपन्यास
४२४	प्रेमचंद युगीन उपन्यासों की विशेषता
४२५	प्रेमचदोत्तरउपन्यासों की विशेषता
४२६	समकालीन हिंदी उपन्यास
४२७	नई कहानी की विशेषताएँ
४२८	समकालीनकहानी की विशेषताएँ
४२९	प्रसाद पूर्व हिंदी नाटक
४३०	प्रसाद युगीन हिंदी नाटक
४३१	प्रसादोत्तर हिंदी नाटक
४३२	समकालीन हिंदी नाटक
४३३	शुक्ल युगीन हिंदी निबंधों की विशेषता
४३४	शुक्लोत्तर हिंदी निबंधों की विशेषता
४३५	समकालीन हिंदी निबंधोंकी विशेषताएँ
४३६	हिंदी एकांकी : उद्भव और विकास
४३७	समकालीन हिंदी आत्मकथा की विशेषताएँ
४३८	हिंदी संस्मरण और स्मृति की रेखाएं
४३९	समकालीन हिन्दी पत्रकारिता की चुनौतियाँ
४४०	इलेक्ट्रॉनिक मीडिया में प्रयुक्त हिंदी
४४१	वैश्विक परिदृश्य में हिंदी

४४२	बाजारवाद और हिंदी
४४३	हिंदी की संवैधानिक स्थिति
४४४	हिंदी में रोजगार की संभावनाएं
४४५	सूचना प्रौद्यौगिकी और हिंदी
४४६	सरकारी कार्यालयों में हिंदी का प्रयोग

सूचना-

१. इन मानक विषयों के अतिरिक्त दूसरे विषयों पर भी विद्यार्थी अपने शोध निर्देशक केपरामर्श से प्रकल्प-विषय का चयन कर सकते हैं।

२. विद्यार्थी किसी कृति का हिंदी अनुवाद मूल लेखक की अनुमति से कर सकते हैं।

३. प्रकल्प की पृष्ठ संख्या 60 से 80 के मध्य होनी चाहिए।

४. विद्यार्थीयदि प्रकल्पकाटंकण करते हैं तो यूनिकोड मंगल फॉण्ट में टंकण करें और फॉण्ट का आकर 14 तथा 1.5 का स्पेस रखें ।

५.विद्यार्थियों को शोध प्रक्रिया का पालन करते हुए अंत में संदर्भ ग्रंथ सूची देनी होगी।

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Examination

1. External Examination (Semester and Examination) Total Marks – 60
2. Internal Examination (आंतरिक परीक्षण) Total Marks – 40

पुस्तक समीक्षा / प्रकल्प	- २० अंक
प्रस्तुतीकरण / रचनात्मक कार्य	- १० अंक
कक्ष शिक्षण के दौरान सहभागिता	- ०५ अंक
शिष्टाचार एवं समग्र आचरण	- ०५ अंक

*** प्रश्न पत्र १६ के लिए - ६० अंक (प्रकल्प)**

- ४० अंक (मौखिकी)

एम. ए. (प्रथम वर्ष) सेमेस्टर III एवं IV

प्रश्नपत्र का प्रारूप

I - Course पाठ्यक्रम **-९, १०, ११, १२.१, १२.३, १३.१, १३.२, १३.३, १३.४, १४.२, १४.३, १४.४ के लिए**

प्रश्न १ - संदर्भ सहित व्याख्या (तीनों पुस्तकों में से) ०२ प्रश्नों के उत्तर अपेक्षित	- २० अंक
प्रश्न २ - दीर्घोत्तरी प्रश्न (तीनों पुस्तकों से) ०२ प्रश्नों के उत्तर अपेक्षित	- ३० अंक
प्रश्न ३ - अ) अतिलघूत्तरी प्रश्न (तीनों पुस्तकों से)	- ०५ अंक
ब) बहु विकल्पीय प्रश्न	- ०५ अंक
	कुल योग - ६० अंक

II - Course पाठ्यक्रम **-१२.२, १४.१, १५.१, १५.२, १५.३, १५.४, १५.५ के लिए**

प्रश्न १ - पूछे गए ४ प्रश्नों में से २ प्रश्नों के उत्तर अपेक्षित	- ४० अंक
प्रश्न २ - पूछे गए ४ टिप्पणियों में से २ के उत्तर अपेक्षित	- १० अंक
प्रश्न ३ - अ) ०५ अतिलघूत्तरी प्रश्न	- ०५ अंक
ब) ०५ बहु विकल्पीय प्रश्न	- ०५ अंक

कुल योग - ६० अंक

एम. ए. प्रथम एवं द्वितीय वर्ष

प्रत्येक प्रश्न पत्र पर चार व्याख्यान प्रति सप्ताह

१६ × ४ = ६४ व्याख्यान

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University of Mumbai

No. AAMS(UG)/ 54 of 2022-23

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and the Head of the University Departments and Directors of the Recognized Institutions in Faculty of Humanities is invited to this office circular No. UG/53 of 2017-18 dated 15th July, 2017 relating to the revised syllabus M.A. in Marathi (Sem III & IV).

They are hereby informed that the recommendations made by the Board of Studies in **Marathi** at its meeting held on 11th May, 2022 and subsequently passed by the Board of Deans at its meeting held on 17th May, 2022 **vide** item No. 5.31(R) have been accepted by the Academic Council at its meeting held on 17th May, 2022 **vide** item No. 5.31(R) and that in accordance therewith, the revised syllabus of **M.A. (Marathi) - Sem III and IV (CBCS)**, has been brought into force with effect from the academic year 2022-23. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
28th June, 2022

(Dr. Vinod Patil)
I/c Registrar

To

The Principals of the Affiliated Colleges, the Head of the University Departments and Directors of the Recognized Institutions in Faculty of Humanities.

A.C/5.31(R)/17/05/2022

****

No. AAMS(UG)/54 -A of 2022-23 28th June, 2022

Copy forwarded with Compliments for information to:-

1) The Dean, Faculty of Humanities,
2) The Chairman, Board of Studies Marathi,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Director, Department of Information & Communication Technology,
6) The Co-ordinator, MKCL.

(Dr. Vinod Patil)
I/c Registrar

Copy to :-

1. **The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
2. **The Deputy Registrar, College Affiliations & Development Department (CAD),**
3. **The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
4. **The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
5. **The Deputy Registrar, Executive Authorities Section (EA),**
6. **The Deputy Registrar, PRO, Fort, (Publication Section),**
7. **The Deputy Registrar, (Special Cell),**
8. **The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
9. **The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. **P.A to Hon'ble Vice-Chancellor,**
2. **P.A Pro-Vice-Chancellor,**
3. **P.A to Registrar,**
4. **All Deans of all Faculties,**
5. **P.A to Finance & Account Officers, (F.& A.O),**
6. **P.A to Director, Board of Examinations and Evaluation,**
7. **P.A to Director, Innovation, Incubation and Linkages,**
8. **P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
9. **The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
10. **The Director of Board of Student Development,**
11. **The Director, Department of Students Walfare (DSD),**
12. **All Deputy Registrar, Examination House,**
13. **The Deputy Registrars, Finance & Accounts Section,**
14. **The Assistant Registrar, Administrative sub-Campus Thane,**
15. **The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
16. **The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
17. **The Assistant Registrar, Constituent Colleges Unit,**
18. **BUCTU,**
19. **The Receptionist,**
20. **The Telephone Operator,**
21. **The Secretary MUASA**

for information.

AC-17/05/2022

Item No- 5.31 (R)

UNIVERSITY OF MUMBAI

Revised Syllabus for M.A (Marathi)

Semester - III And IV

(Choice Based Credit System)

(With effect from the academic year 2022-23)

Syllabus for Approval

Sr No.	Heading	Particular
1	Title of the Course	M.A (Marathi)
2	Eligibility for Admission	Candidates with at least 50% marks in the senior secondary +2 or its equivalent
3	Passing Marks	40%
4	Ordinances / Regulation (if any) No. of Years/Semester	
5	No. of Years / Semester	Sem-III and IV (CBCS)
6	Level	P.G
7	Pattern	Semester
8	Status	Revised Syllabus
9	To be implemented form Academic Year	From Academic Year 2022-23

Name & Signature Of BOS Chairperson : Dr. Vandana Mahajan

Name & Signature Of Dean : Dr. Rajesh Kharat

एम. ए. मराठी भाग २ सत्र ३

अभ्यासक्रम

शैक्षणिक वर्ष २०२२-२३ पासून लागू

सत्र : ३

अभ्यासपत्रिका क्रमांक ९ : १ - साहित्यप्रकाराचा अभ्यास: कविता

(Study of Form of Literature: Poetry)

विशिष्ट साहित्यप्रकार: कविता

उद्दिष्टे : कोणत्याही साहित्यप्रकाराला एक तात्त्विक अंग असते, तसेच त्याला एक ऐतिहासिक अंग असते. या दोन अंगांच्या देवघेवीमधून प्रत्येक साहित्यप्रकाराची जडणघडण होत असते. या दृष्टीने साहित्यप्रकाराच्या अभ्यासासाठी काही मार्गदर्शक तत्त्वे सांगता येतील.

(क) साहित्यप्रकाराची संकल्पना : सैद्धान्तिक विचार, संकेतव्यूह.

(ख) साहित्यप्रकाराची ऐतिहासिकता – आशय, अभिव्यक्ती आणि रचनाबंधातील बदल.

(ग) या सैद्धान्तिक विचाराच्या प्रकाशात नेमलेल्या साहित्यकृतींचा अभ्यास करणे.

या तीन प्रमुख मार्गदर्शक तत्त्वांनुसार साहित्यप्रकाराच्या अभ्यासक्रमाची योजना पुढीलप्रमाणे आहे :

घटक १) व्याख्याने - २०, श्रेयांकन – ०२

अ) साहित्यप्रकाराची संकल्पना सैद्धान्तिक विचार :

(साहित्यप्रकाराच्या वर्गीकरणामागील तत्त्वे) प्रमुख साहित्यप्रकार - कविता, कथा, नाटक, कादंबरी परिचय.

कवितेची व्याख्या.

ब) कविता या साहित्यप्रकाराचा संकेतव्यूह.

पद्यबंध - शब्द, ओळी, कडवी, ध्रुवपद, समांतरता, वृत्तछंद.

कवितेचे नादरूप - यमक, प्रास, अनुप्रास इत्यादी. ताल, लय, वृत्त, छंद इ०

कवितेचे दृश्यरूप – (लिखित रूप) ओळी, कडवी इत्यादी. आशयबंध-कवितेतील आशय, आशयसूत्र, अनुभव, अनुभवविश्व-भावना, भावविश्व,

कवितेचे भाषिक

विशेष–अनेकार्थता–प्रतिमा, प्रतीक, रूपक, मिथ, आदिबंध, वक्रता, नियमोल्लंघन.

सर्व काव्यघटकांची कविता या साहित्यप्रकाराच्या गुणविशेषांनुसार संघटना कशी होते हे स्पष्ट करणे.

घटक २) व्याख्याने - २०, श्रेयांकन - ०२

अ) कवितेची संकल्पना - अभिजाततावादी, रोमँटिक, प्रतीकवादी.

अन्य साहित्यप्रकारांशी कवितेचे साम्यभेदात्मक नाते.

ब) काव्यप्रकार - गीत, कथाकाव्य, खंडकाव्य, नाट्यकाव्य आणि भावकाव्य (अभंग, ओवी, लावणी, पोवाडा, सुनीत, गझल, दशपदी, विडंबन, मुक्तछंद) काव्यप्रकारांची परंपरा.

घटक ३) व्याख्याने – २०, श्रेयांकन – ०२

प्रत्येकी ०५ कविता

१) बहिणाबाई

२) बा. सी. मर्ढेकर

३) विं. दा. करंदीकर

४) नारायण सुर्वे

५) सुरेश भट

(टीप : कविता नंतर कळविण्यात येतील.)

अंतर्गत परीक्षा - एकूण गुण ४०

१. लेखी परीक्षा२० गुण

२. प्रकल्प लेखन२० गुण (पैकी - प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा - एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ-ग्रंथसूची :

१. कुलकर्णी, वा० ल०; मराठी कविता-जुनी आणि नवी, पॉप्युलर प्रकाशन आणि मौज प्रकाशन गृह, मुंबई, १९८७.

२. गणोरकर, प्रभा (संपा०); संक्षिप्त मराठी वाङ्मयकोश, (१९२० पासून २००३ पर्यंतचा कालखंड), जी० आर० भटकळफाउंडेशन, मुंबई, २००४.

३.भागवत, श्री० पु० व इतर (संपा०); साहित्य-अध्यापन आणि प्रकार, पॉप्युलर प्रकाशन गृह, मुंबई.

४. पाटणकर, वसंत; कविता: संकल्पना, निर्मिती आणि समीक्षा, मराठी विभाग, मुंबई विद्यापीठ व अनुभव प्रकाशन, मुंबई, १९९५.

५. पाटणकर, वसंत, शोध कवितेचा, मौज प्रकाशन गृह, मुंबई, २०११. ६. डहाके, वसंत आबाजी; कवितेविषयी, स्वरूप प्रकाशन, औरंगाबाद, १९९९.

७. बेडेकर, दि० के०; आधुनिक मराठी काव्य उद्गम आणि भवितव्य, नागपूर विद्यापीठ, नागपूर, १९६९.

८. रसाळ, सुधीर; काही मराठी कवी जाणिवा आणि शैली, जनशक्ती वाचक चळवळ, औरंगाबाद, आवृत्ती३री, २०११.

९. करोगल, सुषमा (संपा०); स्वातंत्र्योत्तर मराठी कविता, प्रतिमा प्रकाशन, पुणे, १९९९.

१०. गाडगीळ, डॉ. स. रा., काव्यशास्त्रप्रदीप,व्हीनसप्रकाशन, पुणे, २०१६

११. रसाळ, सुधीर, कविताआणिप्रतिमा,मौजप्रकाशनगृह, मुंबई, १९८२

१२.गाडगीळ, डॉ. स. रा.,मराठीकाव्याचेमानदंड (खंडपहिला), पद्मगंधाप्रकाशन, पुणे, २००५

१३. छंदोरचना- माधवराव त्रि. पटवर्धन, कर्नाटक पब्लिशिंग हाऊस मुंबई.

१४. छंदोरचनेचा विकास - ना. ग. जोशी

१५. मराठी छंदोरचना (लयदृष्ट्या विचार) - ना. ग. जोशी, स्वतः, बडोदे.

१६. मराठी छंद (लेख) - वि. का. राजवाडे, समग्र राजवाडे साहित्य खंड १ ला, राजवाडे संशोधन मंडळ,धुळे.

१७. ओवी ते लावणी - श्री. रं. कुलकर्णी, का. स. वाणी मराठी प्रगत अध्ययन संस्था, धुळे.
१८. ओवी छंदः रूप आणि आविष्कार - रोहिणी तुकदेव, प्रतिमा, पुणे.
१९. वाङ्मयीन संज्ञा संकल्पना कोश- संपा. प्रभा गणोरकर व अन्य, भटकळ फौंडेशन, मुंबई.
२०. पदरचना व पदरचनाप्रकार - रमेश तेंडुलकर, मराठी वाङ्मयकोश, खंड चौथा, समीक्षा संज्ञा, समन्वयक संपा. विजया राजाध्यक्ष, महाराष्ट्र राज्य साहित्य व संस्कृती मंडळ, मुंबई.
२१.यादवकालीन काव्यसमीक्षा - सुहासिनी इलेकर, धारा, औरंगाबाद. मराठी साहित्यः इतिहास आणि संस्कृती - वसंत आबाजी डहाके, भटकळ फौंडेशन, मुंबई,
२२. महाराष्ट्र सारस्वत खंड १,२ वि. ल. भावे, पॉप्युलर, मुंबई,
२३. मराठी वाङ्मयाचा इतिहास खंड १ ते ३ - संपा. रा. श्री. जोग, म. सा. प., पुणे.
२४. प्राचीन मराठी वाङ्मयाचा इतिहास खंड १ ते ४ - अ. ना. देशपांडे, कॉन्टिनेन्टल, पुणे.
२५. धर्मसंप्रदाय आणि मध्ययुगीन मराठी वाङ्मय र. बा. मंचरकर, प्रतिमा, पुणे. महानुभाव पंथ आणि त्यांचे वाङ्मय शं. गो. तुळपुळे, व्हीनस, पुणे.
२६. मध्ययुगीन साहित्याविषयी सतीश बडवे, मीरा बुक्स ॲण्ड पब्लिकेशन, औरंगाबाद.
२७. संतसाहित्यमीमांसा - संपा. ताहेर एच. पठाण, न. ब. कदम, शब्दालय, श्रीरामपूर.
२८. पाच संतकवी शं. गो. तुळपुळे, सुविचार प्रकाशन मंडळ, पुणे.
२९. वारकरी पंथाचा इतिहास शं. वा. दांडेकर, शं. वा. दांडेकर, पुणे.
३०. वारकरी संप्रदायः उदय आणि विकास - भा. पं. बहिरट, प्र. ज्ञा. भालेराव, व्हीनस, पुणे,
३१. श्री एकनाथ महाराजांची भारुडे भाग १ व २- संपा. ना. वि. बडवे.
३२. एकनाथांची निवडक भारुडे संपा. वसंत स. जोशी.
३३. भारुड वाङ्मयातील तत्त्वज्ञान रामचंद्र देखणे, पद्मगंधा, पुणे.
३४. एकनाथांची भारुडे शरद व्यवहारे.
३५. प्राचीन मराठी पंडिती काव्य - के. ना. वाटवे, जोशी आणि लोखंढे, पुणे.
३६. मराठी आख्यान कविताः एक अभ्यास गं. ब. ग्रामोपाध्ये, मुंबई मराठी साहित्य संघ, मुंबई.
३७. प्राचीन मराठी आख्यान कविता - संपा. प्र. वा. बापट, केशव ढवळे, मुंबई.
३८. प्राचीन आख्यानक कविता - संपा. गजमल माळी, व्हीनस, पुणे.
३९. मध्ययुगीन मराठी साहित्यः एक पुनर्विचार - श्री. रं. कुलकर्णी, राजहंस, पुणे.
४०. मध्ययुगीन साहित्यः अवलोकन आणि निरीक्षणे संपा. सतीश बडवे व इतर, प्रशांत, जळगाव.
४१. संत कविताः एक दृष्टिकोन - प्रकाश देशपांडे केजकर, स्वरूप, औरंगाबाद,
४२.पंत कविताः एक समीक्षा प्रकाश देशपांडे केजकर, स्वरूप, औरंगाबाद.

सत्र : ३

अभ्यासपत्रिका क्रमांक ९ : २ – मध्ययुगीन कालखंडाचा अभ्यास -१ (यादवकाळ व बहामनीकाळ)

(Study of Medieval Period: yadavkal and bahamanikal)

उद्दिष्टे : या अभ्यासपत्रिकेमध्ये यादवकाळ व बहामनीकाळाचा अभ्यास करावयाचा आहे. सदर अभ्यासपत्रिकेत नेमलेल्या साहित्याच्याआधारे विशिष्ट कालखंडाचा आणि कालखंडाच्या पार्श्वभूमीवर नेमलेल्या साहित्यकृतींचा असा दुहेरी स्तरावर अभ्यास अभिप्रेत आहे. यादवकाळात आणि बहामनीकाळात निर्माण झालेले मराठी साहित्य तपासून बघणे आणि काळाच्या पार्श्वभूमीवर यासाहित्यात झालेली स्थित्यंतरे लक्षात घेणे तसेच संप्रदायिक विचारधारांच्या पार्श्वभूमीवर साहित्यात झालेल्या बदलांचा अभ्यास करणे.

घटक १) व्याख्याने- २०, श्रेयांकन- ०२

अ) कालखंडाचा अभ्यास : संकल्पना, स्वरूप व वैशिष्ट्ये

आ)या कालखंडातील सामाजिक, सांस्कृतिक व राजकीय पार्श्वभूमी आणि वाङमयीन प्रेरणा

घटक २) व्याख्याने-२०, श्रेयांकन – ०२

अ) यादवकालीन मराठी साहित्य

आ)बहामनीकालीन मराठी साहित्य

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

अ) लीळाचरित्र - एकाक

ब) उखाहरण – चोंभा

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा२० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. संत वाङ्मयाची सामाजिक फलश्रुती, गं० बा० सरदार.

२. यादवकालीन महाराष्ट्र, मु० गो० पानसे.

३. यादवकालीन मराठी भाषा, शं० गो० तुळपुळे.

४. पाच संतकवी, डॉ० शं० गो० तुळपुळे.

५. मराठी कविता : प्राचीन कालखंड, वा० रा० ढवळे.
६. ज्ञानेश्वरी (अध्याय १२), (संपा०) अरविंद मंगरूळकर, वि० मो० केळकर / (संपा०) ल० वि० कर्वे, गो० पु० रिसबुड / (संपा०) श्री० ना० बनहट्टी / (संपा०) म० ना० अदवंत, भालचंद्र खांडेकर / (संपा०) शं० वा० दांडेकर / (संपा०) द० सी० पंगु / (संपा०) स० रा० गाडगीळ / (संपा०) श्री० मा० कुलकर्णी.
७. वि० का० राजवाडेकृत 'ज्ञानेश्वरी'ची प्रस्तावना आणि 'ज्ञानेश्वरी'तील मराठी भाषेचे व्याकरण, साहित्य संस्कृती मंडळ.
८. महानुभाव गद्य, शं० गो० तुळपुळे.
९. महानुभाव साहित्यदर्शन, उषा मा० देशमुख.
१०. साहित्य, समाज आणि संस्कृती, दिगंबर पाध्ये.
११. आचार्य, मा० ना०; ज्ञानमयूरांची कविता, पुष्पा प्रकाशन, पुणे.
१२. केतकर, श्री० व्यं०; महाराष्ट्रीयांचे काव्यपरीक्षण, व्हीनस प्रकाशन, पुणे, १९६४ (दु० आ०).
१३. जोग, रा० श्री०;मराठी वाङ्मयाभिरुचीचे विहंगमावलोकन, पुणे विद्यापीठ, पुणे, १९५९.
१४. जोग, रा० श्री०; मराठी वाङ्मयाचा इतिहास, खंड ३ (१६८१ ते १८००) महाराष्ट्र साहित्य परिषद, पुणे, १९७३.
१५. तुळपुळे, श० गो०; पाच संतकवी, सुविचार प्रकाशन मंडळ, पुणे, १९८४ (तृ० आ०)
१६. तुळपुळे, श० गो०; मराठी वाङ्मयाचा इतिहास, खंड १, (आरंभ ते १३५०) महाराष्ट्र साहित्य परिषद, पुणे, १९८४.
१७. देशमुख, उषा मा०; कालखंडाचा अभ्यास, मुंबई विद्यापीठ, मराठी विभाग आणि स्नेहवर्धन प्रकाशन, पुणे.
१८. नसिराबादकर, ल० रा०: प्राचीन मराठी वाङ्मयाचा इतिहास, फडके प्रकाशन, कोल्हापूर, २००५.
१९. पाध्ये, दिगंबर; साहित्य, समाज आणि संस्कृती, मराठी विभाग, मुंबई विद्यापीठ आणि लोकवाङ्मय गृह, मुंबई, १९९८.
२०. फाटक, न० ० एकनाथ; यक्ती आणि वाङ्मय, मौज प्रकाशन, मुंबई, १९६३.
२१. बडवे, नानासाहेब; एकनाथांची भारूडे, भाग १ श्रीएकनाथ संशोधन मंदिर, औरंगाबाद १९६८.
२२. बडवे, नानासाहेब; एकनाथांची भारूडे, भाग २ श्रीएकनाथ संशोधन मंदिर, औरंगाबाद, १९७८
२३. भावे, वि० ल०; महाराष्ट्र सारस्वत, खंड १, पॉप्युलर प्रकाशन, मुंबई, १९८३ (स०आ०).
२४. भावे, वि० ल०; महाराष्ट्र सारस्वत, खंड २, पॉप्युलर प्रकाशन, मुंबई, १९८३ (स०आ०).
२५. भिंगारे, ल० म०; मुक्तमयुरांची महाभारते, मराठवाडा साहित्य परिषद, हैद्राबाद, १९५६.
२६. मालशे स० गं०; मराठी वाङ्मयाचा इतिहास, खंड २, भाग १ (१३५० ते १६८०) महाराष्ट्र साहित्य परिषद, पुणे, १९८२.
२७. मालशे, स० गं०; मराठी वाङ्मयाचा इतिहास, खंड २ भाग २ (१३५० ते १६८०) १९८२. महाराष्ट्र साहित्य परिषद, पुणे.
२८. शेणोलीकर, ह० श्री०; प्राचीन मराठी वाङ्मयाचा इतिहास, मोघे प्रकाशन, कोल्हापूर, १९७१
२९. सरदार, गं० बा०; संत साहित्याची सामाजिक फलश्रुती, महाराष्ट्र साहित्य परिषद, पुणे, १९७० (ति० आ०).
३०. साखरे, नानामहाराज; सकलसंतगाथा, खंड १ ते ३ वरदा प्रकाशन, पुणे, १९६७.

सत्र : ३

अभ्यासपत्रिका क्रमांक ९ : ३ - सौंदर्यशास्त्र

उद्दिष्टे : सौंदर्याचे व कलेचे तत्त्वज्ञान म्हणजे सौदर्यशास्त्र. यामध्ये सौदर्याविषयी व कलेविषयी सिद्धान्तन केले जाते. कला व सौंदर्य यांचे स्वरूप काय, त्यांच्या आवश्यक अटी कोणत्या, त्यांचे काही नियम असतात का, विविध कलांमधील परस्परसंबंध कोणत्या प्रकारचे असतात आणि त्यातून वर्गीकरणाची व्यवस्था लावता येते का ? यांसारख्या प्रश्नांचे भान विद्यार्थ्यांना आणून देणे हा या अभ्यासपत्रिकेचा हेतू आहे.

घटक १) व्याख्याने २०, श्रेयांकन - ०२

अ) सौंदर्यशास्त्राचे स्वरूप व प्रयोजन आणि सौंदर्यकल्पना

आ) साहित्यकृतीच्या सौंदर्याची संकल्पना, रूपबंधाविषयीचे सिद्धांत, सेंद्रिय रूपबंध.

घटक २) व्याख्याने- २०, श्रेयांकन-०२

अ)भरतमुनींचा रससिद्धांत.

आ) इमॅन्युएल कांटचा सौंदर्यविचार

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

अ) कलानिर्मिती/सौंदर्यनिर्मितीमधील महत्त्वाचा घटक म्हणून प्रतिभेविषयीचे सिद्धांत.

आ) सौंदर्यमूल्य स्वायत्त की परायत्त, सौंदर्येतर मूल्ये.

अंतर्गत परीक्षा - एकूण गुण ४०

१.लेखीपरीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ

१. पाटणकर, रा० भा०; सौंदर्यमीमांसा.

२. पाध्ये, प्रभाकर सौंदर्यानुभव,

३. मर्ढेकर, बा० सी०: कला आणि मानव.

४. पाटणकर, रा० भा०, मुक्तिबोधांची कविता.

५. आचवल, माधव, रसास्वाद.

६. संपा०; रङ्गनायक.

७. लागू, श्रीराम रूपवेध

८. नाईक, राजीव; नाटकातील चिन्ह.
९. पाटील, गंगाधर समीक्षामीमांसा,
१०. पाटील, गंगाधर; समीक्षेची नवी रूपे.
११. पद्माकर, दादेगावकर, रसचर्चा.
१२. देशपांडे, ग० त्र्यं०; भारतीय साहित्यशास्त्र.
१३. कंगले, र० पं०: प्राचीन काव्यशास्त्र
१४. देशपांडे, ग० त्र्यं०; साहित्यशास्त्रातील सौंदर्यविचार
१५. कंगले, र० पं० रसभावविचार.
१६. के० नारायण काळे, प्रतिमा, रूप आणि गंध.
१७. संत, दु० का०; ललितकला आणि वाङ्मय.
Cinema: The Movement - Image by Gilles Deleuze
(The Athlone Press, London, 1986)
1. Flim Theory & Criticism edited by Gerald Mast & Marshall Cohen (OUP, Oxford, 1985)
2. Realism & the Cinema edited by Christopher Williams (Routledge & Kegan Paul, London, 1980)
3. The Moving Image by Kishore Valicha (Orient Longman, India, 1988)

सत्र : ३

अभ्यासपत्रिका क्रमांक ९ : ४ - स्त्रीवाद आणि साहित्य (Feminism and Literature)

उद्दिष्टे: जगातील बहुतेक संस्कृती या पुरुषप्रधान असून त्यांच्या समाजरचनेत पुरुषांच्या हितसंबंधांची जपणूक केलेली आहे. यातून पुरुषप्रधान व्यवस्था जन्माला येऊन स्त्रीचे शोषण होत असते. आपल्यावरील अन्यायाची, दुय्यमत्वाची जाणीव झालेली स्त्री कृतीतून व लेखणीतून त्याविषयावर व्यक्त होऊ लागली आणि यातून स्त्रियांच्या वेगळ्या साहित्याचा जन्म झाला. स्त्रीवाद, स्त्रीवादी साहित्य आणि स्त्रीवादी समीक्षा यांची उभारणी पाश्चात्त्य व मराठी साहित्यविश्वात कशी झाली याचा स्थूल परिचय करून देणे हा या अभ्यासपत्रिकेचा हेतू आहे. त्याचबरोबर 'स्त्रीवादी वाचन' हा स्त्रीवादी समीक्षेचा महत्त्वाचा प्रकार विद्यार्थ्यांना परिचित करून देऊन पुरुषलेखकांच्या साहित्याचेही स्त्रीवादी वाचन करता येते हे दर्शवणे येथे अभिप्रेत आहे.

घटक १) व्याख्याने-२०, श्रेयांकन - ०२

अ) स्त्रीवाद – संकल्पना, स्वरूप व प्रेरणा

ब) पाश्चात्य स्त्रीवाद व भारतीय स्त्रीवाद.

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

अ) मराठीतील स्त्रीलिखित साहित्याचा ऐतिहासिक आढावा

ब) स्त्रीवादी समीक्षेची प्रारूपे

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

अ) फिंद्री – सुनिता बोर्डे

ब) वाळूचा प्रियकर – मल्लिका अमरशेख

अंतर्गत परीक्षा-एकूण गुण ४०

१. लेखी परीक्षा२० गुण

२.प्रकल्प लेखन२० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. ऑमव्हेट, गेल; जोतिबा फुले आणि स्त्रीमुक्तीचा विचार.

२. आठलेकर, मंगला; तिची कथा, राजहंस प्रकाशन, पुणे.

३. कर्वे, स्वाती, स्त्री विकासाच्या पाऊलखुणा, प्रतिमा प्रकाशन, पुणे.

४. कर्वे, स्वाती स्त्री विकासाची नवी क्षितिजे, प्रतिमा प्रकाशन, पुणे.

५. खांडगे, मंदा (संपा०); स्त्री साहित्याचा मागोवा, खंड १ व २, साहित्यप्रेमी भगिनी मंडळ, पुणे, २००२.
६. गोखले, करुणा; बाईमाणूस, राजहंस प्रकाशन, पुणे,
७. गोखले, करुणा (अनु०); सेकंड सेक्स, मूळ लेखिका सिमॉन-द-बोव्हा.
८. जाधव, मनोहर; समीक्षेतील नव्या संकल्पना, स्वरूप प्रकाशन, औरंगाबाद.
९. जाधव, रा० ग०, आधुनिक मराठी कवयित्रींची कविता, प्रतिमा प्रकाशन, पुणे.
१०. धोंगडे, अश्विनी; संदर्भ स्त्री पुरुष, दिलिपराज प्रकाशन, पुणे, २००३.
११. धोगडे, अश्विनी स्त्रीवादी समीक्षा-स्वरूप आणि उपयोजन, दिलिपराज प्रकाशन, पुणे, २००३.
१२. नानिवडेकर, मेघा महाराष्ट्रातील स्त्री चळवळीचा मागोवा, प्रतिमा प्रकाशन, पुणे.
१३. निरगुडकर, भारती, समीक्षासंहिता, शब्दालय प्रकाशन, श्रीरामपूर, २०१२.
१४. फडके, भालचंद्र; मराठी लेखिका चिंता आणि चिंतन, श्रीविद्या प्रकाशन, पुणे.
१५. भागवत, विद्युत स्त्री प्रश्नांची वाटचाल, प्रतिमा प्रकाशन, पुणे, २००४.
१६. भागवत, विद्युत, स्त्रीवादी सामाजिक विचार, डायमंड पब्लिकेशन, पुणे, २००८.
१७. भोसले, नारायण; महाराष्ट्रातील स्त्रीविषयक सुधारणावाद्यांचे सत्ताकारण, द ताईची प्रकाशन, पुणे.
१८. भोसले, नारायण; अब्राह्मणी स्त्रीवाद, अथर्व प्रकाशन, जळगाव.
१९. महाजन, वंदना, मराठी कादंबरीतील स्त्रीवाद, स्नेहवर्धन प्रकाशन, पुणे, २०१०.
२०. महाजन, वंदना, सांस्कृतिक प्रवाहांची स्त्रीवादी समीक्षा, स्नेहवर्धन प्रकाशन, पुणे.
२१. रानडे, प्रतिभा, स्त्रीप्रश्नांची चर्चा एकोणिसावे शतक, पद्मगंधा प्रकाशन, पुणे.
२२. वरखेडे, मंगला, स्त्रीवाद संकल्पना व उपयोजन, का० स० वाणी प्रगत अध्ययन संस्था, धुळे.
२३. साळुंखे, आ० ह०, हिंदु संस्कृती आणि स्त्री, लोकवाङ्मय गृह, मुंबई.
२४. A Room of One’s Own – Virginia Woolf
२५. Sexual Politics – Kate Millett
२६. Vindication of The Rights of Woman – Mery Wollstonecraft
२७. The Yellow Wallpaper – Charlotte Perkins Gilman’s

सत्र ३

अभ्यासपत्रिका क्रमांक ९ : ५ - दलित साहित्य (Dalit Literature)

उद्दिष्टे: मराठी साहित्य संस्कृतिक्षेत्रात १९६० नंतरच्या दशकात दलित साहित्याची एक वाङ्मयीन व सामाजिक सांस्कृतिक स्वरूपाची चळवळ सुरू झाली. या चळवळीतून निर्माण झालेल्या दलित साहित्याने मराठी साहित्यात मोलाची भर घातलेली आहे. अशा महत्त्वाच्या साहित्यप्रवाहाचा अभ्यास विद्यापीठीय स्तरावर होणे आवश्यक ठरते. या दृष्टीने दलित साहित्याची वाङ्मयीन व सामाजिक/सांस्कृतिक पार्श्वभूमी, दलित साहित्याची संकल्पना व स्वरूप, त्यातील विद्रोहाची जाणीव व तिचा साहित्यिक आविष्कार या साहित्यप्रवाहातील विविध साहित्यप्रकार, तसेच या साहित्याचे व साहित्यिक चळवळीचे वाङ्मयीन व सामाजिक कार्य इत्यादी गोष्टींचा सुव्यवस्थित अभ्यास करणे, हे या अभ्यासविषयपत्रिकेचे उद्दिष्ट आहे.

घटक १) व्याख्याने २०, श्रेयांकन - ०२

दलित साहित्याचे स्वरूप व वैशिष्ट्ये

अ) दलित, दलित जाणीव, दलित साहित्य संकल्पनेविषयीच्या विविध भूमिका.

ब) दलित साहित्याची प्रेरणा, व्याख्या.

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

दलित साहित्याच्या चळवळीची पार्श्वभूमी

अ) सामाजिक, राजकीय, सांस्कृतिक, धार्मिक परिस्थिती वास्तव.

ब) आंबेडकरपूर्व, आंबेडकरी व आंबेडकरोत्तर चळवळी.

क) दलित साहित्य चळवळीचा सामाजिक, सांस्कृतिक, राजकीय चळवळींशी असलेला अनुबंध.

ड) दलित साहित्याची पूर्वपरंपरा.

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

१. कोंडवाडा – दया पवार

२. सनातन – शरणकुमार लिंबाळे

अंतर्गत परीक्षा- एकूण गुण ४००

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन : १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. आंबेडकर, डॉ० बाबासाहेब; अस्पृश्य मूळचे कोण?, (The Untouchables), (अनु०) कांबळे, बी० सी०;

२. आंबेडकर, डॉ० बाबासाहेब; जातिभेद निर्मूलन, (अनु०) गांजरे, मा० फ०; प्रज्ञा प्रकाशन मंडळ, नागपूर, १९७०.

३. आंबेडकर, डॉ० बाबासाहेब, शूद्र मूळचे कोण होते?, (अनु०) खैरमोडे, चां० भ० ठक्कर आणि कं० लि०, मुंबई, १९४६.

४. कऱ्हाडे, सदा, दलित साहित्य चिकित्सा, स्वरूप प्रकाशन, औरंगाबाद, २००१.

५. कुलकर्णी, गो० म० (संपा०); दलित साहित्य : प्रवाह व प्रतिक्रिया, प्रतिमा प्रकाशन, पुणे, १९८६.

६. खरात, शंकरराव; दलित वाङ्मय प्रेरणा आणि प्रवृत्ती, इनामदार बंधू प्रकाशन, पुणे, १९७८.

७. जाधव, रा० ग०, निळी पहाट, प्राज्ञपाठशाळा मंडळ, वाई, १९७८.

८. डांगळे, अर्जुन (संपा०); दलित साहित्य : एक चिंतन, महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळ, मुंबई, १९७८.

९. निंबाळकर, वामन (संपा०); सामाजिक क्रांतीची दिशा, (प्राचार्य म० भि० चिटणीस समग्र वाङ्मय), प्रबोधन प्रकाशन, नागपूर, २००७.

१०. पाटील, म० सु०; दलित कविता, लोकवाङ्मय गृह, मुंबई, १९८१.

११. पानतावणे, गंगाधर, दलित साहित्य : चर्चा आणि चिंतन, साकेत प्रकाशन, औरंगाबाद,१९९३.

१२. फडके, भालचंद्र; दलित साहित्य : वेदना आणि विद्रोह, श्रीविद्या प्रकाशन, पुणे, १९७७ (प्र० आ०), १९८९ दु०आ०).

१३. बागूल, बाबूराव; दलित साहित्य : आजचे क्रांतिविज्ञान, बुद्धिस्ट पब्लि० हाऊस, नागपूर, १९८१.

१४. भगत, दत्ता, निळी वाटचाल, प्रतिमा प्रकाशन, पुणे, २००१.

१५. मनोहर, यशवंत, दलित साहित्य : सिद्धांत आणि स्वरूप, प्रबोधन प्रकाशन, नागपूर, १९७८.

१६. माटे, श्री० म०; अस्पृष्टांचा प्रश्न, दाते, श्री० र०, पुणे, १९३३.

१७. मेश्राम, केशव (संपा०); विद्रोही कविता, कॉन्टिनेन्टल प्रकाशन, पुणे, १९७८ (प्र० आ०), १९९४ (तृ० आ०).

१८.मेश्राम, केशव व इतर (संपा०); दलित साहित्याची स्थितिगती, मराठी विभाग, मुंबई विद्यापीठ आणि अनुभव पब्लिकेशन्स, मुंबई, १९९७,

१९. मेश्राम, योगेन्द्र; दलित साहित्य - उद्गम आणि विकास, मंगेश प्रकाशन, नागपूर, १९९८.

२०. रेगे, शां० शं०; भीमपर्व, सुगावा प्रकाशन, पुणे, १९९१.

२१. लिंबाळे, शरणकुमार (संपा०); शतकातील दलितविचार, दिलीपराज प्रकाशन,

२२. लिंबाळे, शरणकुमार (संपा०); प्रज्ञासूर्य, प्रचार प्रकाशन, कोल्हापूर, १९९९.

२३. वानखेडे, म० ना०; दलितांचे विद्रोही वाङ्मय, प्रबोधन प्रकाशन, नागपूर, १९८१.

२४. डोळस, अविनाश आंबेडकरी विचार आणि साहित्य, साकेत प्रकाशन,पुणे, २००१.

२५. नीळकंठ, शेरे; डॉ० बाबासाहेब आंबेडकर आणि दलित वैचारिक वाङ्मय, सुविद्या प्रकाशन, पुणे, २००५.

२६. गरुड, श्यामल; दलित स्त्रीआत्मकथने, यशश्री प्रकाशन, पुणे २०१०.

२७. Ambedkar, Babasaheb; Annihilation of Caste, New Book Company, Bombay, 1936.

सत्र : ३

अभ्यासपत्रिका क्रमांक १० : १ - साहित्यप्रकाराचा अभ्यास : कादंबरी

(Study of Form of Literature: Novel)

विशिष्ट साहित्यप्रकार: कादंबरी

उद्दिष्ट : कोणत्याही साहित्यप्रकाराला एक तात्त्विक अंग असते, तसेच त्याला एक ऐतिहासिक अंग असते. या दोन अंगांच्या देवघेवीमधून प्रत्येक साहित्यप्रकाराची जडणघडण होत असते. या दृष्टीने साहित्यप्रकाराच्या अभ्यासासाठी काही मार्गदर्शक तत्त्वे सांगता येतील.

(क) साहित्यप्रकाराची संकल्पना : सैद्धान्तिक विचार, संकेतव्यूह.

(ख) या सैद्धान्तिक विचाराच्या आधारे नेमलेल्या साहित्यकृतीचा अभ्यास करणे.

घटक १ व्याख्याने-२०, श्रेयांकन-०२

अ) 'कादंबरी' या साहित्यप्रकाराची संकल्पना : सैद्धान्तिक विचार

साहित्य आणि साहित्यप्रकार.

साहित्यप्रकाराची संकल्पना, साहित्यकृतींची वर्गवारी करणारी वर्गीकरण-तत्त्वे, काव्य, कथात्म साहित्य व नाटक आदी प्रमुख साहित्यप्रकार इत्यादी गोष्टींचा परिचय करून देणे.

ब) कादंबरी आणि संबंधित इतर साहित्यप्रकार यांच्यामधील साम्यभेदाचे नाते. कथा-कादंबरी या साहित्यप्रकारांतील घटकापेक्षा चरित्र-आत्मचरित्र, प्रवासवर्णन, व्यक्तिचित्रे, ललितनिबंध, रिपोर्टाज् इत्यादी साहित्यप्रकारांतील घटकांच्या साम्यभेदांची चर्चा.

घटक २ व्याख्याने-२०, श्रेयांकन-०२

अ) कथनपर साहित्याचे घटक - आशयसूत्र, निवेदक-पात्र, अनुभवविश्व, निवेदन, निवेदनाचे ४ प्रकार (कथन, वर्णन, संवाद, भाष्य) वातावरण, भाषा इत्यादी.

ब) कादंबरीचे प्रकार उपप्रकार

कादंबरीच्या प्रकारामागील विविध तत्त्वे व कादंबरीचे प्रकार

घटक ३ व्याख्याने-२०, श्रेयांकन-०२

नेमलेल्या कादंबरीचा अभ्यास

१) इंदू काळे व सरला भोळे – वा. म. जोशी

२) सात सक्कं त्रेचाळीस – किरण नगरकर

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण
२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण) -

सत्रान्त परीक्षा एकूण गुण ६०
वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. 'मराठी कादंबरी', कुसुमावती देशपांडे,
२. 'मराठी कादंबरी तंत्र आणि विकास', बापट, गोडबोले,
३. 'घार आणि काठ', नरहर कुरुंदकर.
४. 'कादंबरी', ल० ग० जोग.
५. 'साहित्य : अध्यापन आणि प्रकार', संपा० श्री० पु० भागवत. &. The Rhetoric of Fiction, Booth, W. C.
9. Aspects of the Novel, Forster, E. M. 2. The Theory of the Novel, ed. Halparin John.
8. The Craft of Fiction, Lubbock Percy.
९. The Novel and the Reader, Katherine Lerer.

सत्र : ३

अभ्यासपत्रिका क्रमांक १०:२–मध्ययुगीन कालखंडाचा अभ्यास : शिवकाळ व पेशवेकाळ

(Study of Medieval Period:shivkal and peshavekal)

उद्दिष्ट : या अभ्यासपत्रिकेमध्ये शिवकाळ व पेशवेकाळाचाअभ्यास करावयाचा आहे. हा अभ्यास समकालीन सामाजिक, राजकीय,धार्मिक, सांस्कृतिक पार्श्वभूमी व वाङ्मयीन प्रेरणा यांच्या संदर्भात करणे अपेक्षित आहे. या अभ्यासात शिवकाळात व पेशवेकाळात निर्माण झालेल्या साहित्याचा स्थूल स्वरूपात परिचय करून घेणे अपेक्षित आहे.

घटक १ व्याख्याने-२०, श्रेयांकन-०२

अ) कालखंडाचा अभ्यास :संकल्पना, स्वरूप व वैशिष्ट्ये

आ) या कालखंडातील सामाजिक, राजकीय, धार्मिक व सांस्कृतिक पार्श्वभूमी आणि साहित्य निर्मितीच्या प्रेरणा

घटक २ व्याख्याने-२०, श्रेयांकन-०२

अ) शिवकालखंडातील मराठी साहित्य

ब) पेशवेकालखंडातील मराठी साहित्य

घटक ३ व्याख्याने-२०, श्रेयांकन-०२

१. आज्ञापत्र – रामचंद्रपंत अमात्य

२. अंधारातील लावण्या – संपा. य. न. केळकर

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. जोग, रा० श्री व इतर मराठी वाङ्मयाचा इतिहास खंड ३ (१६८१ ते १८००) महाराष्ट्र साहित्य परिषद, पुणे, १९७३.

२. तुळपुळे, श० गो० पाच संतकवी, सुविचार प्रकाशन मंडळ, पुणे, १९८४.

३. तुळपुळे, शं० गो० व इतर मराठी वाङ्मयाचा इतिहास खंड १ (आरंभ ते १३५०) महाराष्ट्र साहित्य परिषद, पुणे, १९८४.

४. पाटील, म० स० तुकाराम अंत संघर्षाची अनुभवरूपे, शाल प्रकाशन, मुंबई, २००४

५. मालशे स० गं०: मराठी वाङ्मयाचा इतिहास, खंड २, भाग १ (१३५० से १६८०) महाराष्ट्र साहित्य परिषद, पुणे, १९८२.

६. मालशे स० गं०: मराठी वाङ्मयाचा इतिहास खंड २ भाग २ (१३५० ते १६८०) महाराष्ट्र साहित्य परिषद, पुणे, १९८२.
७. भावे, वि० ल०: महाराष्ट्र सारस्वत खंड १, पॉप्युलर प्रकाशन, मुंबई, १९८३ (स०आ०).
८. भावे, वि० ल० महाराष्ट्र सारस्वत, खंड २ पॉप्युलर प्रकाशन, मुंबई, १९८३ (स०आ०).
९. शेणोलीकर, ह० श्री०; प्राचीन मराठी वाड्मयाचा इतिहास, मोघे प्रकाशन, कोल्हापूर, १९७९
१०. सहस्रबुद्धे, म० ना०, मराठी शाहिरी वाङ्मय, ठोकळ, पुणे, १९६९
११. सरदार गं० वा० संत साहित्याची सामाजिक महाराष्ट्र साहित्य परिषद, पुणे, १९७० (ति० आ०).
१२. सरदार गे० वा०: तुकारामदर्शन, अर्थात् अभंगवाणी प्रसिद्ध तुकयाची (संपा०), मॉडर्न बुक डेपी प्रकाशन, प० आ०, १९६८.
१३) वाटवे के० ना० व कुलकर्णी, कुसुम (संपा०) पंडिती काव्य, कॉन्टिनेन्टल प्रकाशन, पुणे, प० आ०, १९६८.
१४) महऱ्हाटी लावणी, म० वा० धोंड.
१५) मराठी शाहिरी वाङ्मय, म० ना० सहस्रबुद्धे.
१६) मराठी कवितेचा उष:काल, श्री० म० वर्दे.
१७) पैंजण, म० ना० अदवंत.

सत्र : ३

अभ्यासपत्रिका क्रमांक १० : ३- ग्रामीण मराठी साहित्य (Gramin Marathi Sahitya)

उद्दिष्ट: ग्रामीण साहित्य हा आधुनिक मराठी साहित्यातील एक महत्त्वाचा प्रवाह आहे. या प्रवाहाला ग्रामीण चळवळीची पार्श्वभूमी आहे. बदलत्या भारतीय समाजजीवनाला सातत्याने समकक्ष राहणाऱ्या मराठी ग्रामीण साहित्याचा अभ्यास करताना आपल्याला विविध टप्पे दिसतात. या टप्यांचा अभ्यास करणे हा या अभ्यासपत्रिकेचा हेतू आहे.

घटक १) व्याख्याने-२०. श्रेयांकन - ०२

१. ग्रामीण साहित्याची संकल्पना, स्वरूप आणि विशेष

२. ग्रामीण साहित्य चळवळ आणि निर्मीतीच्या प्रेरणा

घटक २) व्याख्याने- २०, श्रेयांकन- ०२

१. स्वातंत्र्यपूर्व काळातील ग्रामीण साहित्याचे स्वरूप.

२. स्वातंत्र्योत्तर काळातील ग्रामीण साहित्याचे बदलते स्वरूप.

घटक ३) व्याख्याने २०, श्रेयांकन - ०२

१. खुरपं – सुचिता घोरपडे
२. विजेने चोरलेले दिवस – संतोष जगताप

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन १० गुण व प्रकल्पावर आधारित तोडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. यादव, आनंद; ग्रामीण साहित्य स्वरूप आणि वास्तवता.

२. यादव, आनंद; मराठी साहित्य समाज आणि संस्कृती.

३. भोळे, भा० ल० महात्मा फुले विचार आणि वारसा.

४. भोसले, द० ता० ग्रामीण साहित्य एक चिंतन.

५. वाघमारे, जनार्दन साहित्यचिंतन.

६. कोत्तापले, नागनाथ, ग्रामीण साहित्य स्वरूप आणि शोध.

७. मुलाटे, वासुदेव; ग्रामीण कथा स्वरूप आणि विकास.

८. पवार, गो० मा० व हातकणंगलेकर, म० द०; मराठी साहित्य प्रेरणा व स्वरूप.

सत्र : ३

अभ्यासपत्रिका क्रमांक १०:४- वैचारिक गद्य (Vaicharik Gadhya)

उद्दिष्ट : वैचारिक गद्यापासूनच आधुनिक मराठी साहित्याचा प्रारंभ झाला. कालांतराने विकसित झालेल्या कथा, कविता, कादंबरी, नाटक, ललित निबंध, प्रवासवर्णने इत्यादी साहित्यप्रकारांपेक्षा वैचारिक गद्य या प्रकाराचेस्वरूप कसे वेगळे आहे. मराठी गद्याची समृद्ध परंपरा समजून घेणे हा या अभ्यासपत्रिकेचा हेतू आहे.

घटक १) व्याख्याने २०, श्रेयांकन-०२

अ) वैचारिक गद्य : संकल्पना, स्वरूप आणि विशेष

आ) स्वातंत्र्यपूर्व काळातील वैचारिक गद्यामागील प्रेरणा

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

अ) स्वातंत्र्योत्तर काळातील वैचारिक गद्यामागील प्रेरणा: राजकीय, सामाजिक प्रेरणा, प्रबोधन चळवळी इत्यादी.

आ) वैचारिक गद्याचे विविध प्रकार

घटक ३) व्याख्याने-२०, श्रेयांकन – ०२

अ) स्वातंत्र्य पूर्व कालखंडातील वैचारिक गद्याची परंपरा.

आ) महात्मा फुले – सार्वजनिक सत्यधर्म

घटक ४) व्याख्याने २०, श्रेयांकन – ०२

अ) स्वातंत्र्योत्तर कालखंडातील वैचारिक गद्याची परंपरा.

आ) तर्कतीर्थ लक्ष्मणशास्त्री जोशी यांचे निवडक निबंध – विचारशिल्प – संपा. रा. ग. जाधव

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. फडके, य० दि०, विसाव्या शतकातील महाराष्ट्र

२. मालशे, स० गं० गतशतक शोधताना.
३. वाळिंबे, श० रा०, महाराष्ट्रातील सामाजिक पुनर्घटना.
४. जोग, रा० श्री०, मराठी वाङ्मयाचा इतिहास, खंड ४.
५. वैद्य, सरोजिनी, संक्रमण,
६. क्षीरसागर, श्री० के०, समाजविकास
७. भोळे, भा० ल०; साहित्यप्रत्येय.
८. बेडकिहाळ, किशोर व भोळे, भा० ल० (संपा०); बदलता महाराष्ट्र.
९. कोतापले, नागनाथ; ज्योतीपर्व,
१०. कुलकर्णी, गो० म०; आधुनिक मराठी साहित्याची सांस्कृतिक पार्श्वभूमी.
११. सरदार, गं० बा०; प्रबोधनाच्या पाऊलखुणा.

सत्र : ३

अभ्यासपत्रिका क्रमांक ११ : १ - साहित्यप्रकाराचा अभ्यास : नाटक

(Study of Form of Literature : Drama)

विशिष्ट साहित्यप्रकार नाटक

उद्दिष्ट: कोणत्याही साहित्यप्रकाराला एक तात्त्विक अंग असते, तसेच त्याला एक ऐतिहासिक अंग असते. या दोन अंगांच्या देवघेवीमधून प्रत्येक साहित्यप्रकाराची जडणघडण होत असते. या दृष्टीने साहित्यप्रकाराच्या अभ्यासासाठीकाही मार्गदर्शक तत्त्वे सांगता येतील.

(क) साहित्यप्रकाराची संकल्पना सैद्धान्तिक विचार, संकेतव्यूह.

(ख) या सैद्धान्तिक विचाराच्या प्रकाशात नेमलेल्या साहित्यकृतींचा अभ्यास करणे.

घटक १ व्याख्याने २०, श्रेयांकन-०२

अ) 'नाटक' या साहित्यप्रकाराची संकल्पना:सैद्धान्तिक विचार

साहित्य आणि साहित्यप्रकार.

साहित्यप्रकाराची संकल्पना, साहित्यकृतींची वर्गवारी करणारी वर्गीकरण-तत्त्वे, काव्य, कथात्म साहित्य व नाटक आदी प्रमुख साहित्यप्रकार इत्यादी गोष्टींचा परिचय करून देणे.

ब) नाटक हा एक दृश्य, श्राव्य स्वरूपाचा संमिश्र व प्रयोगनिष्ठ कलाप्रकार आहे, या गोष्टीचे भान ठेवून नाटकाची व्याख्या करणे, नाटकाचे व्यवच्छेदक लक्षण, त्याची उपलक्षणे, नाटकाचा संकेतव्यूह यासंबंधी विवेचन करणे या संदर्भात भरताची नाटकाची अभिनयाधिष्ठित व्याख्या, ॲरिस्टॉटलची नाट्यसंकल्पना आदीचा वापर करणे.

घटक २ व्याख्याने २०, श्रेयांकन - ०२

अ) नाटकाचे घटक नाट्यबीज, नाट्यप्रसंग, कथानक, पात्र, संवाद, भाषा यांचे स्वरूप व कार्य यांचे विवेचन या सर्व नाट्यांगांतून संघटित होणाऱ्या नाटकांचे एकात्म रूप लक्षात घेणे.

ब) नाटकाचे प्रकार नाटक, एकांकिका, संगीत, गद्य नाटक, शोकात्मिका, सुखात्मिका इत्यादी.

घटक ३ व्याख्याने २०, श्रेयांकन - ०२

नेमलेल्या नाटकांचा अभ्यास

१. कुलवधू – मो. ग. रांगणेकर

२. उध्वस्त धर्मशाळा – गो. पु. देशपांडे

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ

१. कंगले, र० पं०; रस-भाव-विचार, महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळ, मुंबई, १९७३.
२. करंदीकर, गो० वि०, ऑरस्टॉटलचे काव्यशास्त्र, मौज प्रकाशन, मुंबई, १९५७.
३. कानेटकर, वसंत, नाटक एक चिंतन, नीळकंठ प्रकाशन, पुणे, १९७४.
४. काळे, के० नारायण; नाट्यविमर्श, पॉप्युलर बुक डेपो, मुंबई, १९६१.
५. काळे, के० नारायण व इतर (संपा०); मराठी रंगभूमी मराठी नाटक घटना आणि परंपरा, मुंबई मराठी साहित्यसंघ, मुंबई, १९७१.
६. केतकर, गोदावरी; भरतमुनींचे नाट्यशास्त्र, पॉप्युलर बुक डेपो, मुंबई, १९६३.
७. जोग, रा० श्री०; अभिनव काव्यप्रकाश, व्हीनस प्रकाशन, पुणे, १९९७ (द०आ०).
८. देशपांडे, ग० त्र्यं०; भारतीय साहित्यशास्त्र, पॉप्युलर प्रकाशन, मुंबई, १९८० (तृ० आ०).
९. नाईक, राजीव; नाटकातील चिन्ह, संदर्भ प्रकाशन, ठाणे, १९९४.
१०. नाईक, राजीव व इतर (संपा०); रङ्गनायक, आविष्कार प्रकाशन, मुंबई, १९८८.
११. पाटणकर, रा० भा०; कांटची सौदर्यमीमांसा, मौज प्रकाशन, मुंबई, १९७७.
१२. पाटील, गंगाधर; समीक्षेची नवी रूपे, मॅजेस्टिक बुक स्टॉल, मुंबई, १९८१.
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२. दावतर, वसंत; 'नाटक म्हणजे काय?', अनुष्टुभ्, मे-जून १९८७.

सत्र : ३

अभ्यासपत्रिका क्रमांक ११ : २ - लोकसाहित्य (Folk Literature)

उद्दिष्ट: भाषा, साहित्य आणि संस्कृती यांच्या घडणीत लोकसाहित्याचा फार मोठा सहभाग असतो. ललित साहित्य आणि लोकसाहित्य यांच्या निर्मितिप्रेरणा, संकल्पना, संकेतव्यवस्था आणि आविष्काररूप यांमध्ये अर्थातच भेद आहेत. असे असले तरी ललित साहित्यात लोकसाहित्याचे काही गुणविशेष, संकेत आढळून येतात, तसेच लोकसाहित्यातही ललित साहित्याचे काही गुणविशेष लक्षणे व संकेत दिसून येतात. या दोहोंचे घनिष्ट संबंध असून त्यांच्यामध्ये सतत देवघेव होत असते.

या पार्श्वभूमीवर भाषा साहित्याच्या विद्यार्थ्यांनी विद्यापीठीय स्तरावर लोकसाहित्याचा अभ्यास करणे प्रस्तुत ठरते. या दृष्टीने (१) लोकसाहित्याची संकल्पना, स्वरूप व निर्मितिप्रेरणा, (२) लोकसाहित्याची संकेतव्यवस्था, (३) लोकसाहित्याची व्याप्ती व विविध प्रकार, (४) लोकसाहित्य आणि ललित साहित्य यांचे परस्परसंबंध आदी गोष्टींचे परिचयपर ज्ञान विद्यार्थ्यांना करून देणे, तसेच लोकसाहित्याचे वाचन / आस्वाद व अभ्यास करण्याची त्यांना यथोचित साहित्यदृष्टी देणे हे प्रस्तुत अभ्यासविषयपत्रिकेचे उद्दिष्ट आहे.

घटक १) व्याख्याने- २०, श्रेयांकन – ०२

अ) लोकसाहित्य : संकल्पना व व्याख्या

आ) लोकसाहित्य स्वरूपविचार

१) 'लोक' आणि 'लोकमानस'

२) 'लोकधर्म' आणि 'लोकदैवत'

३) 'लोकतत्त्व' आणि 'लोकसंस्कृती'

४) 'लोकवाङ्मय' आणि 'लोकसंस्कृती'

या संकल्पनांचे स्पष्टीकरण आणि स्वरूपदिग्दर्शन, लोकसाहित्याच्या विविध व्याख्या व लक्षणे, लोकसाहित्याची संकेतव्यवस्था, लोकसाहित्यामागील निर्मितिप्रेरणा.

घटक २) व्याख्याने २०, श्रेयांकन - ०२

अ) लोकसाहित्याचे प्रकार व वर्गीकरण

आ)लोक्साहीत्यचा इतर ज्ञानशाखांशी असलेला संबंध

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

अ) गंगासागर (लोकनाट्य) – न. ह. खोडे

आ) 'कोकणाचा गाबीत शिग्मोत्सव या ग्रंथातील पारंपारिक फागगीते' – प्रा. डॉ. रमेश कुबल, प्रा. डॉ. अंकुश सारंग

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०
वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. कुबल, रमेश; आदिवासी नाटक - स्वरूप आणि समीक्षा, आयएनटी प्रकाशन, मुंबई, २००६.
२. जोशी, उषा (संपा०); रामायणाची भाषांतरे,
३. ढेरे, रा० चिं०; भारतीय रंगभूमीच्या शोधात, पद्मगंधा प्रकाशन, पुणे, १९९६.
४. ढेरे, रा० चिं०; लोकदैवताचे विश्व, पद्मगंधा प्रकाशन, पुणे, २०००. ५. ढेरे, रा० चिं०; लोकसंस्कृतीचे उपासक, पद्मगंधा प्रकाशन, पुणे, १९९६.
६. ढेरे, रा० चिं०; लोकसाहित्य : शोध आणि समीक्षा, श्रीविद्या प्रकाशन, पुणे,१९९०.
७. ढेरे, रा० चिं०; संतसाहित्य आणि लोकसाहित्य : काही अनुबंध, श्रीविद्या प्रकाशन, पुणे, १९७८.
८. पगार, संभाजी, खानदेशातील ग्रामदैवते आणि लोकगीते, का० स० वाणी मराठीप्रगत अध्ययन केंद्र, धुळे, १९९२.
९. पाटील, गंगाधर; समीक्षेची नवी रूपे, मॅजेस्टिक बुक स्टॉल, मुंबई, १९८१.
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१३. भागवत, दुर्गा; धर्म आणि लोकसाहित्य, पॉप्युलर प्रकाशन, मुंबई, १९७५.
१४. मांडे, प्रभाकर; लोकसाहित्याचे स्वरूप, परिमल प्रकाशन, औरंगाबाद, १९७८.
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सत्र : ३

अभ्यासपत्रिका क्रमांक ११ : ३ समाज भाषाविज्ञान (Socio Lingustics)

उद्दिष्ट : भाषाव्यवहार आणि सामाजिक संरचना यांत परस्परावलंबित्वाचे' आहे. लौकिक जीवनात भाषेचा उपयोग व्याकरणिक नियमांनी होत नसून सामाजिक संकेतांनी होत असतो. त्यामुळे भाषेचा अभ्यास हा एका अर्थान समाजाचाच अभ्यास असतो. समाजभाषाविज्ञानाची ही नवी दिशा भाषेच्या पारंपरिक अभ्यासाला छेद देणारी आहे. समाजभाषा विज्ञानात समाजातील सर्व स्तरातील भाषाव्यवहारजाळे, त्यामागील भाषासंप्रेक्षण यांचा अभ्यास विद्यार्थ्यांनी करणे अभिप्रेत आहे.

घटक १) व्याख्याने २०, श्रेयांकन - ०२

अ) समाज भाषाविज्ञान संकल्पना, स्वरूप व व्याप्ती.

आ) भाषिक बदल व त्याची कारणे (सामाजिक फरक व त्यांचे परिणाम, भाषिक सापेक्षता सिद्धान्त (सपीर व्होर्फ) व त्याचा प्रतिवाद,

घटक २) व्याख्याने २०, श्रेयांकन - ०२

अ) व्यवहाराची भाषा, संपर्क भाषा, उपभाषा. (व्यक्तिभाषा, स्त्री-पुरुषांची भाषा, जातव्यवस्था आणि आर्थिक वर्ग यांच्या भाषा) यांचे स्वरूप, कार्य आणि व्याप्ती.

आ) भाषांतर्गत भेद, भाषाद्वित्व, द्वैभाषिकत्व, बहुभाषिकत्व त्यांचे प्रकार व परिणाम, बोली भूगोल.

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

अ) भाषेचे प्रमाणीकरण-कारणे, निकष (भाषाबाह्य निकष, भाषिक धोरणांची आवश्यकता).

आ) भाषेच्या नियोजनाचे परिणाम, भाषेचे खच्चीकरण किंवा पदोन्नती, मराठी भाषकांचे अनुभव.

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा-एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ

१) कालेलकर, ना० गो०; भाषा: इतिहास आणि भूगोल, मौज, मुंबई.

२) कालेलकर, ना० गो०, भाषा आणि संस्कृती, मौज, मुंबई,

३) कुलकर्णी, श्री० २०, तेलंगणातील अरे मराठा समाज भाषा आणि संस्कृती, म०रा० साहित्य संस्कृती मंडळ.

४) केळकर, अशोक रा०; मराठी भाषेचा आर्थिक संसार, मराठवाडा सा० प०, औरंगाबाद,

५) केळकर, अशोक रा०; वैखरी (भाषा आणि भाषाव्यवहार), मॅजेस्टिक, मुंबई.
६) केळकर, अशोक रा०; 'भाषिक स्वाधीनता', भाषा आणि जीवन, वर्ष ३, अंक ४, १९८५.
७) खोकले, वसंत; 'भाषाविकास व मराठी भाषा समाजव्यवहार', नवभारत, जून, १९९०.
८) गोखले, द० न०; 'डॉ० केतकरांच्या भाषाविषयक विचारांबद्दल आणखी थोडेसे', भाषा आणि जीवन, वर्ष ३, अंक १, १९८५.
९) जोशी, श्री० बा०, 'रसनाविलास', महाराष्ट्र टाइम्स, २६ फेब्रुवारी १९९५.
१०) दातार, छाया; 'जातिवाचक संबोधने स्त्रियांमधली फूटपाडणी' भाषा आणि जीवन, वर्ष २, अंक ३, १९८४. –
११) देव, विजया; 'ग्रामीण स्त्री जीवन आणि भाषा', भाषा आणि जीवन, वर्ष १०, अंक २, १९९२.
१२) प्रधान, ग० प्र० 'राजकारणातील भाषा', भाषा आणि जीवन, वर्ष ३, अंक २, १९८५.
१३) भवाळकर, तारा; 'मायबोलीतील धक्के आणि हिसके', भाषा आणि जीवन, वर्ष ३, अंक २, १९८५.
१४) मांडे, प्रभाकर; सांकेतिक आणि गुप्त भाषा: परंपरा आणि स्वरूप, सविता प्रकाशन, औरंगाबाद.
१५) मालशे, मिलिंद, 'सामाजिक भाषाविज्ञान : एक नवे अभ्यासक्षेत्र', मराठी संशोधन पत्रिका, जाफेमा, वर्ष २५, अंक २, १९७८.
१६) मुंडले, आशा: 'भाषेचे प्रदूषण स्त्रीला भोवणारे', भाषा आणि जीवन, वर्ष २, अंक ३, १९८४.
१७) साने, राजीव, 'सर्वनामांचे समाजशास्त्र', भाषा आणि जीवन, वर्ष २, अंक २, १९८४.
१८) वरखेडे, रमेश, समाज भाषाविज्ञान : संकल्पना
१९) गायकवाड, संपत, दलित आत्मकथने : भाषिक व्यवस्था, भाषा आणि भाषिक समाज.
२०) Aitchison, Jean; Language Change, Progress or Decay, London: Fontana.
२१) Beteille A.; Cast, Class & Power,
२२) Downes W.; Language and Society, London: Fontana.
२३)Hudson, R. A.; Sociolinguistics, Cambridge University Press.
२४)Trudgill Peter, Sociolinguistics: An Introduction to Language & Society, London Penguin.

सत्र : ३

अभ्यासपत्रिका क्रमांक ११ : ४ - विज्ञानसाहित्य (Vidnyan Sahitya)

उद्दिष्ट: विज्ञान व साहित्य या एकमेकांपासून भिन्न अशा संकल्पना असल्या तरी विज्ञानावर आधारित ललित साहित्यहा एक वेगळा साहित्यप्रकार अनुवादाच्या माध्यमातून मराठी साहित्यात प्रविष्ट झाला. आंतरराष्ट्रीय ख्यातीच्या वैज्ञानिकांनी मराठी भाषेमध्ये हा विज्ञानसाहित्यप्रकार रुजवला. यातून मराठी साहित्यातील विज्ञान साहित्याची लक्षणीय परंपरा निर्माण झाली. या विज्ञान साहित्याच्या मूलतत्त्वांचे आणि परंपरेचे भान विद्यार्थ्याला आणून देणे हा या अभ्यासपत्रिकेचा हेतू आहे.

घटक १) व्याख्याने- २०, श्रेयांकन – ०२

अ) विज्ञानसाहित्य स्वरूप व संकल्पना.

आ) विज्ञानसाहित्याच्या प्रेरणा व प्रयोजने..

घटक २) व्याख्याने-२०, श्रेयांकन - ०२

अ) विज्ञानसाहित्याची परंपरा (पाश्चात्य आणि मराठी)

आ) विज्ञानसाहित्याच्या मूल्यमापनाचे निकष.

घटक ३) व्याख्याने- २०, श्रेयांकन - ०२

अ) सुपरक्लोन – पंडित विद्यासागर

आ) डायनोसॉरचे वंशज – दीनानाथ मनोहर

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी- प्रकल्प लेखन : १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ :

१. बागूल, मराठी विज्ञान साहित्यसमीक्षा.

२. घाटे, निरंजन, विज्ञान साहित्य आणि संकल्पना.

३. जावडेकर, सुबोध, (संपा०) म० सु० पगारे, मराठी विज्ञान साहित्य.

४. कुलकर्णी, व० दि०, विज्ञान साहित्य आणि संकल्पना.

५. विज्ञानकथा विशेषांक, महाराष्ट्र साहित्य पत्रिका.

सत्र : ३

अभ्यासपत्रिका क्रमांक १२ : १ - आदिवासी मराठी साहित्य (Adivasi Sahitya)

उद्दिष्ट : स्वातंत्र्योत्तर काळापासून आदिवासी जीवनाची नोंद मराठी लेखकांनी विशेषतः कादंबरीकारांनी घेतली असून त्यानंतर साठोत्तरी मराठी प्रवाहात आदिवासी साहित्य दाखल झाले. आजतागायत मोठ्या प्रमाणात कविता, आदिवासी जीवनाचे चित्रण करणाऱ्या कादंबऱ्या, नाटके व विपुल वैचारिक ग्रंथसंपदा आदिवासी साहित्य प्रवाहात नोंदविली गेली असून आदिवासी साहित्य आविष्काराने मराठी साहित्यात मोलाची भर घातली आहे. विद्यार्थ्यांना या साहित्य अभिव्यक्तीचा अभ्यास घडावा म्हणून ही अभ्यासपत्रिका महत्त्वाची ठरते. या साहित्यप्रवाहातून विद्यार्थ्यांना आदिवासी साहित्याचा परिचय होणे, त्यांच्या मौखिक व लिखित परंपरा संबंधी जाणीव विकसित करणे, आदिवासी साहित्याच्या संदर्भात सामाजिक चळवळींचा परिचय करून घेणे, आदिवासी बोली, संस्कृतीचा विद्यार्थ्यांना परिचय करून देणे अपेक्षित आहे.

घटक १) व्याख्याने-२०, श्रेयांकन - ०२

अ) आदिवासी साहित्य स्वरूप व संकल्पना.

आ) आदिवासी साहित्य चळवळ.

इ) आदिवासी साहित्याचे प्रेरणास्रोत, आदिवासी साहित्यसमीक्षा विचार.

घटक २) व्याख्याने-२०, श्रेयांकन - ०२

(अ) आदिवासी कवितेची वाटचाल आदिवासी कवितेचे स्वरूप व विशेष.

आ) आदिवासी मराठी कविता (पाच आदिवासी कवीच्या प्रत्येकी चार निवडक मराठी कवितांचा अभ्यास)

विनायक तुमराम, उषाकिरण आत्राम, माधव सरकुंडे, प्रभू राजगडकर, विनोद कुमरे

१) विनायक तुमराम (रानगर्भातील जखमा) - स्वातंत्र्या! कुठे आहेस तू?, झुंज रानातली, उठाव, आदिवासी माय.

२) उषाकिरण आत्राम - (लेखणीच्या तलवारी) - उजेडपाडी, भवरा, खरच आपला देश आहे, मरण स्वस्त होत आहे.

३) माधव सरकुंडे (चेहरा हरवलेली माणसे) दगा, सौदा, बेड्या, बापू.

४) प्रभू राजगडकर (निवडुंगाला आली फुले) मल्टी ॲटिट्यूड टॉवर्डस् आदिवासी, गोंगलू, TATR, ते आले त्यानंतरची गोष्ट.

५) विनोद कुमरे (आगाजा) अरण्य, होमलँड, पहांदी पारी कुपार लिंगोची गोष्ट, मोटीफ: एक होता राजा.

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

अ) आदिवासी आणि आदिवासीऐतर मराठी कादंबरी लेखनाची परंपरा, स्वरूप व विशेष.

आ) कलाकृतीचा अभ्यास (पळसचोंड - देवदत्त चौधरी)

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण
२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा १० गुण)
सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ :
१. आदिवासी साहित्यविचार, माहेश्वरी गावित.
२. मराठी आदिवासी साहित्य, अमर कांबळे.
३. आदिवासी साहित्य स्वरूप आणि समीक्षा, विनायक तुमराम.
४. महाराष्ट्रातील आदिवासी मराठी साहित्य : एक शोध, माहेश्वरी गावित.
५. आदिवासी साहित्य आणि अस्मितावेध, (संपा०) प्रफुल्ल शिलेदार.
६. आदिवासी साहित्य संमेलने अध्यक्षीय भाषणे, (संपा०) गोविंद गारे.
७. गोंडी संस्कृतीचे संदर्भ, व्यंकटेश आत्राम.
८. उलगुलानव्रती डॉ० विनायक तुमराम, (संपा०) सुनिल कुमरे.
९. आदिवासी साहित्य विविधांगी आयाम, माहेश्वरी गावित.
१०. आदिवासी कवितेचा उषःकाल आणि सद्यस्थिती - तुकाराम रोंगटे, संस्कृती, पुणे.
११. आदिवासी मराठी साहित्य: स्वरूप आणि समस्या - संपा. प्रमोद मुनघाटे, विजय, नागपूर.
१२. आदिवासी मराठी साहित्य: एक अभ्यास - ज्ञानेश्वर वाल्हेकर, स्वरूप, औरंगाबाद.
१३. आदिवासी संस्कृती, भाषा आणि साहित्य - पुष्पा गावीत, प्रशांत, जळगाव.
१४.आदिवासी साहित्यः दिशा व दर्शन - विनायक तुमराम, स्वरूप, औरंगाबाद.

सत्र : ३

अभ्यासपत्रिका क्रमांक १२ : २ - संशोधनशास्त्र व शोधनिबंध(Research Methodology)

उद्दिष्ट : विद्यार्थ्यांना स्वतंत्रपणे एखादा अभ्यासविषय घेऊन साहित्याचा शास्त्रीय पद्धतीने अभ्यास करण्याची संधी मिळावी या हेतूने या अभ्यासपत्रिकेची आखणी केली आहे. त्यासाठी प्रारंभी अभ्यास करण्याच्या विविध शास्त्रीय पद्धतींची व अभ्यास- घटकांची ओळख करून दिलेली असून उत्तर भागात त्यांनी त्या पद्धतींचे उपयोजन करून एक दीर्घ निबंध लिहावा अशी अपेक्षा ठेवलेली आहे. येथपर्यंत विद्यार्थ्यांना वाङ्मयाच्या इतिहासाचा, समीक्षेच्या तात्त्विक आणि उपयोजित अंगांचा आणि प्रत्यक्ष साहित्यकृतींच्या समीक्षेचा परिचय झालेला असतो. तेव्हा त्या पार्श्वभूमीवर संशोधनशास्त्र समजून घेऊन त्यांनी स्वतंत्रपणे आपल्या आवडीचा एक अभ्यासविषय निवडून अभ्यास करून दाखवावा अशी अपेक्षा आहे.

घटक १) व्याख्याने-२०, श्रेयांकन - ०२

१) संशोधन म्हणजे काय? वैज्ञानिक, सामाजिक व साहित्यिक संशोधन साम्यभेद

२) साहित्यसंशोधन-स्वरूप, प्रकार व पद्धती

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

१) साहित्यसंशोधन व साहित्यविचार-ग्रंथकार, साहित्यप्रकार, कालखंड, साहित्यकृती

२) साहित्यसंशोधन व समीक्षा

३) पाठचिकित्साशास्त्र

घटक ३) व्याख्याने-२०, श्रेयांकन -०२

१) साहित्यसंशोधन- भाषाशास्त्र व बोलींचा अभ्यास

२) साहित्यसंशोधन व साहित्यकृतीचा, ग्रंथकारांचा तुलनात्मक अभ्यास

३) ग्रंथालयीन वाचनाचे संयोजन, ग्रंथसूचिशास्त्र व संशोधनसाधने (स्थूल परिचय)

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा १० गुण)

सत्रान्त परीक्षा-एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. कऱ्हाडे, सदा; संशोधन : सिद्धान्त आणि पद्धती, लोकवाङ्मय गृह, मुंबई, १९९७.

२. चुनेकर, सु० रा० व इतर (संपा०); संशोधन : स्वरूप आणि पद्धती, शिक्षण प्रसारक संस्था, संगमनेर, १९८३.

३. जोशी, वसंत व इतर (संपा०); भाषा व साहित्य : संशोधन खंड १, महाराष्ट्र साहित्य परिषद, पुणे, १९८१.
४. जोशी, वसंत व इतर (संपा०); भाषा व साहित्य : संशोधन खंड २, महाराष्ट्र साहित्य परिषद, पुणे, १९८५.
५. जोशी, वसंत व इतर (संपा०); भाषा व साहित्य : संशोधन खंड ३, महाराष्ट्र साहित्य परिषद, पुणे, १९८९.
६. तुळपुळे, शं० गो०; प्राचीन मराठी कोरीवलेख, पुणे विद्यापीठ, पुणे, १९६३.
७. देशमुख, उषा मा०; मराठी संशोधनविद्या, स्नेहवर्धन पब्लिशिंग हाऊस, पुणे.
८. बनहट्टी, श्री० ना० (संपा०); ज्ञानदेवी-अध्याय १२, सुविचार प्रकाशन मंडळ, पुणे,१९६७.
९. मालशे, स० गं०; शोधनिबंधाची लेखनपद्धती, सुविचार प्रकाशन, नागपूर, १९७५.
१०. संत, दु० का०; शोधविज्ञानकोश, अनाथ विद्यार्थी गृह प्रकाशन, पुणे, १९८५.
११. संत, दु० का०; संशोधन पद्धती, प्रक्रिया व अंतरंग, अनाथ विद्यार्थी गृह प्रकाशन, पुणे, १९६२.
१२. Whitney, F. L.; Elements of Research, Prentice-Hall, New York, 1954.

सत्र : ३

अभ्यासपत्रिका क्रमांक १२ : ३ - बालसाहित्य (Balsahitya)

उद्दिष्टे : 'बालसाहित्य' हे ललित साहित्याच्या कक्षेत येते. मात्र प्रौढ साहित्यापेक्षा त्याचे स्वरूप कसे वेगळे ठरते, बालसाहित्यातील अनुभवविश्व आणि भाषा यांच्या संदर्भात त्यांची स्वरूपवैशिष्ट्ये कोणती यांचा अभ्यास करणे प्रस्तुत अभ्यासपत्रिकेत अपेक्षित आहे.

घटक १) व्याख्याने २०, श्रेयांकन- ०२

अ) बालसाहित्याचे स्वरूप, वैशिष्ट्ये, प्रेरणा

आ) मराठी बालसाहित्याचा इतिहास.

घटक २) व्याख्याने २०, श्रेयांकन - ०२

अ) बालमानसशास्त्र व बालसाहित्य

आ) बालसाहित्याचे प्रकार बालकविता, कथा, कादंबरी, एकांकिका, नाटक

घटक ३) व्याख्याने- २०, श्रेयांकन - ०२

अ) जंगलातील दूरचा प्रवास – भारत सासणे (कादंबरी)

आ) मनात आहे पुष्कळ पुष्कळ – उत्तम कोळगावकर (कवितासंग्रह)

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन : १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण) -

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. दांडेकर, मालतीबाई, बालसाहित्याची रूपरेखा.

२. भागवत, लीलावती; मराठी बालसाहित्य प्रवाह आणि स्वरूप.

३. शहा, सुलभा; मराठी बालवाङ्मय स्वरूप आणि अपेक्षा.

४. कुसुमाग्रज; 'स्वागत' (प्रस्तावना) गवतफुला-इंदिरा संत.

५. वसेकर, विश्वास; बालसाहित्याचे अंतरंग.

६. जाधव, रा० ग० (संपा०); मराठी वाङ्मयाचा इतिहास, खंड ७, भाग २.

७. दीक्षित, लीला; मराठी बालसाहित्य : विचार आणि दर्शन.

८. बोरसे-सुर्वे, विद्या, बालसाहित्य - आकलन आणि समीक्षा.

९. बोरसे – सुर्वे, विद्या, कोरा कागद निळी शाई

१०. बागूल, देविदास, बालवाङ्मय.
११. मासिक ऋग्वेद, बालकुमार साहित्य संमेलन, देवर्डे विशेषांक, मार्च २०१६.

सत्र : ३

अभ्यासपत्रिका क्रमांक १२ : ४- मराठी व्याकरणाच्या समस्या

(Problems of Marathi Grammer :)

उद्दिष्ट : सदर व्याकरणविषयक अभ्यासपत्रिकेत मराठी वर्णविचारांपासून वाक्यविचारा-पर्यंतच्या सर्व संकल्पनांचा शास्त्रीय दृष्टीने व ऐतिहासिक संदर्भात परामर्श घ्यावयाचा आहे. एम० ए० पूर्वपातळीवर विद्यार्थ्यास प्रामुख्याने प्रचलित असणाऱ्या व्याकरणविचाराची ओळख झालेली आहे, असे येथे गृहीत धरलेले आहे. तथापि, कोणत्याही जिवंत भाषेच्या संदर्भात त्या प्रचलित विचारांचा अनेक कारणांनी पुनर्विचार करण्याची आवश्यकता वेळोवेळी निर्माण होत असते. शास्त्रीय पद्धतीने हा पुनर्विचार कसा करावा हे या अभ्यासपत्रिकेच्या अभ्यासातून विद्यार्थ्यांनीशिकावयाचे आहे.

घटक १) व्याख्याने-२०, श्रेयांकन - ०२

सामान्य विचार :

१) व्याकरणाचे प्रयोजन.

२) व्याकरण हे शास्त्र वर्णनात्मक (descriptive) की आदेशात्मक (prescriptive).

३) व्याकरणाचा विषय प्रमाणभाषा की बोली? प्रमाणभाषा ही उच्चारित की लिखित-मुद्रित ?

४) संस्कृत आणि इंग्रजी व्याकरणांचा मराठी व्याकरणावर प्रभाव आणि त्यातून निर्माण झालेली परिस्थिती.

५) व्याकरण आणि लेखनाचे नियम अन्योन्यसंबंध.

६) शुद्ध, अशुद्ध या संकल्पना आणि त्यांचे शास्त्रीय मूल्य.

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

वर्णविचार : समस्या

१) वर्णविचार हा व्याकरणाचा विषय आहे काय?

२) वर्णभेदाचे निकष कोणते? अंतरयुग्म (minimal pair)

३) स्वरांचे हस्व-दीर्घ भेद वेगळे गणावे का?

४) अनुस्वार हा स्वतंत्र वर्ण आहे का?

५) महाप्राण व्यंजने (ख्, ध्, भ्) हे मूल वर्ण की संयोग?

६) व्हे, न्ह, म्ह...हे संयोग की मूल वर्ण ?

७) मराठी वर्णांची संख्या.

८) मराठी व्याकरणातला संधिविचार.

९) मराठीचा स्वराघात.

घटक ३) व्याख्याने २०, श्रेयांकन - ०२

शब्दविचार: समस्या

१) शब्दांच्या वर्गीकरणाचे प्रयोजन आणि तत्त्व.
२) मराठी व्याकरण परंपरेतला वर्गीकरण विचार, त्याची चिकित्सा आणि तत्त्वशुद्ध वर्गीकरण.
३) मराठीतील परंपरागत लिगविचार आणि त्याच्या पुनर्विचाराची आवश्यकता.
४) संस्कृत समास व्यवस्थेची मराठीच्या संदर्भात युक्तायुक्तता.
५) व्याकरणाच्या कक्षेत व्युत्पत्तिविचार येतो काय? किती प्रमाणात?

अंतर्गत परीक्षा- एकूण गुण ४०
१. लेखी परीक्षा २० गुण
२. प्रकल्प लेखन २० गुण (पैकी - प्रकल्प लेखन : १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण

सत्रान्त परीक्षा- एकूण गुण ६०
वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ :
१. अर्जुनवाडकर, कृ० श्री०; मराठी व्याकरण : वाद आणि प्रवाद, सुलेखा प्रकाशन, पुणे, १९८७.
२. अर्जुनवाडकर, कृ० श्री०; मराठी व्याकरणाचा इतिहास, मराठी विभाग, मुंबई विद्यापीठ, मुंबई, १९९२.
३. आचार्य, मा० ना०; मराठी व्याकरण विवेक, स्नेहवर्धन प्रकाशन, पुणे, २००१.
४. गुंजीकर, रा० भि०; मराठी व्याकरणावर विचार (रा० भि० गुंजीकर यांचे संकलित लेख, खंड १)
५. चिपळूणकर, कृष्णशास्त्री; मराठी व्याकरणावर निबंध, चित्रशाळा प्रेस, पुणे, १९२३.
६. दामले, मोरो केशव; शास्त्रीय मराठी व्याकरण, (संपा० कृ० श्री० अर्जुनवाडकर), देशमुख आणि कं०, पुणे, १९७०.
७. दीक्षित, प्र० ना०; मराठी व्याकरण : काही समस्या, शुभदा प्रकाशन, फलटण, १९७५.
८. परब, प्रकाश; मराठी व्याकरणाचा अभ्यास, ओरिएंट लाँगमन, मुंबई, २००२.
९. मंगरुळकर, अरविंद; मराठीच्या व्याकरणाचा पुनर्विचार, पुणे विद्यापीठ, पुणे, १९६४.
१०. मोडक, गो० कृ०; मराठीचे अंतरंगदर्शन, (व्याकरण विभाग), मोडक गो० कृ०, १९३२.
११. सबनीस, म० पां०; आधुनिक मराठीचे उच्चतर व्याकरण, म० पां० सबनीस, मुंबई, १९५१.

सत्र : ३

अभ्यासपत्रिका क्रमांक १२ : ५ - मराठी वाङ्मयाचा सांस्कृतिक अभ्यास

(Cultural **Study** of Marathi Literature)

उद्दिष्ट : सांस्कृतिक जाणिवांची जडणघडण सामाजिक, आर्थिक, राजकिय अंतरसंबंधाच्या आधारे घडत असते. यातुनच सांस्कृतिक अभ्यासाच्या नव्या संकल्पना उदयास आल्या. या संकल्पनांच्या आधारे मराठी साहित्यातील बदलत्या सांस्कृतिक जाणिवा समजून घेणे. त्या नवीन जाणिवांचा, सामाजिक घटितांचा परिचय व्हावा आणि त्यांचे साहित्यनिर्मितीतील महत्त्व स्पष्ट व्हावे तसेच साहित्य व समकालीन संस्कृती यांतील अनुबंध स्पष्ट व्हावे हा या अभ्यासपत्रिकेमागील हेतू आहे.

घटक १) व्याख्याने- २०, श्रेयांकन - ०२

अ) सांस्कृतिक अभ्यास : संकल्पना, स्वरूप व पद्धती

ब) पाश्चात्य सांस्कृतिक प्रभुत्वाच्या संकल्पना (अंतोनिओ ग्रामची आणि फुको)

भारतीय सांस्कृतिक प्रभुत्वाच्या संकल्पना (डॉ. बाबासाहेब आंबेडकर व डॉ. एम. एन. श्रीनिवास)

घटक २) व्याख्याने-२०, श्रेयांकन - ०२

अ) वसाहतकाळातील सांस्कृतिक जाणिवा आणि सांस्कृतिक स्थित्यंतरे

घटक ३) व्याख्याने-२०, श्रेयांकन-०२

अ) सांस्कृतिक प्रभुत्वाची संकल्पना आणि स्वातंत्र्यपूर्व व स्वातंत्र्योत्तर मराठी साहित्य

अंतर्गत परीक्षा-एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ:

१. मराठी साहित्य, समाज आणि संस्कृती - वसंत आबाजी डहाके, पॉप्युलर प्रकाशन, मुंबई २००६

२. शिंदे लेखसंग्रह - संपा. मा. पं. मंगुडकर, ग. ल. ठोकळ प्रकाशन, पुणे,

३. निवडक शेजवलकर, लेखसंग्रह,

४. जीर्णोद्धार - श्री. मा. भावे, लोकवाङ्मय गृह प्रकाशन, मुंबई,

५. स्मृतिभ्रंशानंतर - गणेश देवी, अनु. म. सु. पाटील, पद्मगंधा प्रकाशन, पुणे, २००९

६. साहित्याची भाषा - भालचंद्र नेमाडे, साकेत प्रकाशन, औरंगाबाद,

७.निवडक राजारामशास्त्री भागवत (खंड पाच) - संपा. दुर्गा भागवत, वरदा बुक डेपो,
८. मराठी संस्कृती - शं. बा. जोशी, व्हिनस प्रकाशन, पुणे,
९. आधुनिक समीक्षा सिद्धान्त - मिलिंद मालशे, अशोक जोशी, मौज प्रकाशन, मुंबई, २००७
१०. संस्कृती समाज आणि साहित्य - के. रं. शिरवाडकर, पद्मगंधा प्रकाशन, पुणे, २०१३
११. आधुनिक मराठी साहित्याची सांस्कृतिक पार्श्वभूमी - गो. म. कुलकर्णी, मेहता प्रकाशन, पुणे, १९९४.
१२. दासशुद्रांची गुलामगिरी- शरद पाटील, प्राज्ञपाठशाळा, वाई.
१३. अब्राह्मणी साहित्याचे सौंदर्यशास्त्र - शरद पाटील,
१४. तमाशा : एक रांगडी गंमत - संदेश भंडारे, लोकवाङ्मयगृह प्रकाशन, मुंबई.
१५. वासाहतिक समाजातील सांस्कृतिक बंड- गेल ऑमव्हेट, सुगावा प्रकाशन, पुणे, १९९५.
१६. मराठी लोकांची संस्कृती इरावर्ती कर्वे, देशमुख आणि कंपनी, पुणे, १९५१.
१७. वसाहतिक काळातील बंड – डॉ. गेल ऑम्व्हेट
१८. महाराष्ट्रातील प्रबोधनविचार – डॉ. उमेश बगाडे

सत्र : ३

अभ्यासपत्रिका क्रमांक १३ : १- महानगरीय साहित्य (Mahanagariya Sahitya)

उद्दिष्ट : दोन महायुद्धांच्या दरम्यानच्या काळात भारतीय समाजजीवनात आमूलाग्र परिवर्तन होत गेले व खेड्यापाड्यांतील समाज शहराकडे औद्योगिकीकरणामुळे स्थलांतरित होत गेला. त्यातून शहरीकरणाची प्रक्रिया सुरू झाली. विविध कारणांमुळे शहरांची महानगरी होत गेली. या शहरीकरणाच्या व महानगरीकरणाच्या प्रक्रियेमुळे मानवी जीवनातील गुंतागुंत अधिकच वाढत गेली. यातून महानगरावर आधारित वैशिष्ट्यपूर्ण साहित्य निर्माण होत गेले. त्याचा अभ्यास या अभ्यासपत्रिकेत करावयाचा आहे.

घटक १) व्याख्याने-२०, श्रेयांकन - ०२

अ) शहरीकरण, महानगरीकरण प्रक्रिया (समाजशास्त्रीय परिप्रेक्ष्यातून) महानगरी संस्कृती.

ब) महानगरी जीवन, त्यात कालपरत्वे घडत गेलेले बदल, व्यामिश्रता, महानगरी जाणिवा, संवेदना, परात्मता, भयग्रस्तता, मूल्यभ्रष्टता, व्यक्तिकेंद्रितता इत्यादी.

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

अ) महानगरी मराठी साहित्य : संकल्पना, स्वरूप व तत्त्वे

आ) महानगरीय मराठी साहित्याची परंपरा

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

१) वासूनाका- भाऊ पाध्ये (कादंबरी)

२) दस्तखत- प्रकाश जाधव (कवितासंग्रह)

अंतर्गत परीक्षा-एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. पोवार, छाया; मराठी नागर कथा.

२. खोले, विलास (संपा०); गेल्या अर्धशतकातील मराठी कादंबरी.

३. आडारकर, नीरा व मेनन, मीना, कथा मुंबईच्या गिरणगावाची.

४. अन्सल, कुसुम, आधुनिक हिंदी उपन्यासोंमें महानगर.

५. नारंग, सुदर्शन (संपा०); महानगरकी कहानियाँ.

सत्र : ३

अभ्यासपत्रिका क्रमांक १३ : २ - अल्पसंख्याकांचे साहित्य : मराठी भाषक ख्रिस्ती, मुस्लिम व जैन साहित्य

उद्दिष्ट : मराठी साहित्य परंपरेमध्ये विविध धर्मातील साहित्यिकांनी प्रारंभापासून मोलाची भर घातली आहे. यापैकी ख्रिस्ती व मुस्लीम धर्मीय लेखकांनी मराठीमध्ये केलेल्या मौलिक लेखनाकडे विद्यार्थ्यांचे लक्ष वेधणे व त्यांचा निवडक साहित्यकृतीच्या आधारे अभ्यास करणे हा या अभ्यासपत्रिकेचा हेतू आहे.

घटक १) व्याख्याने–२०, श्रेयांकन - ०२

अ) मराठी भाषक ख्रिस्ती साहित्याची परंपरा.

आ) मराठी भाषक ख्रिस्ती साहित्याचे स्वरूप व वैशिष्ट्ये.

घटक २) व्याख्याने-१०, श्रेयांकन - ०१

अ) जैन धर्मियांच्या साहित्याची परंपरा.

आ) मराठी भाषिक जैन धर्मीय साहित्याचे स्वरूप व वैशिष्ट्ये

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

अ) मराठी भाषक मुस्लीम धर्मियांच्या साहित्याची परंपरा.

आ) मराठी भारतीय मुस्लीम धर्मियांच्या साहित्याचे स्वरूप व वैशिष्ट्ये.

घटक ४) व्याख्याने १०, श्रेयांकन - ०१

अ) कादंबरी : इंधन – हमीद दलवाई

आ) आत्मकथन: सिसिलिया कार्व्हालो - टीपंवणी

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण) -

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ :

१)जागतिकीकरण आणि मराठी साहित्य, (संपा०) डॉ० शरद गायकवाड, प्रा० सुनील शिंदे, स्नेहवर्धन प्रकाशन, पुणे.

२)म० सा० प० मराठी वाङ्मयाचा इतिहास, खंड ८, संपा० रा० ग० जाधव.

३)मराठी ख्रिस्ती साहित्यातील परिवर्तन, डॉ० गंगाधर मोरजे, लोकवाङ्मय गृह, मुंबई.
४)ख्रिस्ताचा धर्मविचार साहित्याचा, सुनील आढाव, दिलीपराज प्रकाशन, पुणे.
५)मुस्लिम मराठी साहित्य प्रेरणा आणि स्वरूप, फ० म० शहाजिंदे व फारूक तांबोळी.
६)नवे प्रवाह नवे स्वरूप, कादिरा जुल्फी शेख.
७)मराठी ख्रिस्ती साहित्य, डॉ० गंगाधर मोरजे, लोकवाङ्मय गृह, मुंबई.
८)भारतीय मुसलमानांची समाजरचना व मानसिकता, फक्रुद्दीन बेन्नूर.
९)मुस्लिम मराठी साहित्य : एक आकलन, मेहबूब सय्यद.
१०)मुस्लिम मराठी साहित्य: स्वरूप आणि समीक्षा - नसीम एहतेशाम देशमुख, अध्यक्ष, महाराष्ट्र मुस्लिम मराठी साहित्य चळवळ, जळगाव.
१३)मुस्लिम मराठी साहित्यः प्रेरणा आणि स्वरूप - फ. म. शहाजिंदे, फारुक तांबोळी.
१२)दस्तक (मुस्लिम मराठी कविता) - संपा. रफीक सूरज, दर्या, पुणे.
१४)मुस्लिम मराठी साहित्यः परंपरा, स्वरूप आणि लेखकसूची - संपा. फ. म. शहाजिंदे, भूमी, लातूर.
१५)मुस्लिम मराठी कविता - उज्ज्वला तुपसुंदरे

सत्र : ३

अभ्यासपत्रिका क्रमांक १२ : ३ चित्रपट पटकथांचा अभ्यास (Study of Movie Script)

उद्दिष्ट : विसाव्या शतकात चित्रपटकलेने सार्वत्रिक मान्यता मिळवली असून चित्रपटकलेत अनेक कला व अत्याधुनिक तंत्रज्ञानाचा वापर केला जातो. चित्रपटाचा प्राण म्हणजे पटकथा, पटकथेची घडण कशी होत जाते व ती पडद्यावर कशा प्रकारे साकार केली जाते याचा अभ्यास विद्यार्थ्यांनी करणे येथे अभिप्रेत आहे.

घटक १) व्याख्याने- २०, श्रेयांकन - ०२

अ) चित्रपट माध्यम स्वरूप आणि वैशिष्ट्ये.

ब) चित्रपटाचे विविध घटक : कथाबीज, पटकथा, दृश्यानुसंधान, संवाद, दिग्दर्शन, नेपथ्य, संगीत, पार्श्वसंगीत, वेशभूषा, छायाचित्रण, अभिनय, रंगसंगती, कॅमेरा इत्यादी यांचा थोडक्यात परिचय.

घटक २) व्याख्याने-२०, श्रेयांकन - ०२

अ) पटकथा स्वरूप आणि वैशिष्ट्ये.

ब) पटकथा लेखनतंत्र संरचना आणि पटकथेचे विविध घटक.

घटक ३) व्याख्याने- २०, श्रेयांकन – ०२

नेमलेल्या चित्रपट पटकथांचा अभ्यास

अ) उंबरठा – विजय तेंडूलकर

ब) गाभारा – अनिल सपकाळ

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. जोशी, रा० भि० (अनु०), मू०ले० बा० सी० मर्ढेकर, कला आणि मानव, मौज प्रकाशन गृह, मुंबई, १९८३.

२. जाधव, रा० ग०, कला, साहित्य व संस्कृती, सुगंधा प्रकाशन, पुणे.

३. अत्रे, प्र० के०, कऱ्हेचे पाणी, परचुरे प्रकाशन मंदिर, मुंबई, १९८६. ४. खोपकर, अरुण, गुरुदत्त-तीन अंकी शोकांतिका, ग्रंथाली वाचक चळवळ, १९८५.

५. अत्रे, प्र० के०; चित्रकथा, परचुरे प्रकाशन मंदिर, मुंबई, १९८५. ६. दीक्षित, विजय, चित्रपट-एक कला, रेणुका प्रकाशन, १९७९.

७. सपकाळ, अनिल; मराठी चित्रपटांची पटकथा, अनुबंध प्रकाशन, पुणे, २००५.

८. काळे, नारायण के प्रतिमा, रूप आणि गंध, १९७६. ९. साठे, वसंत, बखर सिनेमाची, व्ही० शांताराम चलच्चित्र शास्त्रीय अनुसंधान व सांस्कृतिक प्रतिष्ठान.

१०. कुलकर्णी, अ० वा०, मराठी नाट्यलेखनतंत्राची वाटचाल, व्हीनस प्रकाशन, पुणे, १९७६. ११. हातकणंगलेकर, म० द व पवार, गो० मा०; मराठी साहित्य-प्रेरणा व स्वरूप, पॉप्युलर प्रकाशन, १९८६.

१२. संत, दु० का०, ललितकला आणि ललित वाङमय, एम० व्ही० फडके, १९८२. १३. कुलकर्णी, मधु, ललित साहित्यातील आकृतीबंधाची जडणघडण, शुभदा सारस्वत, १९८७.

१४. माडगूळकर, ग० दि०; वाटेवरल्या सावल्या, विश्वमोहिनी प्रकाशन, १९८७.

१५. तेंडुलकर, विजय; सामना, नीलकंठ प्रकाशन, १९७८. १६. नेमाडे, भालचंद्र, साहित्याची भाषा, साकेत प्रकाशन, १९८७.

१७. शिंदे, मा० कृ०, सिनेमाशास्त्र आणि तंत्र, नवमत प्रकाशन संस्था, मुंबई, १९८०.

१८. खोपकर, अरुण; चलचित्र.

१९. खोपकर, अरुण; गुरुदत्त : एक तीन अंकी शोकांतिका,

२०. Ludolf, Anheim, Film as Arts, Feber & Feber, London, 1983. २१. Morris, Beja, Film & Literature, Longman, New York, 1979.

२२. Dwight V. Swain & Joye R. Swain, Film Scripting & Practical Manual, Focal Press, London, 1987.

सत्र : ३

अभ्यासपत्रिका क्रमांक १३ : ४ - लोकप्रिय साहित्य (Popular Literature)

उद्दिष्ट : काही साहित्यकृती या सर्वसामान्य वाचकांकडून मोठ्या प्रमाणात वाचल्या जातात व त्यांच्या अनेक आवृत्त्याही प्रकाशित होत असतात. त्यांच्या लोकप्रियतेची कारणे कोणती आहेत, त्याआधारे सर्वसामान्य वाचकाची अभिरुची कशी आहे याचा अभ्यास विद्यार्थ्यांनी करणे अभिप्रेत आहे.

घटक १) व्याख्याने २०, श्रेयांकन - ०२

अ) लोकप्रिय साहित्य स्वरूप आणि वैशिष्ट्ये.

आ) लोकप्रिय साहित्य आणि अभिजात साहित्य यांतील फरक.

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

अ) मराठीतील लोकप्रिय साहित्याची परंपरा. महत्त्वाचे लेखक व त्यांच्या साहित्यकृतींचा परिचय.

आ) लोकप्रिय साहित्यातील प्रमुख लेखनप्रकार कथा, कादंबरी, चरित्र, प्रवासवर्णन.

घटक ३) व्याख्याने- २०, श्रेयांकन - ०२

अ) मृत्युंजय – शिवाजी सावंत

आ) व्यक्ती आणि वल्ली- पु.ल.देशपांडे

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ :

१) मराठी वाङ्मयाचा इतिहास, खंड ८, म. सा. प. - संपा० रा० ग० जाधव.

२) मृत्युंजयकार शिवाजी सावंत : व्यक्ती आणि साहित्य – शांताराम वाघ

३) THE ROUTLEGE HISTORY OF LITRERATURE IN ENGLISH – RONALD CARTER AND JOHN MCRAE

४) A GLOSSARY OF LITERARY TERMS – M. H. ABRAMS/GEOFFREY GALT HARPHEM

५) MERICAN AND POPULAR LITERATURE – MD. MIJANUR RAHAMAN

६) पापुलर कल्चर – सुधीर पचौरी

७) लोकप्रिय संस्कृती व भारतातील आधुनिकता : लिंगभाव परिप्रेक्षातून – शर्मिला रेगे

एम. ए. मराठी भाग २ सत्र ३
अभ्यासक्रम
शैक्षणिक वर्ष २०२२-२३ पासून लागू

सत्र ४

अभ्यासपत्रिका क्रमांक १४ : १ साहित्यकृतीच्या माध्यमांतरांचा अभ्यास

उद्दिष्ट : साहित्य, चित्रपट, नाटक आदी मौखिक, लिखित व दृक्श्राव्य माध्यमांचा विद्यार्थ्यांना संकल्पनात्मक परिचय व्हावा, विसाव्या व एकविसाव्या शतकात लिखित साहित्याचे दृक्श्राव्य माध्यमांमध्ये मोठ्या प्रमाणात माध्यमांतरझालेले दिसते. ही माध्यमांतराची प्रक्रिया विद्यार्थ्यांनी समजून घेणे येथे अभिप्रेत आहे.

घटक १) व्याख्याने- २०, श्रेयांकन - ०२

अ) माध्यम म्हणजे काय, माध्यमांचे स्वरूप, माध्यमांचे प्रकार, संकल्पना व वैशिष्ट्ये.

आ) साहित्यप्रकाराची संकल्पना कथनात्म, नाट्यात्म, काव्यात्म साहित्याचे सैद्धान्तिक विवेचन.

घटक ३) व्याख्याने २०, श्रेयांकन - ०२

अ) कथात्म साहित्यकृतींचे नाट्यरूपांतर.

आ) श्री. ना. पेंडसे – लव्हाळी (संभूसाची चाळीत)

घटक ४) व्याख्याने- २०, श्रेयांकन - ०२

अ) कथात्म साहित्यकृतीचे चित्रपट माध्यमांतर.

आ) बाबा भांड - दशक्रिया.

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा : १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ

१. आचवल, माधव; किमया, मुंबई, १९७९.

२. कानडे, मु० श्री०: प्रयोगक्षम मराठी नाटके, नागपूर, १९६२.

३. कुलकर्णी, अरविंद वामन; मराठी नाट्यलेखनतंत्राची वाटचाल, पुणे, १९७६.

४. कुलकर्णी, भीमराव व मीना जेस्ते (संपा०); साहित्य आणि नाट्य-काही समस्या, पुणे, १९७४.
५. कुळकर्णी, द० भि०; तिसऱ्यांदा रणांगण, नागपूर, १९७६.
६. कुलकर्णी, व० दि०; साहित्यरूप आणि गंध, मुंबई.
७. कुलकर्णी, गो० म०; रसग्रहण कला आणि स्वरूप, पुणे, १९५३-७३.
८. गोडसे, द० ग०, पोत, मुंबई, १९६३.
९. दादेगांवकर, उमा; बॅरेस्टर-तीन रूपे, मुंबई, १९८८.
१०. पवार, गो० मा० व हातकणंगलेकर, म० द० (संपा०); मराठी साहित्य-प्रेरणा आणि स्वरूप, मुंबई, १९८६.
११. पाटणकर, रा० भा०, सौंदर्यमीमांसा, मुंबई, १९७४.
१२. भागवत, श्री० पु० व इतर (संपा०); साहित्य-अध्यापन आणि प्रकार, पॉप्युलर प्रकाशन, मुंबई, १९८७.
१३. सोमण अंजली, साहित्य आणि सामाजिक संदर्भ, पुणे, १९८९.
१४. William Archur, Play Making, A Manual of Craftsmanship, New York, 1960.
१५. Aristotle; Aristoles Theory of Poetry And Fine Art, Introduction, tr. & ed by S. H. Butecher, Dover Publications, New York, 1966.
१६. Hudson W. H.; An Introduction to The Study of Literature, New Delhi, repr. 1983.

सत्र : ४

अभ्यासपत्रिका क्रमांक १४ :२ - स्त्रीवादी चळवळ आणि सिद्धान्तन

उद्दिष्ट : प्रस्तुत अभ्यासपत्रिकेत स्त्रीवादी चळवळीचा इतिहास आणि त्यासंदर्भात झालेल्या सिद्धान्तनाची सूत्रे लक्षात यावीत, भारतीय स्त्रीवादी चळवळीचा इतिहास आणि वेगवेगळ्या प्रवाहांचा उगम व विकास लक्षात यावालिंगभेद आणि समाज, साहित्य, संस्कृती यांच्यातील संघर्षरूपे आणि त्यासंदर्भातील विविध दृष्टिकोणांचा परिचयव्हावा, हे अभिप्रेत आहे.

घटक १) व्याख्याने २०, श्रेयांकन - ०२

अ) स्त्रीवाद संकल्पना व स्वरूप

ब) पाश्चात्य स्त्रीवाद चळवळ आणि सिद्धान्तन

क) पाश्चात्य स्त्रीवादी प्रवाह उदारमतवादी स्त्रीवाद, जहाल स्त्रीवाद, मार्क्सवादी स्त्रीवाद, काळा स्त्रीवाद

घटक २) व्याख्याने २०, श्रेयांकन - ०२

अ) भारतीय स्त्रीवाद संकल्पना व स्वरूप

ब) भारतीय स्त्रीवादी प्रवाह - (महाराष्ट्राच्या विशेष संदर्भात) उदारमतवादी स्त्रीवाद, जहाल स्त्रीवाद, दलित स्त्रीवाद पर्यावरणवादी स्त्रीवाद

घटक ३) व्याख्याने-१०, श्रेयांकन - ०१

अ) महाराष्ट्रातील स्त्रीवादी चळवळ आणि स्त्रीवादी संघटनांचे कार्य.

ब) स्त्रीवादी मराठी नियतकालिके व त्यांचे कार्य. 'मिळून साऱ्याजणी', 'बायजा'.

घटक ४) व्याख्याने-१०, श्रेयांकन-०१

पुढील साहित्यकृतीचा अभ्यास

क)भारतीय स्त्रीजीवन – गीता साने

ड) अब्राम्हणी स्त्रीवादाच्या दिशेने – संपा. प्रतिभा परदेशी, विद्युत भागवत

अंतर्गत परीक्षा-एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन १० गुण व प्रकल्पावर आधारित तोंडी परीक्षा १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१)बाईमाणूस, करुणा गोखले, राजहंस प्रकाशन, पुणे.
२)स्त्रीवादी समीक्षा-स्वरूप आणि उपयोजन, अश्विनी धोंगडे, दिलीपराज प्रकाशन, पुणे.
३)महाराष्ट्रातील स्त्री चळवळीचा मागोवा, मेघा नानिवडेकर, प्रतिमा प्रकाशन, पुणे.
४)संदर्भासहित स्त्रीवाद, गीताली, वि० मं० शब्द प्रकाशन, मुंबई,
७)महाराष्ट्रातील स्त्रीविषयक सुधारणावाद्यांचे सत्ताकारण, नारायण भोसले, दतिची प्रकाशन, पुणे.
६)स्त्रीवादी सामाजिक विचार, विद्युत भागवत, डायमंड पब्लिकेशन्स, पुणे,
७)स्त्री प्रश्नांची वाटचाल, विद्युत भागवत, प्रतिमा प्रकाशन, पुणे.
८)सांस्कृतिक प्रवाहांची स्त्रीवादी समीक्षा, वंदना महाजन, स्नेहवर्धन प्रकाशन, पुणे,
९)भारतीय स्त्रीवाद: बदलते आयाम, (संपा०) वंदना महाजन, स्त्रीवाणी विशेषांक,
१०)स्त्रीवाद संकल्पना व उपयोजन, मंगला वरखेडे, का० स० वाणी प्रगत अध्ययन संस्था, धुळे.
११)हिंदू संस्कृती आणि स्त्री, आ० ह० साळुंखे, लोकवाङ्मय गृह, मुंबई.
१२)मायवाटेचा मागोवा, तारा भवाळकर.
१३. The Feminine Mystique – Betty Friedans
१४. A Room of One’s Own – Virginia Woolf
१५. Sexual Politics – Kate Millett
१६. Vindication of The Rights of Woman – Mery Wollstonecraft
१७. The Yellow Wallpaper – Charlotte Perkins Gilman’s
१८. The Color Purple – Alice Walker
१९. काळ्या स्त्रियांचा विचार व लढा – शर्मिला रेगे
२०. बहुजन स्त्रीवादाच्या दिशेने – विलास सोनवणे

सत्र : ४

अभ्यासपत्रिका क्रमांक १४ : ३ - फुले-आंबेडकरवादी साहित्य

उद्दिष्ट: १९९० नंतर वर्ण, जात, वर्ग, लिंगभाव अधिष्ठित शोषकव्यवस्थेच्या अंतासाठीचे तत्त्वज्ञान म्हणून फुले आंबेडकरांच्या विचारप्रवाहाचा उदय झालेला दिसतो. जागतिकीकरणाच्या गुंतागुंतीपूर्ण वास्तवात विशेषतः भारतीय समाज, साहित्य आणि संस्कृती संदर्भात सदर विचारप्रणालीचे महत्त्व अनन्य आहे. त्याचा परिचय व्हावा आणि योगदान स्पष्ट व्हावे हा सदर अभ्यासपत्रिका सुरू करण्यामागील प्रमुख उद्देश आहे.

घटक १) व्याख्याने-२०, श्रेयांकन - ०२

अ) फुलेवाद तत्त्व आणि विचारप्रणाली.

आ) आंबेडकरवाद तत्त्व आणि विचारप्रणाली.

घटक २) व्याख्याने-२०, श्रेयांकन - ०२

अ) फुले-आंबेडकवादी साहित्यप्रेरणा, जाणीवा आणि संवेदन

आ) फुले – आंबेडकरवादी साहित्याची परंपरा

घटक ३) व्याख्याने-२०, श्रेयांकन - ०२

कथासंग्रह – पड – अमिताभ

दीर्घकविता- भूमिपुत्रांचे बाबासाहेब – चंद्रशेखर मलकमपट्टे

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन: १० गुण व प्रकल्पावर आधारित तोडी परीक्षा : १० गुण)

सत्रान्त परीक्षा - एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ :

१)कसबे, रावसाहेब आंबेडकरवाद : तत्त्व आणि व्यवहार, सुगावा प्रकाशन, पुणे.

२)पाटील, शरद; मार्क्स-फुले-आंबेडकरवाद, सुगावा प्रकाशन, पुणे.

३)गायकवाड, सुधाकर; माणूस त्याचा समाज आणि बदल : डॉ० आंबेडकरांचे सिद्धान्तन, सृजन प्रकाशन, मुंबई,

४)शेरे, नीळकंठ; आंबेडकरवाद, सुविद्या प्रकाशन, पुणे. पानतावणे, गंगाधर; पत्रकार डॉ० बाबासाहेब आंबेडकर, प्रतिमा प्रकाशन, पुणे.

५) आंबेडकर, डॉ० बाबासाहेब; अस्पृश्य मूळचे कोण?, (The Untouchables), (अनु०) कांबळे, बी० सी०;

६) आंबेडकर, डॉ० बाबासाहेब; जातिभेद निर्मूलन, (अनु०) गांजरे, मा० फ०; प्रज्ञा प्रकाशन मंडळ, नागपूर, १९७०.

७) आंबेडकर, डॉ० बाबासाहेब, शूद्र मूळचे कोण होते?, (अनु०) खैरमोडे, चां० भ० ठक्कर आणि कं० लि०, मुंबई, १९४६.

सत्र : ४

अभ्यासपत्रिका क्रमांक १४ : ४ - आदिवासी संस्कृती : कला व लोकसाहित्य

उद्दिष्ट : आदिवासींच्या जीवनाची व्याप्ती आदिम आणि फार व्यापक असून भारतीय समाजव्यवस्थेचे आणि संस्कृतीचे मूळ त्यात आहे. मूलत: भारतीय समाजव्यवस्था ही मातृसत्ताक होती. वर्णसंकरानंतर तिने पुरुषसत्तेचे रूप धारण केले आणि त्यानंतर नव्या शोषणाच्या भारतीय समाजजीवनाचा इतिहास, संस्कृतीचे स्थित्यंतर रचले गेले. आदिवासींचा म्हणता येईल असा धर्मही त्यावेळी पृथ्वीच्या पाठीवर नांदत होता. मूलत: आदिवासी समाजव्यवस्था, संस्कृती ही निसर्गाधारित व मानवताकेंद्री होती आणि त्याचे प्रतिबिंब आदिवासींच्या लोकसाहित्यात आढळते. एकूणच भारतीय मूळ समाजव्यवस्था, संस्कृतीचा अभ्यास आजच्या जागतिकीकरणाच्या पार्श्वभूमीवर विद्यार्थ्यांना व्हावा असा या अभ्यासपत्रिकेचा हेतू आहे.

घटक १) व्याख्याने-२०, श्रेयांकन - ०२

अ) आदिवासी संस्कृती-परंपरा व भाषा

ब) आदिवासी धर्म संकल्पना (निसर्गधर्म व वर्तमान विधिधर्मकल्पना. उदाहरणार्थ, गोडवानांच्या भारत, आफ्रिका, अंटार्टिका, ऑस्ट्रेलिया व दक्षिण अमेरिका या पाच महाखंडांचा धर्म, बिरसाधर्म, सरनाधर्म (कोयतूर किंवा गोडी धर्म).

घटक २) व्याख्याने २०, श्रेयांकन - ०२

आदिवासी विविध जमातीचे कलाजीवन अ) संगीत (कल्पना, वाद्ये व विशेष).

च) वास्तुकला (परंपरा, स्वरूप व विशेष).

क) शिल्पकला (परंपरा, स्वरूप व विशेष).

ड) चित्रकला वारली व गोडी (परंपरा, स्वरूप व विशेष).

घटक ३) व्याख्याने २०, श्रेयांकन - ०२

आदिवासी लोकसाहित्य

अ) आदिवासी लोकसाहित्याचे स्वरूप व संकल्पना.

ब) आदिवासी लोकगीते (कल्पनाविश्व प्रकार व विशेष).

क) आदिवासी लोककथा (कल्पनाविश्व प्रकार व विशेष).

ड) आदिवासी लोकनाट्य (परंपरा, प्रकार व विशेष).

अंतर्गत परीक्षा- एकूण गुण ४०

१. लेखी परीक्षा २० गुण

२. प्रकल्प लेखन २० गुण (पैकी प्रकल्प लेखन १० गुण व प्रकल्पावर आधारित तोडी परीक्षा १० गुण)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१) आदिवासी लोकपरंपरा, माहेश्वरी गावित, चिन्मय प्रकाशन, औरंगाबाद.
२) आदिवासी कलत्र, गोविंद गारे व उत्तमराव सोनवणे, श्रीविद्या प्रकाशन, पुणे.
३) आदिवासी लोकनृत्य लय, ताल आणि सूर, गोविंद गारे, कॉन्टिनेन्टल प्रकाशन, पुणे.
४) सह्याद्रीच्या दऱ्याखोऱ्यातील ठाकूर आदिवासी, गोविंद गारे, श्रीविद्या प्रकाशन, पुणे.
५) मानवी संस्कृतीचा इतिहास, आर० के० परळकर, किताब महल, नागपूर.
६) आदिवासी साहित्य आणि लोककला, (संपा०) शत्रुघ्न फड.
७) कोणे एके काळी सिंधु संस्कृती, मधुकर केशव ढवळीकर, राजहंस प्रकाशन, पुणे.
८) आदिवासीचे सण उत्सव, सरोजिनी बाबर, महाराष्ट्र राज्य लोकसाहित्य माला, पुष्प २४.
९) गोंड, संजय साळुंखे, संवेदन प्रकाशन, औरंगाबाद.
१०)गोंडवाना, जीव जगत की उत्पत्ती, उत्थान, पतन और पुनरुत्थान, संघर्ष, चंद्रलेखा कंगाली.
११)गोड़ो का मूल निवास स्थल परिचय, मोतीराम कंगाली.
१२)भील जनजीवन और संस्कृती, अशोक पाटील, मध्यप्रदेश हिंदी ग्रंथ अकादमी.
१३)Warli of Thana, A. M. Ghatage, The Maharashtra State Board for Literature and Culture.
१४)Understanding Tribal Religion, Migang Tamo, Sarit Chaudhuri. The Gonds Genesis History and Culture, Paul Anuradha.

सत्र : ४

अभ्यासपत्रिका क्रमांक १५ : १- प्रसारमाध्यमे आणि भाषाव्यवहार

(Mass media and Usage of Marathi Language)

उद्दिष्ट: भाषाव्यवहार हा साहित्याव्यतिरिक्त अन्य क्षेत्रांमध्येही महत्त्वाचा असतो. आधुनिक युगात प्रसारमाध्यमांचे स्वरूप व प्रकार बदलले आहेत. प्रसारमाध्यमांनुसार भाषेच्या उपयोजनाची विविध कौशल्ये विद्यार्थ्यांना ज्ञात व्हावी तसेच ती त्यांनी आत्मसात करून त्याआधारे प्रत्यक्ष उपयोजन करावे हा या अभ्यासपत्रिकेचा हेतू आहे.

घटक १) व्याख्याने- २०, श्रेयांकन - ०२

अ) प्रसारमाध्यमे म्हणजे काय पारंपरिक प्रसारमाध्यमे आणि आधुनिक प्रसारमाध्यमे

ब) प्रसारमाध्यमांचा समाजावर होणारा परिणाम, प्रसारमाध्यमांचा विकास.

घटक २) व्याख्याने-२०, श्रेयांकन - ०२

अ) प्रसारमाध्यमांचे प्रकार मुद्रितप्रसारमाध्यमे (वृत्तपत्रे आणि नियतकालिके).

ब) दृक् आणि श्राव्य प्रसारमाध्यमे नभोवाणी, दूरचित्रवाणी, इंटरनेट.. -

घटक ३) व्याख्याने-२०, श्रेयांकन – ०२

अ) श्राव्य माध्यमाचे स्वरूप व महत्त्व, कार्यक्रमांचे विविध प्रकार, उद्दिष्ट्ये, कार्यक्रमाची पूर्वतयारी आणि सादरीकरण.

ब) दूरचित्रवाणी माध्यमाचे स्वरूप विस्तार कार्यक्रमांचे प्रकार. लेखन, संशोधन आणि प्रसारण इत्यादी.

अंतर्गत परीक्षा : एकूण ४० गुण.

विद्यार्थ्यांनी पुढीलपैकी कोणतेही दोन घटक निवडून त्यावर दोन प्रकल्प सादर करावेत.

१) मुलाखत, २) ग्रंथपरीक्षण, ३) चित्रपटपरीक्षण, ४) नाट्यपरीक्षण, ५) विकिपीडियावर एखाद्या विषयाची निवड करून लेख लिहिणे व त्यावर तो नोंदविणे, ६) दूरचित्रवाणीसाठी बातमीलेखन, ७) आकाशवाणीसाठी बातमीलेखन, ८) एखाद्या विशिष्ट विषयावरील ज्ञानकोश, विश्वकोश, एन्साक्लोपीडिया ब्रिटानिका व तत्सम कोशांमधील नोंदींचा अभ्यास करून त्याआधारे स्वतंत्र संशोधन करून नवीन नोंद तयार करणे, ९) वरील विषयांव्यतिरिक्त अभ्यासक्रमातील घटक न निवडता विषयशिक्षकाने विद्यार्थ्यांकडून दोन प्रकल्प तयार करून घेणे.

सत्रान्त परीक्षा-एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ :

१. देव, सदाशिव, कोशवाङ्मय विचार आणि व्यवहार, सुवर्ण प्रकाशन, २००२.

२. मराठी अभ्यास परिषद पत्रिका, 'भाषा आणि जीवन', त्रैमासिक.

३. नसिराबादकर, ल० रा०, व्यावहारिक मराठी.

४. गर्गे, स० मा०, पत्र आणि पत्रकारिता, मानसन्मान प्रकाशन, १९९९.

सत्र : ४

अभ्यासपत्रिका क्रमांक १५ : २ - भाषांतरकौशल्ये

उद्दिष्ट : भाषांतराच्या विविध प्रकारांमध्ये ललित वाङ्मयातील भाषांतर कौशल्य आत्मसात करणे हा हेतू सदर अभ्यासपत्रिकेच्या मुळाशी आहे. एखाद्या साहित्यकृतीचे भाषांतर करताना त्या साहित्यातील भाषारूपाची वैशिष्ट्ये पुननिर्मितीमध्ये किती प्रभावीपणे व्यक्त झालेली आहेत, त्यातील भाषिक, शैलीविषयक अडचणी जाणून घेणे, उत्तम भाषांतराचे महत्त्व जागतिकीकरणामध्ये समजावून घेणे तसेच विद्यार्थ्यांनीही स्वत: भाषांतर करणे याठिकाणी अभिप्रेत आहे.

घटक १) व्याख्याने-२०, श्रेयांकन – ०२

अ) भाषांतर : संकल्पना, स्वरूप व प्रकार.

ब) भाषांतराचे महत्व, भाषांतर शास्त्र की कला.

घटक २) व्याख्याने २०, श्रेयांकन - ०२

अ) भाषांतरातील भाषा व शैलीविषयक समस्या.

ब) भाषांतरातील सांस्कृतिक समस्या.

घटक ३) व्याख्याने २०, श्रेयांकन – ०२

Indian literature sahitya a kademi's bimonthly journal september – october - 2017

POEMS

1) Arun Kale –

a) The people who come later

b) The bright future of the vultures

2) Bhujang Mesharam –

a) The death of a poet

b) Medhabai

3) Kalpana dudhal –

a) Heat is always around

b) Before losing the drimitive determination

4) Kavita mahajan –

a) I am a blue – bellied black fish

b) Eating each moment

Women's writings in Marathi the modern short stories (vol – 1)

Edited by Dr. Pushpalata rajapure – tapas

STORYS

1) Can baba's home be mine ?
   Tai, this is itself the home sweet home.
   - Vibhawari shirurkar
2) Fertility clinic marriage
   - Priya tendulkar

अ) अजब न्याय वर्तुळाचा – चि. त्र्यं. खानोलकर
(बल्ट्रोड ब्रेख्त यांच्या कॉकेशन चॉक सर्कल या मूळ नाटकाचे भाषांतर)

अंतर्गत परीक्षा- एकूण गुण ४०

विद्यार्थ्यांनी विषयशिक्षकांच्या मार्गदर्शनाखाली प्रत्यक्ष इंग्रजी वा हिंदी भाषेतून मराठीत किमान ४००० शब्दांचा भाषांतरप्रकल्प पूर्ण करून सादर करणे. भाषांतरासाठी निवडलेल्या इंग्रजी वा हिंदीतील साहित्यकृतींचे यापूर्वी मराठीमध्ये भाषांतर झालेले नसावे याची दक्षता विषयशिक्षकांनी घेणे आवश्यक आहे.

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भ :

१)चिकित्सा – डॉ. मधुकर मोकाशी,स्नेहवर्धन प्रकाशन, पुणे.
२) भाषांतरमीमांसा - संपा. कल्याण काळे, अंजली सोमण, प्रतिमा, पुणे.
३)भाषांतर शास्त्र की कला? - म. वि. फाटक, रजनी ठकार, वरदा, पुणे.
४)भाषांतर - सदा कऱ्हाडे, लोकवाङ्मयगृह, मुंबई.
५) भाषांतर आणि भाषा - विलास सारंग, मौज, मुंबई.
६) अनुवादमीमांसा - संपा. केशव तुपे, साक्षात, औरंगाबाद.
७) अनुवादविज्ञान - निलेश लोंढे, स्वरूप, पोखर्णी, परभणी.

सत्र : ४

अभ्यासपत्रिका क्रमांक १५ : ३ - ग्रंथव्यवहार

उद्दिष्ट : ग्रंथनिर्मितीसह ग्रंथव्यवहार आणि प्रकाशन या संदर्भातील ज्ञान विद्यार्थ्यांना देणे हा सदर अभ्यासपत्रिकेचा हेतू आहे. हा अभ्यास करताना विविध विषयांनुसार उपलब्ध झालेली हस्तलिखित, त्याची अंतिम मुद्रणप्रत तयार करणे, प्रत्यक्ष प्रकाशन व्यवहार तसेच वितरणव्यवहार यांतील ज्ञान व कौशल्ये विद्यार्थ्यांनी आत्मसात करणे अभिप्रेत आहे.

घटक १) व्याख्याने-२०, श्रेयांकन-०२

प्रकाशन व्यवसाय

अ) प्रकाशन संस्था व प्रकाशन व्यवसाय – स्वरूप आणि आव्हाने

ब) पुस्तकाची निर्मिती प्रक्रिया, पुस्तकांचे प्रकार व आकार

घटक २) व्याख्याने- २०, श्रेयांकन - ०२

अ) प्रकाशक व प्रकाशनाची प्रक्रिया

(प्रकाशन संस्थेचे ध्येयधोरण, कार्यवाही, हस्तलिखितांची निवड, लेखकांना नव्या पुस्तकांचे विषय देऊन लिहून घेणे, संहिता निवड इत्यादी.)

आ)मुद्रण व मांडणी

(मुद्रणप्रत तयार करणे, मजकूर तपासणे, शुद्धलेखन तपासणे, चित्रे-आलेख-नकाशे यांची मांडणी करणे, मुखपृष्ठ व मलपृष्ठ तयार करवून घेणे इत्यादी.)

घटक ३) व्याख्याने २०, श्रेयांकन - ०२

अ) वितरण व्यवस्था

विक्री आणि आर्थिक देवाण-घेवाण

(प्रकाशन करणे, प्रसिद्धी देणे, विक्री विभागाला मार्गदर्शन करणे, वाचक मेळावा, ग्रंथप्रदर्शन सवलत, हिशेब ठेवणे इत्यादी.)

आ) पुस्तकाची बाजारपेठ

ई-बुक्स : प्रकाशन, व्यवसाय आणि विक्री.

अंतर्गत परीक्षा- एकूण गुण ४०

विषयशिक्षकांच्या मार्गदर्शनाखाली प्रत्यक्ष सुमारे ३२-६४ पृष्ठांच्या ग्रंथाची निर्मिती करणे.

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भग्रंथ

१)ग्रंथव्यवहार, अ० ह० लिमये, व्हीनस बुक स्टॉल, पुणे.
२)मराठी प्रकाशनांचे स्वरूप प्रेरणा व परंपरा, (संपा०) अ० ह० लिमये, प्रसाद प्रकाशन, पुणे.
३)मराठी ग्रंथनिर्मितीची वाटचाल, शं० गो० तुळपुळे, महाराष्ट्र ग्रंथोत्तेजक संस्था, पुणे.
४)प्रकाशन व्यवसाय परिचय, शरद गोगटे, अखिल भारतीय मराठी प्रकाशक संघ, पुणे.
५)पॉप्युलर रीतिपुस्तक - मृदुला जोशी आणि रामदास भटकळ, हर्ष प्रकाशन, मुंबई, २०१५.
६) संपादन कला आणि शास्त्र - शुभदा धारुरकर, व्ही.एस. धारुरकर प्रकाशन, औरंगाबाद, १९८५.
७) प्रकाशनविश्व - मोहन वसंत वैद्य, प्रकाशन विश्व, पुणे, २००९.
८)ग्रंथ आणि ग्रंथालय - अ.ना. साठे, किताबमिनार प्रकाशन, पुणे.
९)ग्रंथालय आणि माहितीशास्त्र - वि.वि. कुलकर्णी, पिंपळापुरे बुक डिस्ट्रीब्युटर्स, नागपूर १९७४.
१०)ग्रंथालय शासन - वि.वि. कुलकर्णी, सुविचार प्रकाशन, नागपूर, १९७४.
११)हस्तलिखितांची वर्णनात्मक नामावली - सुरेंद्र गावस्कर, मराठी संशोधन मंडळ, मुंबई, १९७२.
१२)भावे प्रयोग, अ.ह. भावे.
१३)मराठी ग्रंथप्रकाशनाची दोनशे वर्षे - शरद गोगटे, राजहंस प्रकाशन, पुणे, २००८.
१४)पॉप्युलरचे अंतरंग - किशोर आरास, (संपा.) ग्रंथाली प्रकाशन, मुंबई, २०१५.
१५)श्री. पु. भागवत व्यक्ती आणि वाङ्मय वासंती इनामदार, (संपा.) -
१६) विष्णुपंत भागवत - वि.पि. भागवत स्मारक समिती, १९८४.
१७)मुद्रणपर्व - दीपक घारे.
१८)सदानंदयात्रा - सदानंद भटकळ.
१९)मराठी ग्रंथप्रकाशनाचे स्वरुप व परंपरा - ह.अ. भावे.
२०)मराठी प्रकाशन व्यवसाय परिचय - शरद गोगटे.
२१)मुद्रण प्रवेश - शं.रा. दाते, लोकसंग्रह कारखाना, पुणे, १९३७.
२२) मुद्रण व्यवस्थापन - व्ही.जी. देवकुळे, पुणे, १९५६.

सत्र : ४

अभ्यासपत्रिका क्रमांक १५ : ४ – सर्जनशील साहित्य

उद्दिष्ट: कथनात्मक साहित्य आणि कविता यांच्या रचनाबंधाचा परिचय करून घेणे. या साहित्य प्रकारांच्या घटकांचा अभ्यास करणे आणि सर्जनशील साहित्य निर्मितीचे सूत्र लक्षात घेणे. हा या अभ्यासपत्रिकेचा प्रमुख उद्देश आहे. सर्जनशील साहित्य निर्मितीचा सराव करणे या अभ्यासपत्रिकेत अभिप्रेत आहे.

घटक – १ व्याख्याने-२०, श्रेयांकन-०२

अ) सर्जनशीलता म्हणजे काय ?

आ)सर्जनशीलतेविषयीचे विविध सिद्धांत

घटक – २ व्याख्याने-२०, श्रेयांकन-०२

अ) कथनात्मक साहित्याची निर्मिती प्रक्रिया (कथा व कादंबरी)

आ)काव्य निर्मितीची प्रक्रिया

घटक – ३ व्याख्याने-२०, श्रेयांकन-०२

अ) नाट्यात्म साहित्याची निर्मिती प्रक्रिया

आ)वैचारिक साहित्याची निर्मिती प्रक्रिया

अंतर्गत परीक्षा- एकूण गुण ४०

विषय शिक्षकांच्या मार्गदर्शना खाली सर्जनशील साहित्याची निर्मिती करणे.

(उदा. एक कादंबरी, पाच कथा, पंधरा कविता)

सत्रान्त परीक्षा- एकूण गुण ६०

वरील अभ्यासक्रमावर १५-१५ गुणांचे चार प्रश्न पर्यायांसह विचारण्यात येतील.

संदर्भसूची -

१. साहित्य सिध्दान्त- रेने वेलेक व ऑस्टिन वॉरेन, अनुवाद: स. गं. मालशे, महाराष्ट्र राज्य साहित्यवसंस्कृती मंडळ, मुंबई.

२. कला म्हणजे काय? - टॉलस्टाय, अनुवाद: साने गुरुजी, कॉन्टिनेन्टल, पुणे.

३. सौंदर्य आणि साहित्य - बा. सी. मर्ढेकर, मौज, मुंबई

४.साहित्य आणि इतर ललित कला - दु. का. संत

५. साहित्याची निर्मितिप्रक्रिया - आनंद यादव, मेहता, पुणे.

६.जी. एं.ची निवडक पत्रे - संपा. म. द. हातकणंगलेकर, मौज, मुंबई.
७. सर्जनशीलता आणि लिहिता लेखक - विलास सारंग, मौज, मुंबई.
८.सृजनात्मक लेखन - आनंद पाटील, पद्मगंधा, पुणे.
९.प्रतिभा आणि सर्जनशीलता - सुधाकर देशमुख, पद्मगंधा, पुणे.
१०. वाङ्मयप्रकारः संकल्पना व स्वरूप - संपा. आनंद वास्कर, अन्वय प्रकाशन, पुणे.
११. वाचणाऱ्याची रोजनिशी - सतीश काळसेकर, लोकवाङ्मयगृह, मुंबई.
१२.सर्जनशीलता - म. बा. कुंडले, नूतन, पुणे.
१३. भाषासंवाद - अनिल गवळी, नंदकुमार मोरे, सायन, पुणे.
१४.प्रत्यय आणि व्यत्ययः एक संवाद - दिलीप पुरुषोत्तम चित्रे / रंगनाथ पठारे, शब्दालय, श्रीरामपूर.
१५. साहित्याची भाषा - भालचंद्र नेमाडे, साकेत, औरंगाबाद.
१६.हे लेखकाला माहीत हवेच अ. अं. कुलकर्णी, कॉटिनेन्टल, पुणे.
१७. ललित साहित्यातील आकृतिबंधाची जडणघडण मधू कुलकर्णी, शुभदा सारस्वत, पुणे.

सत्र ४

अभ्यासपत्रिका १६

स्वरूप - या अभ्यासपत्रिकेत विद्यार्थ्यांकडून १०० गुणांसाठी शोध प्रबंधिका तयार अभ्यासपत्रिकेचे करून घेणे अपेक्षित आहे. यासाठी संशोधनाचे स्वरूप, संशोधनाच्या पद्धती तसेच विषयानुसार प्रबंधाची मांडणी करताना विद्यार्थ्यांनी वापरायच्या संशोधन पद्धती, संदर्भ साधनांचा वापर या विषयी व्याख्याने घेणे आवश्यक आहे.

उद्दीष्ट – या अभ्यास पत्रिकेत विद्यार्थ्यांमध्ये संशोधनाविषयी आवड निर्माण करणे. संशोधनाचे स्वरूप, संशोधनाच्या पद्धती, संदर्भांचा योग्य वापर आणि संशोधन विषयासंदर्भात परिचय करून देणे. तसेच प्रबंध लेखनाच्या पद्धती अवगत करणे. विशिष्ट विषयावर संशोधन करताना संशोधन नियमांचे तसेच शिस्तीचे पालन करून प्रबंध लेखन करणे.

श्रेयांकन – १०

प्रत्येक श्रेयांकनात १० व्याख्याने

प्रकल्प विषय

१. साहित्यविचार आणि साहित्य सिद्धांतनाविषयी संशोधन
२. समीक्षाविचार संशोधन
३. विशिष्ट कलाकृतीचा अभ्यास
४. विशिष्ट लेखकाचा अभ्यास
५. लोकसाहित्याचा अभ्यास
६. बोलीचा अभ्यास
७. कालखंडाचा अभ्यास
८. साहित्यप्रवाहांचा अभ्यास
९. मराठी भाषेचा भाषावैज्ञानिक अभ्यास
१०. मराठी भाषेचा व्याकरणिक अभ्यास
११. प्राचीन हस्तलिखिते, शिलालेख, ताम्रपट आणि ऐतिहासिक साधनांच्या आधारे भाषा व साहित्याचा अभ्यास
१२. वाङ्मयीनवाद, विविध विचार प्रवाह आणि मराठी साहित्य
१३. तौलनिक साहित्य अभ्यास
१४. अनुवादित साहित्याचा अभ्यास
१५. आधुनिक तंत्रज्ञान आणि भाषा व साहित्याचा अभ्यास
१६. माध्यमांतराचा अभ्यास

१७.साहित्य प्रकारांचा अभ्यास

एकूण गुण १००
प्रकल्प लेखन गुण – ७५
मौखिक परीक्षा गुण – २५

REVISED SYLLABUS

AS PER CHOICE BASED CREDIT SYSTEM (CBCS)
(TO BE IMPLEMENTED FROM THE ACADEMIC YEAR 2016-17)

FYBA

POLITICS PAPER I

SEMESTER I

TITLE: INDIAN POLITICAL SYSTEM

SUB-TITLE: THE CONSTITUTIONAL FRAMEWORK

1. **INTRODUCTION TO THE CONSTITUTION** (12)
   - 1.1 BRIEF HISTORY OF THE MAKING OF CONSTITUTION
   - 1.2 PREMABLE
   - 1.3 BASIC FEATURES

2. **CITIZENS AND THE CONSTITUTION** (11)
   - 2.1 FUNDAMENTAL RIGHTS – ARTS 14 TO 19
   - 2.2 FUNDAMENTAL RIGHTS –ARTS- 20 TO 32
   - 2.3 DIRECTIVE PRINCIPLES OF STATE POLICY

3. **LEGISLATURE AND JUDICIARY** (11)
   - 3.1 PARLIAMENT
   - 3.2 JUDICIAL SYSTEM – ORIGINAL AND WRIT JURISDICTION
   - 3.3 JUDICIAL ACTIVISM

4. **EXECUTIVE** (11)
   - 4.1 UNION EXECUTIVE - THE PRESIDENT
   - 4.2 PRIME MINISTER AND COUNCIL OF MINISTERS
   - 4.3 LOCAL SELF-GOVERNMENT – 73rd,74th, AMENDMENTS AND THEIR IMPLEMENTATION

SUGGESTED READINGS:

1. Basu, Durga Das, Introduction to the Constitution of India, Lexis Nexis, 2012.
2. Laxmikant, M, Indian Polity, TMH, 2015.
3. Laxmikant, M., Governance in India, TMH, 2015.
4. Pylee, M. V., An Introduction to the Constitution of India, Vikas Publishing, 2008.
5. Sharma, Brij Kishore, Introduction to the Constitution of India, PHI Learning, 2009.
6. क्षीरसागर, के. श्री., भारतीयराज्यव्यवस्था, विद्याप्रकाशन.
7. घांग्रेकर, चिं. ग., भारतीयराज्यघटना, श्रीमंगेशप्रकाशन, २००१.
8. जाधव, तुकाराम, आणिशिरापूरकर, महेश, भारतीयराज्यघटनावघटनात्मकप्रक्रिया, युनिकअकादमी, २०१४.

SEMESTER II
SUB-TITLE: INDIAN POLITICAL PROCESS

1. **CHANGING NATURE OF FEDERAL SYSTEM** (11)
   - 1.1 CENTRE-STATE RELATIONS WITH REFERENCE TO FISCAL AND EMERGNCY POWERS.
   - 1.2 DEMAND FOR GREATER AUTONOMY
   - 1.3 CHANGING DYNAMICS OF CENTRE-STATE RELATIONS

2. **PARTY POLITICS AND ELECTIONS**
   - 2.1 NATIONAL PARTIES - FEATURES
   - 2.2 REGIONAL PARTIES – CHARACTERISTICS
   - 2.3 ANALYSIS OF ELECTORAL PERFORANCE OF NATIONAL AND REGIONAL PARTIES SINCE 1989.

3. **SOCIAL DYNAMICS** (11)
   - 3.1 CASTE (WITH REFERENCE TO RESERVATION)
   - 3.2 RELIGION (WITH REFERENCE TO COMMUNALISM)
   - 3.3 GENDER (WITH REFERENCE TO POLITICAL PARTICIPATION)

4. **CHALLENGES TO NATIONAL SECURITY** (12)
   - 4.1 CRIMINALISATION OF POLITICS
   - 4.2 INTERNAL THREATS TO SECURITY (WITH REFERENCE TO NAXALISM AND INSURGENCY)
   - 4.3 GLOBAL TERRORISM

SUGGESTED READINGS:

1. Abbas, H., Kumar, Ranjay, and Alam, Mohammad Aftab, Indian Government and Politics, Pearson, 2011.
2. Chakravarty, Bidyut, and Pande, Rajendra Kumar, Indian Government and Politics, Sage Publications, 2008.
3. Chandoke, Neera, and Priyadarshi, Praveen, Contemporary India, Pearson, 2009.
4. Ghosh, Peu, Indian Government and Politics, PHI, 2012.
5. Jayal, Nirja G., and Mehta, BhanuPratap, The Oxford Companion to Politics in India, OUP, 2011.
6. Jha, Pravin Kumar, Indian Politics in Comparative Perspective, Pearson, 2012.
7. Paranjpe,Shrikant,India’s Internal Security:Issues and Perspectives, Kalinga Publications, 2009.
8. Singh, M. P., and Saxena, Rekha, Indian Politics, PHI, 2011.
9. कुलकर्णीबी. वाय., भारतीयशासनआणिराजकारण, विद्याप्रकाशन, २००८.
10. पाटील, बी. बी., भारतीयशासनआणिराजकारण, फडकेप्रकाशन, २०१०.
11. पाटीलव्ही. बी., भारतीयराज्यव्यवस्था, के. सागर, २०११.
12. पित्रे, शशिकांन्त, डोमेलतेकारगिल, राजहंसप्रकाशन, २०००.
13. भुरे, रश्मी, शांततेच्याशोधातकाश्मिरीतरुण, श्रीविद्याप्रकाशन, २००९.

SYBA

PAPER II- POLITICAL THEORY

Semester-III

SEMESTER III- PRINCIPLES AND CONCEPTS OF POLITICAL THEORY

Module 1 - Introduction to Political Theory **[11 lectures]**

1.1 Definition and Scope of Political Theory
1.2Approaches to the Study of Political Theory: Traditional
1.3 Approaches to the Study of Political Theory: Contemporary

Module 2 – State, Civil Society & Market **[12 Lectures]**

2.1 State: Concept and Perspectives
2.2 Nation - State: Meaning and Changing Perceptions
2.3 State, Civil Society and Market

Module 3 – Power, Authority and Legitimacy **[10 Lectures]**

3.1 Power
3.2 Authority
3.3 Legitimacy

Module 4 : Concept of Law and Political Obligation **[12 Lectures]**

4.1 Concept of Law
4.2 Political Obligation
4.3 Right to Resist

SEMESTER IV- POLITICAL VALUES AND IDEOLOGIES

Module1 – Rights **[10 Lectures]**

1.1 Meaning and Nature of Rights
1.2 Theories of Rights
1.3 Classification of Rights

Module 2 – Basic Political Values **[12 Lectures]**

2.1 Liberty
2.2 Equality
2.3 Justice

Module 3 – Democracy **[11 Lectures]**

3.1 Theories of Democracy
3.2 Principles of Liberal Democracy
3.3 Conditions for the Successful Working of Democracy

Module 4 – Political Ideologies **[12 Lectures]**

4.1 Marxism
4.2 Fascism
4.3 Feminism

REFERENCES

Abbas, Hoveyda and Ranjay Kumar, *Political Theory*, Pearson, 2012

Bhargava, Rajeev and Ashok Acharya (eds), *Political Theory: An Introduction*, Pearson Longman, 2008

Bhargava, Rajeev and Helmut Reifeld (eds), *Civil Society, Public Sphere, and Citizenship: Dialogues and Perception*, Sage Publications, New Delhi, 2005

Chandhoke, Neera, *State and Civil Society*: *Explanations in Political Theory*, Sage Publications, New Delhi, 1995

Gauba, O.P., *An Introduction to Political Theory*, Macmillan Publishers India Ltd., 2011

SYBA

PAPER III - PUBLIC ADMINISTRATION

Syllabus: Semester-III

Module 1: Introduction to Public Administration [Lectures 12]

1.1. Meaning, Scope and Significance
1.2. Evolution of Public Administration as a Discipline
1.3. Public Administration in the Age of Liberalisation, Privatisation and Globalisation

Module 2.Theories of Administration [Lectures 10]

2.1. Scientific Management Theory- F.W. Taylor
2.2. Bureaucratic Theory- Max Weber
2.3. Human Relations Theory- Elton Mayo

Module3. **Basic Principles and Theories of Organisation[Lectures 12]**

3.1. Hierarchy, Delegation, Centralisation-Decentralisation
3.2. Motivation Theories- McGregor, McClelland
3.3. Leadership Theories- Trait theory, Contingency theory

Module 4. Contemporary Techniques and Practices in Administration [Lectures 11]

4.1. Good Governance
4.2. E-Governance
4.3. Public-Private Partnership (PPP)

SEMESTER IV- INDIAN ADMINISTRATION

Module 1.Introduction to Indian Administration [Lectures 11]

1.1 Evolution and Constitutional Context
1.2 Salient features
1.3 District Administration since Independence: Changing role of District Collector

Module 2.Personnel Administration[Lectures 11]

2.1. Recruitment: All India Services, Central Services, State Services
2.2. Public Service Commission: Union Public Service Commission and Maharashtra Public Service Commission
2.3. Training: All- India Services, Central Services, State Services (Maharashtra)

Module3.Financial Administration[Lectures 12]

3.1. Budgetary Process
3.2. Parliamentary Committees: Public Accounts Committee, Estimates Committee, Committee on Public Undertakings
3.3. Comptroller and Auditor General

Module 4.Contemporary Issues in Indian Administration[Lectures 11]

4.1. Integrity in Administration: Lokpal, Lokyukta, CVC
4.2. Citizen and Administration
4.3. Citizens' Charter

REFERENCES

Bava,.Noorjahan.*Public Administration in the 21stCentury*, Kanishka Publishers New Delhi, 2010.

Avasthi, Maheshwari, *Public Administration*, Laxmi Narayan Agarwal Publications, Agra, 2006.

Bhattacharya, Mohit,New*Horizons of Public Administration*, Jawahar Publications, New Delhi, 2008.

Chakrabarty, Bidyut, and Bhattacharya Mohit (ed.), *Public Administration a Reader*, Oxford University Press, New Delhi, 2005

Fadia, B. L. &Dr.KuldeepFadia, *Public Administration: Administrative Theories and Concepts*,SahityaBhawan**,** Agra, 2015

UNIVERSITY OF MUMBAI

Revised Syllabus for T.Y.B.A.

Programme: B.A.

Course : Politics

Semesters: V and VI

(Each paper has 4 credits)

As per Choice Based Credit System for the academic year 2018-19.

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PaperIV:InternationalRelations
SemesterV:WorldPolitics

No. of Lectures

Module 1: Concepts and approaches **12**

1.1 International Relations, International Politics – Definition, Scope and Relevance

1.2 Approaches: Realism and Liberalism

1.3 Concepts: Power, National Interest and Balance of Power

Module 2: World Order **09**

2.1 Cold War: Bipolarity

2.2 Post-Cold War: Unipolarity, Multipolarity and Non-Polarity

Module 3: Conflict, Peace and Security **12**

3.1 Types of Conflict and changing nature of Conflict

3.2 Approaches to Peace: Arms Control, Disarmament and Collective Security

3.3 Changing Idea of Security: National Security and Human Security

Module 4: International Political Economy **12**

4.1 Bretton Woods Institutions: IMF, World Bank and WTO

4.2 Regional Economic Integration: European Union

4.3 Globalisation

Paper IV: International Relations

Semester VI: India in World Politics

	No. of lectures
Module 1: Foreign Policy and Diplomacy	**12**
1.1 Definition and Objectives	
1.2 Diplomacy: Role, Types and Changing Nature	
1.3 Determinants of Foreign Policy with reference to India	
Module 2: India and the Major Powers	**12**
2.1 U.S.A.	
2.2 Russia	
2.3 China	
Module 3: India and her Neighbours	**12**
3.1 India and SAARC	
3.2 Pakistan and Bangladesh	
Module 4: India and International Organisations	**09**
4.1 India's Role in the United Nations	
4.2 India and ASEAN	

Recommended Readings

1. Bull, Hedley: *The Anarchical society: A study of order in world politics,* ColumbiaUniversity press, New York, 1977.
2. Camilleri, Joseph A. and Falk, Jim: *The end of sovereignty the politics of a shrinking and fragmenting world,* Edward Elgar Publishing Ltd., 1992.
3. Chomsky, N.: *Pirates and Emperors International terrorism in the real world,* revised edition, Black Rose Books, Montreal, 1995.
4. Claude, I.: *Power and International Relations: Power and Justice,* Prentice Hall, Englewood Cliffs, New Jersey, 1986.
5. Geiger, Theadore: *The Future of the International System,* Unwin Hyman, Boston, 1988.
6. Gilpin, Theodore: *The Political Economy of International Relations,* Princeton UniversityPress, Princeton, 1987.
7. Griffiths, Martin: *Realism, Idealism and International Politics,* Routledge, London, 1993.
8. Hughes, Barry: *Continuity and Change in World Politics,* Prentice Hall, EnglewoodCliffs, New Jersey, 1991.
9. Luard, Evan: *Types of International Society,* The Free Press, New York, 1976.
10. Pettman, Ralph: *International Politics,* Longman, 1991.
11. Spero, Joan Edelm: *The Politics of International Economic Relations,* Routledge, London, 4th Edition, 1990.
12. Waltz, Kenneth Neal: *Theory of International Politics,* Addition Wosley, Rending, Massachusetts, 1979.
13. Yarborough, B. V.: *Co-operation and Governance in World Trade,* Princeton University Press, Princeton, 1992.

5

Politics Paper V: Political Thought
Semester V: Western Political Thought

Module 1: Modern State **12**
1.1 Niccolo Machiavelli [1469-1527]
1.2 John Locke [1632-1704]

Module 2: Liberty and Justice **11**
2.1 John Stuart Mill [1806-1878]
2.2 John Rawls [1921-2002]

Module 3: Revolution and Hegemony **11**
3.1 Karl Marx [1818-1883]
3.2 Antonio Gramsci [1891-1937]

Module 4: Feminism and Multiculturalism **11**
4.1 Simone de Beauvoir [1908-1986]
4.2 Will Kymlicka [1962-till date]

Semester VI– Indian Political Thought

Module 1: Ideas on State **12**

1.1MahadevGovindRanade (1842 – 1901)
1.2 Mohandas Karamchand Gandhi (1869 – 1948)

Module 2: Nationalism **11**

2.1 Rabindranath Tagore – (1861 – 1941)
2.2 VinayakDamodarSavarkar (1883 - 1966)

Module 3: Rational and Radical Reform **11**

3.1 Gopal Ganesh Agarkar (1856 – 1895)
3.2 BhimraoRamjiAmbedkar (1891 – 1956)

Module 4 : Socialism **11**

4.1 Jawaharlal Nehru (1889 – 1964)
4.2 RammanoharLohia (1910 – 1967)

Rationale

TYBA Politics Paper V titled Political Thought is a compulsory paper consisting of Part I and II. The paper introduces students of politics to the political philosophy and ideas expounded by thinkers in their historical setting. The revised syllabus is a blend of Western and Indian political thought.

The syllabus for Semester V consists of four modules and focuses on Western Political Thought. New themes incorporated in Module III & IV to introduce the students to the writings on hegemony, feminism and multiculturalism. Module III includes the new theme viz. 'Theory of Hegemony' of Antonio Gramsci whereas Module IV covers feminist thought of Simone-de-Beauvoir and multiculturalism of Will Kymlicka . Antonio Gramsci rejected the crudest form of Marxist materialism. He stated that rule of one class over another was not just due to coercive state apparatus. It depended on hegemony. He stressed that the ruling party of a society uses cultural leadership and domination to establish their legitimacy. Simone-de-Beauvoir was a revolutionary feminist thinker of her times. She rejected the traditional role of a woman. She argued that femininity and domesticity are not natural and act as artificial barriers to prevent full expression of woman's personality. Modern political thinker Will Kymlicka insists that group-specific rights are consistent with liberalism and are particularly appropriate, if not outright demanded, in certain situations. He defines three such group-specific rights: special group representation rights, self-government rights, and polyethnic rights. It is believed that the new themes will help the students explore post Marxist thought and also provide glimpses of contemporary thought.

The syllabus for Semester VI consists of four modules and provides insight into Indian political thought. The Indian Political Thought has been dominated by a galaxy of renowned thinkers. The new themes included in Semester VI are 'Ideas on State' by MahadevGovindRanade [Module I], 'Nationalism' enunciated by Rabindranath Tagore and VinayakDamodarSavarkar [Module II], 'Rational Reform' of Agarkar [Module III], Democratic Socialism of Pandit Nehru and 'Socialism' of RammanoharLohia [Module IV]. MahadevGovindRanade held an organic conception of society and pleaded for social, economic, political and educational reform. He emphasized reorganization of rural credit, indigenous teachers, a school in every village, state support for higher education ,permanent settlement of land, reorganization of rural credit, new constitution for Bombay Legislative Council, raising the age of marriage, abolition of enforced widowhood and women's education. His phenomenal contribution to the PrarthanaSamajmoulded public opinion and awakened the body politic of Maharashtra that had gone in deep slumber. Tagore's doctrine of universal humanity was to spread spiritual values among people and create a new world culture out of multi-culturalism, diversity, and tolerance. He believed that the western concept of nation-state was coterminous with mechanical organisation of people in pursuit of material enhancement and hence aggressive and imperialist in character. The problem of the present age was whether different groups of people would go on fighting with one another or find true basis of reconciliation. Critical of the use of force he wanted man to discover his soul in the spiritual unity of human beings. India needed to discard evils of caste system, blind obedience to authority and tradition. He denounced the commercial civilization and made a fervent plea for freedom of mind. He opposed cultural nationalism and stressed that different cultures should be absorbed in constructive ways. Agarkarcriticised the prevalent method of social reform based on tradition, revivalism and social legislation. He advocated

the cause of reform based on enlightened reason. V.D Savarkar, one of the founders of the Hindu Mahasabha propounded the theory of Hindutva and advocated Hindu political and social unity. The ideology of Hindutva shaped the Hindu Nationalism in the 1920's and the term is widely employed today to describe various expressions of the Hindu nationalist movement. Pandit Nehru laid the foundation of nation-building by evolving a set of principles based on socialism, equality, freedom of the individual, secularism, scientific attitude towards life, industrialisation and piloting the much acclaimed Five Year Plans. RammanoharLohia's thought will acquaint the students with seven types of revolutions and his 'destroy caste' movement. His plea for social equality and preferential opportunity for backward classes, women, dalits, adivasis and backward amongst minorities is reflected in current political process. The new themes in Semester V and VI will provide an exposure to the rich treasure of both Western and Indian Political Thought.

Recommended Reading:

Semester V

1. Anne, Showstack Sassoon: *Gramsci and Contemporary Politics: Beyond Pessimismof the Intellect*, Routledge, London, 2000.
2. Beauvoir, Simone de: *The Second Sex*, Picador, London, 1988.
3. Gokhale, Karuna: *The Second Sex*, by Simone de Beauvoir translated into Marathi, PadmagandhaPrakashan, Pune.
4. Jones, Steves: *Antonio Gramsci*, Routledge, Oxon, 2006, First Indian Reprint 2007.
5. Kymlicka, Will: "Immigration, Multiculturalism, and the Welfare State", http://en.wikipedia.org/wiki/Ethics_%26_International_Affairs_(journal)*s*, Volume 20, Issue No. 3, Fall, 2006.
6. _____: *Multicultural Citizenship: A Liberal Theory of Minority Rights*, Oxford University Press, 1995.
7. Mukherjee, S. and Ramswamy, S.: *History of Socialist Thought*, Sage Publications, New Delhi, 2000.
8. _____: *A History of Political Thought: Plato to Marx*, Prentice Hall of India Pvt. Ltd., New Delhi, 2007. (Machiavelli, Locke, Mill, Marx)
9. Renate, Holub: *Antonio Gramsci: Beyond Marxism and Postmodernism*, Routledge, London, 1992.
10. Sheldon, Garrett Ward: *The History of Political Theory: Ancient Greece to ModernAmerica*, Peter Lang Publishing, New York, 1988. Reprint in 2003. (Machiavelli,Locke, Mill, Marx, Rawls)
11. Steve, Jones: *Antonio Gramsci*, Routledge, London, 2006.

Semester VI

1.Ahuja, M. L.: *Indian Political Thought*, Dominant Publishers and Distributors, New Delhi, 2012. (Tagore, Gandhi, Nehru, Savarkar, Lohia)

2.Arora, V. K.: *RammanoharLohia and Socialism in India*, Deep and Deep Publishers, New Delhi, 1984.

3.Bakane, Chhaya: *PrakashKirane*, (Marathi) ShrividyaPrakashan, Pune, 2007

4.Bhole, B. L.: *'AhdunikBhartatilRajkiyaVichar'*, (Marathi) Continental Prakashan,*Pune*, 1998.

5.Chakrabarty, Bidyut and Pandey, Rajendra Kumar: *Modern Indian Political Thought:Text and Context*, Sage Publication, New Delhi, 2009. (Ranade, Phule, Tilak, Tagore,Gandhi, Nehru, Ambedkar, Lohia, Gandhi, Savarkar, PanditaRamabai)

6.Chaturvedi, Archana: *Indian Political Thought*, Common Wealth Publishers, New Delhi, 2006. (Ranade, Phule, Tilak, Tagore, Gandhi)

7.Nanda, B. R.: *Three Statesmen Gokhale, Gandhi, and Nehru*, Oxford University Press, New Delhi, 2004.

8.Pantham, Thomas and Deutsch Kenneth L.: *Political Thought in Modern India*, Sage Publication, New Delhi, 1986.

9.Ray, B. N. and Mishra, B. K.: *Indian Political Thought: Readings and Reflections*, Kaveri Books, New Delhi, 2012. (Phule, Ranade, Tilak, Tagore, Nehru, Ambedkar, Lohia, Gandhi)

10. Singh, M. P. and Roy Himanshu (Ed.): *Indian Political Thought: Themes andThinkers*, Pearson, Delhi, 2011.

11. Desphande, S. V.: *'BhartiyaRajkiyaVicharvant'*, MangeshPrakashan, Nagpur, 1998.

12. Pandey, B. N.: *Nehru*, Rupa.Co., New Delhi, 2003 .

13. Ganachari, A.: *Agarkar: The Secular Rationalist Reformer*, Popular Prakashan, Mumbai, 2005.

6A

Politics Paper VI A: Political Process in Modern Maharashtra
Semester V: Politics of Modern Maharashtra
Theory – 80 marks + Project – 20 marks = Total 100 marks

No. of Lectures
(Total 45)

Module 1: Historical Background 11
1.1 Evolution of the idea of Maharashtra
1.2 Nationalist Movement and Social Reform Movement
1.3 Sanyukta Maharashtra Movement

Module 2: Sub-regionalism, Regional Disparity and Development 12
2.1 Konkan, Marathwada &Vidarbha
2.2 Dandekar Committee Report
2.3 Statutory Development Boards

Module 3: Political Institutions in Maharashtra 12
3.1 State Legislature: Composition and Functions
3.2 Chief Minister and Council of Ministers: Role
3.3 High Court and Subordinate Courts

Module 4: Caste and Politics in Maharashtra 10
4.1 Dominant Caste Politics
4.2 Dalit Politics
4.3 OBC Politics

One theory question paper of 80 marks at the end of the semester, consisting 4 compulsory questions of 20 marks each with internal options for each question – i.e. Q. 1a or Q. 1b.

Project reports – (20 marks) - will be collected and assessed at college level by respective subject teachers, on or before a fixed date, well before the beginning of semester end theory exam. The date will be decided by the Subject teachers in respective colleges. Topics for projects should be based on the semester syllabus.

List of topics for projects

(This is not a comprehensive list and teachers are free to design projects based on the syllabus)

1. Reviews of books related to politics of Maharashtra.
2. Interviews of politicians and administrators.
3. Reviews of biographies and autobiographies of influential leaders.
4. Review of social welfare schemes
5. Study of sub regions – Konkan, Marathwada, Vidarbha, Western Maharashtra
6. Legislative process

Explanatory notes :Semester V

Module 1: **Historical Background**

Under 1.1 it is expected that the students should know, how the idea of Maharashtra (mainly as cultural aspect) has been evolved, from the regime of Shivaji, the British rule, till the movement for Samyukta Maharashtra.

Module 3: Political Institutions in Maharashtra

In the earlier syllabus (prior to the present) this topic was included. Again it is added to the new revised syllabus. The students should know the institutional as well as the actual functioning of these institutions.

Politics Paper VIA : Political Process in Modern Maharashtra
Semester VI: Determinants of Politics of Maharashtra
Theory – 80 marks + Project – 20 marks = Total 100 marks

No. of Lectures
(Total 45)

Module 1 : Political Economy of Maharashtra **12**

1.1 Business and Politics
1.2 Politics of Cooperatives
1.3 Land issues: Urban and Rural

Module 2 : Political Parties **12**

2.1 Indian National Congress (I), Nationalist Congress Party and BharatiyaJanata Party
2.2 Republican Party of India, Peasants and Workers Party, Shiv Sena and Maharashtra NavNirmanSena
2.2 Coalition Politics

Module 3 : Contemporary issues and movements **10**

3.1 Tribal issues
3.2 Farmers movements and agitations

Module 4 : Civil society initiatives and alternative models of development **11**

4.1 Civil society - Concept and nature
4.2 Movements for the right to information in Maharashtra
4.3 Initiatives for protection of environment

One theory question paper of 80 marks at the end of the semester, consisting 4 compulsory questions of 20 marks each with internal options for each question – i.e. Q. 1a or Q. 1b.

Project reports – (20 marks) - will be collected and assessed at college level by respective subject teachers, on or before a fixed date, well before the beginning of semester end theory exam. The date will be decided by the Subject teachers in respective colleges. Topics for projects should be based on the semester syllabus.

List of topics for projects

(This is not a comprehensive list and teachers are free to design projects based on the syllabus)

1. Studying electoral performances on the basis of statistical data available on the website of Election Commission of India.
2. Campaigning to register voters from your area.
3. Projects related to the activities of non-governmental organisations.
4. Projects about the right to information – which may include conducting workshops for people to make them aware about their rights.

5. Collecting information about small business units and business organisations, trade unions, cooperative institutions etc.
6. Collecting information about tribal lifestyle.

Explanatory Notes :Semester VI

Module 1: Political Economy of Maharashtra

1.3: Land Issues at Rural and Urban areas

Land is the most sensational issue, both at urban and rural level in Maharashtra. The issue mainly has concerns with

(1) Growing urbanization and problems of urban housing

(2)Drought prone Land of Marathwada and Vidarbha

(3)Conservation of Agricultural land for SEZ or some other purposes.

Module 4: Civil Society Initiatives and Alternative Models of Development

4.3 Initiative for Protection of Environment

Specific mention of any movement is not mentioned in the syllabus. It is expected that minimum two urban and two from rural should be taught to the students for eg:– Vanrai, Ralegaon Siddhi, HivareBajar, MadhavGadgil Committee' report on The Western Ghats Ecology Expert Panel (WGEEP) headed by MadhavGadgil.

Recommended Reading

1. Lele, Jayant: *One Party Dominance in Maharashtra Resilience and Change;* Popular Prakashan, Mumbai, 1982

2. Phadke, Y D: *Politics and Language;* Himalaya Publishing House, Mumbai, 1975

3. _____: *Social Reformers of Maharashtra;* Maharashtra Information Center, New Delhi, 1975

4. Phatak, Anagha: *Political Process of Maharashtra;*PrachiPrakashan

5. Sirsikar, V.M.: *Politics of Modern Maharashtra;* Orient Longman, 1994

6. Teltumbde, Anand: *Ambedkar in and for the post – Ambedkar Dalit Movement;* SugawaPrakashan, Pune, 1997

7. Thakkar, Usha and Kulkarni, Mangesh: *Politics in Maharashtra;* Himalaya Publishing House, Bombay, 1995.

8.Tikekar, S. R.: *Maharashtra The Land, Its People and their Culture;* Ministry of Information and Broadcasting, New Delhi ,1966

Books in Marathi

1. Kulkarni, Bhimrao: *AsmitMaharashtrachi*, Maratha MandirPrakashan, 1971

2.Mungekar, S. G. (Sampadak): *ParivartanacheParivaha- Maharashtra, 1932-1981,* Continental Prakashan, Pune, 1982

3.Nimbale, Arunkumar: *DalitPanther,*SugawaPrakashan, Pune, 1989

4.Pandit, Nalini: *JativadaniVargavad,*SadhanaPrakashan, Pune, 1971

5. _____: *MaharashtratilRashtriyatvacha Vikas,* Modern Book DepotPrakashan, Pune, 1972

6.Pannalal, Surana and Bedkihal, Kishore (Sampadak): *Aajacha Maharashtra,*SrividyaPrakashan, Pune, 1988

7.Panse, Ramesh (Sampadak): *MahashtratilSamajParivartanachyaDisha,* Majestic Prakashan, Mumbai, 1989

8.Phadke, Y. D.: *VisavyaShatakatil Maharashtra: Khanda 1 to 6*, SrividyaPrakashan, Pune, 1990

9.Vora, Rajendra and Palshikar, Suhas: *MaharashtratilSattantar,*Granthali, Mumbai, 1996

Magazines and Journals (Also for Local Self Government – Paper VII)

Agrotech

Andolan

Bayaja

ChanakyaMandalParivar

Lokarajya

ParivartanachaVatsaru

Sadhana

SpardhaPariksha

StriUvacha

Yashoda

Yojana

6 B

PAPER VI(B): PUBLIC POLICY
Semester V: Public Policy: Theoretical Framework

Module I: **Understanding Public Policy** **12**
1.1 Concept and Theories
1.2 Relevance of policy making in Public Administration
1.3 Policy formulation and implementation

Module II : Models of Policy Making **11**
2.1 Institutional Model, Rational Legal Model
2.2 Elite-Mass Model, Group Model
2.3 Systems Model, Streams and Windows Model

Module III : Three Tier Policy Making **11**
3.1 Union level
3.2 State level
3.3 Local level

Module IV : Policy Making in India : An Analysis **11**
4.1 Challenges to Public Policy Making
4.2 Reforming the Policy Making Process
4.3 Improving Competence of Policy Making Manpower

Project Topics

1. Jan DhanYojana
2. Direct Benefit Transfer
3. Indradhanush
4. New Tax Regime: GST
5. Demonetisation
6. Benami Property Act
7. Swachh Bharat
8. KaushalVikas
9. Mudra Yojana
10. Digital India

Recommended Reading

1. Anderson, James E., Public Policy-Making, Seventh Edition, Houghton Mifflin, Boston, 2010.
2. Bardach, Eugene, A Practical Guide for Policy Analysis: The Eightfold Pathto More Effective Problem Solving, Fourth Edition, CQ Press, New York, 2011.
3. Birkland, Thomas, An Introduction to the Policy Process: Theories, Concepts and Models of Public Policy Making, Third Edition, M.E.Sharpe, New York, 2010.Bevir, Mark,The Sage Handbook of Governance, Sage, New Delhi, 2013.
4. Chakrabarty, Bidyut, Public Administration in a Globalizing World: Theories and Practices, Sage India, New Delhi , 2012.
5. Dunn, William N., Public Policy Analysis An Introduction, Fifth Edition, Pearson, Delhi, 2011
6. Laxmikant, M., Governance in India, TMH, New Delhi, 2017

7. Lodge, Martin, Wegrich, Kai, Managing Regulation: Regulatory Analysis, Politics and Policy, Palgrave Macmillan, Houndmills, 2012.
8. Schedler, Kuno, Proeller, Isabella, Outcome-oriented Public Management: A Responsibility-based Approach to the New Public Management, Information Age Publishers, Charlotte, 2012.

Semester VI : Public Policy in India

Module I : Types of Public Policy in India **12**
1.1 Substantive, Regulatory
1.2 Distributive, Redistributive
1.3 Capitalisation Public Policy, Constituent Public Policy

Module II : Major Policies and Schemes in India **11**
2.1 Employment: Mahatma Gandhi National Rural Employment Guarantee Act(MGNREGA), PradhanMantri Mudra Yojana(PMMY)
2.2 Health: National Rural Health Mission
2.3 Education: SarvaShikshaAbhiyan, Mid-Day Meal

Module III : Major Policies and Schemes in India – 2 **11**
3.1 Environment: Water, Minerals, Biodiversity
3.2 Digital Governance: Service delivery, Citizens' Participation
3.3 Energy: Coal, Solar

Module IV : Major Policies in Maharashtra **11**
4.1 Urban Governance: Land, Housing
4.2 Urban Waste Management
4.3 Rural Water Conservation and Distribution

Project Topics

1. Make in India
2. National Urban Health Mission - NUHM
3. Skill India
4. Smart City
5. Soil Health Card
6. Crop Insurance
7. BetiBachaoBetiPadhao
8. UjjwalaYojana
9. PM AwasYojana
10. PM Gram SadakYojana

Recommended Reading

1. Agravala, Pramoda Kumara, Land Reforms in States and Union Territories in India, Concept, New Delhi, 2010.
2. Basu, Kaushik, and Maertens, Annemie, The New Oxford Companion to Economics in India, Oxford University Press, Oxford, 2012.

3. Bhagwati, Jagdish and Panagriya, Arvind (Eds.), Reforms and Economic Transformation in India, Oxford University Press, Oxford,2013.
4. Government of India, Second Administrative Reforms Commission, Promoting e-Governance The SMART Way Forward, 2008, available athttp://arc.gov.in/11threp/ARC_11th_report.htm
5. Narain, Sunita, Bhushan, Chandra, Mahapatra, Richard, and Aruna, P., State of India's Environment 2015: A Down to Earth Annual, Centre for Science and Environment, New Delhi, 2015
6. Ramesh, Jairam, Green Signals: Ecology, Growth, and Democracy in India, Oxford University Press, NewDelhi, 2015.
7. Shankar, Shylashri, Gaiha, Raghav, Battling Corruption: Has NREGA Reached India's Rural Poor?, Oxford University Press, New Delhi, 2013.

7A

Politics Paper VII (A): Political Sociology
Semester V: Concepts in Political Sociology

	No. of Lectures
Module 1: Understanding Political Sociology	**10**
1..1 Weberian Approach	
1..2 Marxian Approach	
1..3 Behavioral Approach	
Module 2: Basic Concepts	**10**
2.1 Power	
2.2 Legitimacy	
2.3 Hegemony	
Module 3: Stratification	**12**
3.1 Elite; Class	
3.2 Caste	
3.3 Gender	
Module 4: Social and Political Dynamics	**13**
4.1 Political Culture: Types and influencing factors	
4.2 Political Socialization- Agents	
4.3 Political Participation- Means and Levels	

Politics Paper VII (A): Political Sociology
Semester VI: Political Dynamism and Society

	No of Lectures
Module 1: Public Opinion	**12**
1.1 Concept	
1.2 Opinion Makers: a) Non-Political leaders b) Media	
1.3 Impact on Political Behavior	
Module 2: Institutional Impact	**10**
2.1 Political Parties	
2.2 Pressure groups	
Module 3: Social and Political Processes	**10**
3.1 Modernisation	
3.2 Development	
Module 4: Protest movements and change	**13**
4.1 Mainstream Liberal movements: Consumer and Anti-graft movements	
4.2 Social Movements: Old and New	

Rationale

In the revision of TYBA papers in Political Science, to be implemented from the Academic year 2013-14, Political Sociology (Paper VII of the earlier syllabus) is kept as it is. The Paper was introduced to make the students aware of society and political system. Political System is nothing else but a sub-system of the social system. By understanding the interactions between society and state, scientific political analysis is possible. State and Society are interrelated and interdependent. In fact, society is mirror of the Politics of the country. Both depend upon each other in every respect.

The paper covers theoretical concepts as well as the impact of society on Political system and vice versa. It would be useful for the students to have rational observation and logical approach towards society as well as the Political System. The syllabus is structured with a basic objective to make the students aware of the process of replacement of traditional values by modern values and the emerging conflicts between traditional institutions and their values with modern institutions and their values in the society.

Explanatory notes

Semester V
(Mainly focuses on basic concepts and approaches, social stratification)

Module 1: Understanding Political Sociology

Weberian, Marxian and Behavioral approaches may help the students understand the structural (Bureaucratic), economic and behavioral elements of the society over a Political System

Module 2 and 3: Basic Concepts and Stratification

These two modules are designed to acquaint students with different aspects and components of Society – traditional as well as modern. The social aspects of Power, Authority, Legitimacy and Hegemony, social strata like caste, Elite, class, and gender have a direct influence and impact, which determine political behavior and political culture of a society.

Module 4: Social and Political Dynamics

A study of various agents of Political Socialization help one to determine participation in the Political processes at different levels.

Semester VI

Module 1: Public Opinion

In a Democratic system, it is highly essential to know various political institutions and processes that create a long reaching impact on a society. In a dynamic social system of today, media plays a major role in forming public opinion of the people of a given society.

Module 2: Institutional Impact

In the last few decades, democracy is gaining strength across the world. Besides Elected Institutions of a state, Political Parties and Pressure Groups play a vital role in determining social and political currents of a state. Political Parties and Pressure groups effectively influence society as well as state.

Module 3: Social and Political Processes

The Modernization and development get inculcated in developing evolutionary transition from traditional to modern society. As modernization takes place within a society, change and development takes place in family and community also. Instead of being dominated by tradition, societies undergo the process of modernization and may lead to conflicts.

Module 4: Protest Movements and Change

This module deals with people's acceptance or non-acceptance of the modernization, modern trends, practices and values, that are manifested through various social movements. Old and New social movements aim at bringing change or aim at protesting against a new development.

Recommended Reading

1 Alavi, H. and Shanin. T.: *Sociology of Developing Societies*, Macmillan, London, 1982.

2 Almond, G. et.al: *Comparative Politics Today: A World View*, 7thedn., Harper/Collins, New York, 2000.

3 Ashraf, Ali and Sharma, L. N.: *Political Sociology: A new grammar of Politics*, Universities Press, Madras, 2004.

4 Biswas, Dipti Kumar: *Political Sociology- An Introduction*, Firma KLM Kolkata, 1978.

5 Chackravarti, Satyabrata, *Political Sociology*, Macmillan, New Delhi, 2011.

6 Gupta, Dipankar: *Political Sociology in India*: *Contemporary Trends*, Orient Longman, New Delhi, 1996.

7 Jangam, R. T.: *Textbook of Political Sociology*, Oxford and IBH Publication Co., New Delhi, 1988.

8 Johari, J. C., *Comparative Political Theory: New Dimensions, Basic Concepts and MajorTrends*, Sterling, New Delhi, 1987.

9 Kachole, D. D.: *RajakaranacheSamajshastra* (Marathi); Kailash Publications, Aurangabad.

10 Krishna, D.: *Political Development: A Critical Perspective*, Oxford University Press, 1979.

11 Kulkarni, B. Y.: *RajakiyaSamajshastra* (Marathi); VidyaPrakashan, Nagpur.

12 Miller, A. L. M.: *The Third World in Global Environmental Politics*, Lynne Reinner, Boulder Colorado, 1995.

13 Nash, Kate: *Readings in Contemporary Political Sociology*; Blackwell Publishers, Massachusetts, 2000.

14 Nash, Kate, Scott Alan, *Blackwell Companion to Political Sociology*, Blackwell Publishing House, New Delhi.

15 Oommen, T. K.: Nation, Civil Society and Social Movements: Essays in Political Sociology, Sage Publications, New Delhi, 2004.

16 Prakash, Louis: *Political Sociology of Dalit Assertion*, Gyan Publishing House, New Delhi, 2003.

17 Rotberg, R. I. (Ed).: 'Politics and Political Change', *A Journal of Inter - DisciplinaryHistory*, MIT Press, Massachusetts, 2001.

18 Thomas, Janosiki: *Handbook of Political Sociology: State, Civil societies andGlobalization*, Cambridge University Press.

7B

PaperVII B:UnderstandingPoliticsthroughFilms
SemesterV:PoliticsandFilms

No. of Lectures

Module1: Understanding films as an expression of popular culture. 11

1.1 Films as a medium of creating political awareness.

1.2 Filmsasatooltostudypoliticaltheory(withspecialreferencetotheconceptof power and authority.)

1.3 Filmsasatooltostudyinternationalpolitics.(withspecialreferencetotheconceptof war and futility of war)

Suggested Films—God Father (E), Sarkar (H), Rajneeti (H), Gulal (H), Simhasan (M), Haqeekat(H),BridgeontheRiverKwai(E),Noman'sLand(E),Border(H),TheDay After (E), Saving Private Ryan, Letters from Ivogima. (Minimum two films must be screened.)

Module 2: Indian Films, Documentaries and Laws regulating Films 8

2.1 Significant landmarks in Indian films

2.2 Changing nature of the documentaries in India.

Module 3: Evolution of Regional Films in India 13

3.1 Marathi

3.2 Bengali

3.3 Malayalam

Module 4: Partition and its Impact 13

4.1 Impact of Partition

4.2 Impact on women

4.3 Partition and Displacement.

SuggestedFilms: GaramHawa(H),Tamas(H),Pinjar(H),KhamoshPani(H),Earth1947 (H)

7B

PoliticsPaperVIIB:UnderstandingPoliticsThroughFilms

SemesterVILearningIndianPoliticsthroughFilms

No. of Lectures

Module 1: The Process of Nation–Building. **13**

1.1 End of Feudalism.

1.2 Democratization of Indian society and the idea of Nehruvian socialism.

SuggestedFilms: MotherIndia(H),SahebBibiaurGulam(H),Sardar(H),Ambedkar(H), NayaDaur (H), Shree 420 (H), DoBighaJameen (H).

Module 2: Politics of Development. **12**

2.1 Process of Development

2.2 Debates about Development.

SuggestedFilms: PatherPanchali(H),RotiKapadaAurMakan(H),DoBighaJameen(H), Namak Haram (H), NayaDaur (H), Satyakam(H), JagteRaho (H)

Module 3: People's Movements **10**

3.1 Environmental movements—Chipko and Narmada BachaoAndolan

3.2 Right to Information Movement.

Documentaries: EkCupChai,RighttoInformation(KamluDidi)(H),NarmadaBachaoAndolan (You Tube), A Narmada Dairy (Anand Patwardhan)

Module 4: Internal Security Challenges **10**

4.1 Terrorism

4.2 Naxalism

SuggestedFilms---Machis(H),Roja(H),AWednesday (H),Sarfarosh(H),DilSe(H), Fanna (H), Mr and Mrs Iyer (H), Tango Charlie (H), Chakravyuha (H), Mission Kashmir (H).

ThispapercannotbeofferedtoIDEstudents,asitisapracticalbased paper

8

Paper VIII (A): International and Regional Organizations
Semester V: International Organizations

No. of lectures

Module 1: Concept of International Organization 12

1.1 Meaning, Nature and Scope

1.2 Evolution and Significance

1.3 Structure of the United Nations

Module 2: Untied Nations and Security Concerns 10

2.1 Pacific Settlement of International Disputes and Peace Keeping Operations

2.2 Regulation and control of Nuclear Technology: Role of International Atomic Energy Agency (IAEA)

Module 3: United Nations and Contemporary Socio-economic Issues 14

(Poverty, Health, Food Security, Development and Environment)

3.1 Millennium Development Goals

3.2 World Health Organization (WHO), Food and Agriculture Organization (FAO)

3.3 United Nations Development Programme(UNDP) and United Nations Environment Programme (UNEP)

Module 4: International Economic/Financial Organizations 9

4.1 Organisation for Economic Cooperation and Development (OECD)

4.2 Organisation of Petroleum Exporting Countries (OPEC)

Politics Paper VIII (A): International and Regional Organizations
Semester VI: Regional Organisations and Transcontinental Groups

No. of Lectures

Module 1: Regionalism and Globalization **13**

1.1The League of Arab States/ Arab League (AL)

1.2 Mercosur -Mercado Comúndel Sur (Southern Common Market)

1.3 African Union (AU)

Module 2: Security Concerns and Regional Organizations **10**

2.1 North Atlantic Treaty Organization (NATO)

2.2 Shanghai Cooperation Organisation (SCO)

Module 3: India and Regional Organizations **10**

3.1 Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Co-operation (BIMSTEC)

3.2 Indian Ocean Rim-Association for Regional Cooperation (IOR-ARC)

Module 4: Transcontinental Forums/ Groups **12**

4.1 Group of 77 (G-77)

4.2 Group of Eight (G- 8)

4.3 BRICS (**B**razil, **R**ussia, **I**ndia, **C**hina, **S**outh Africa)

Rationale

In the revision of TYBA Politics Papers to be implemented from 2013-2014 the paper on*International Politics* which was one of the options in paper VIII in the previous syllabus hasbeen shifted to paper VI as *International Relations*. Therefore a new paper- *International andRegional Organizations* is introduced as one of the options in Paper VIII. The other optionunder Paper VIII is *American Political System* which was an option in paper VII previously.

The paper *International and Regional Organizations* is introduced with a view to familiarising students with the recent activities of the UN and other organizations, particularly Inter Governmental Organizations (IGOs) that have acquired immense prominence in world politics vis-à-vis the forces of globalization in the past decade.

The United Nations appears to have reclaimed the ground which it had lost in the 1990s in the immediate aftermath of the cessation of the Cold War, disintegration of the Soviet Union and the emergence of unipolarity in world politics. Now its role in some of the recent conflicts, say, in the Arab World or partition of Sudan, among others, and its contribution to economic and social development with a view to strengthening human security through its various programmes has been widely acknowledged. Paper for Semester V will deal with the activities of the UN and international economic and financial organizations.

Regional and Transcontinental organizations and forums have grown not only in numbers but they have been also performing a wide range of functions from providing security to member states to increasing trade and commerce and cooperation among them. Paper for Semester VI will focus on some of the regional and also the transcontinental organizations spread across the world.

This Paper is also designed to help students preparing for civil services and other competitive examinations as these examinations include topics on international and regional organizations.

Explanatory notes

General

This paper, *International and Regional Organizations* will be taught at the information level. It aims at increasing students' familiarity with the functioning of the UN and regional organizations. Therefore questions set for examination will not expect critical and in-depth answers about the functioning of these organizations. The focus is more on the evolution, the expanding membership and the successes as well as the limitations of these organizations.

Study of this paper calls for familiarity with the world map for understanding locations of countries that are members of various organizations. Use of world atlas by students and world map by teachers in the classroom is therefore, desirable, especially in Semester VI.

Organizations covered in Paper VI- *International Relations*- ASEAN, EU, IMF, SAARC, WB, WTO - are not included in this paper to avoid repetition.

Semester V

Module 1

To be taught with reference to the issue of the place of state sovereignty in international politics and to the role of international organizations as transnational actors. A brief reference to the League of Nations would be adequate. No question need be asked on the League. Structure of the UN is to be taught briefly.

Module 2

To be taught with reference to the concept of National Security. Reference to Chapter VI and VII of the UN Charter is essential. Focus is expected to be on recent peacekeeping activities.

Module 3

To be taught in the context of Non-traditional Security. This module could be assigned for 10- mark assignment in Semester V

Semester VI

At the outset a brief introduction on the relationship between regionalism and Globalisation could be provided to stress the importance of regional organisations. The origin of various organizations is to be explained with a brief reference to the global/ regional situation prevalent at the time of their establishment. Attention could be drawn to the overlapping membership of the various regional organizations. Students may submit assignments on any organization of their choice from any module.

Recommended Reading

{Authentic and up-to-date information about these organizations is available on their respective websites. A number of articles describing/ evaluating the functioning and the role of these organizations are available on the Internet. Colleges may also subscribe to UNews, a monthly newsletter of the UN Information Centre, 55 Lodi Estate, New Delhi-110003 by writing to the Centre. Price of the Newsletter is Re. 1/- (Rupee one) only.}

1. Baylis, John and Steve, Smith (Ed): *The Globalization of World Politics*, OUP, New Delhi, 3rd ed. 2005.
2. *Basic Facts about the United Nations*, The News and Media Division, UNDepartment of Public Information, New York, 2011.
3. Chaterjee, Anik (Ed): *World Politics*, Pearson, New Delhi, 2012.
4. Diehl, Paul F.: *The Politics of Global Governance: International Organizations in an Interdependent World*, Lynne Rienner Publishers; 4th edition, paperback, Boulder,2010.
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6. Gamble, Andrew and Payne, Anthony (Ed): *Regionalism and World Order*, St. Martin's Press, New York, 1996.
7. Gupta, Sanju (Ed): *An Introduction to International Relations*, Pearson Delhi, 2012.
8. Heywood, Andrew: *Global Politics*, Palgrave Foundation, Palgrave Macmillan, New York, 2011.
9. Karns, Margaret P. and Mingst, Karen A.: *International Organizations: The Politicsand Process of Global Governance*, 2nd edition, 2009
10. Meisler, Stanley: *United Nations: The First Fifty Years*, Atlantic Monthly Press, New York, 1995.

11. Mingst, Karen A. and Karns, Margaret P: *United Nations in the Post- Cold War Era*, Westview Press, Boulder, 2nd edition, 2000.
12. Rajan, M.S: United Nations at Fifty and Beyond, Lancers, New Delhi, 1996.
13. Rajaram, Kalpana (Ed): *International Organisations, Conferences and Treaties*, Spectrum Books Pvt. Ltd., New Delhi, 13th ed. 2012.
14. Sauderbaum, Fredrik and Shaw, Timothy M. (Ed): *Theories of New Regionalism: APalgrave Reader*, Palgrave Macmillan, Houndsmills, 2003.
15. *The United Nations Today*, United Nations Department of Public Information, NewYork, 2008.
16. Traub, James, Arbour, Louise and Arieff, Irwin: *A Global Agenda: Issues before theUN 2011-2012*, United Nations Association of the USA, 2011.
17. Weiss, Thomas and Daws, Sam (Ed): *The Oxford handbook on the United Nations*, OUP New York, paperback 2008.
18. Weiss, Thomas, Forsyth, David P. and Coate, Roger A: *The United Nations andChanging World Politics*, Westview Press, Boulder, 4thEd 2004.

Paper VIII (B): American Political System
Semester V: American Constitution and Institutions

No. of Lectures

Module 1: The American Constitution 12

1.1 Making of the Constitution
1.2 Philosophy of the Constitution
1.3 Features of the Constitution

Module 2: Federalism 11

2.1 Evolution and Changing Trends

2.2 Rights and Powers of State Government

2.3 Rights and Powers of Local Government

Module 3: The President and the Vice –President12

3.1 Office of the President

3.2 Powers of the President and the Vice President

Module 4 : The Congress10

4.1 Structure

4.2 Functions

Politics Paper VIII (B): American Political System
Semester VI: Political Process in the United States

No. of Lectures

Module I: The Supreme Court **12**

1.1Structure

1.2Landmark Decisions (Marbury v. Madison, Gibbons v. Ogden, Brown v. Board of Education, New York Times Co. V. Sullivan)

Module 2: Political Parties and Interest Groups **12**

2.1 Evolution and the role of Political Parties

2.2 Types of Interest Groups

2.3 Strategies of Interest Groups

Module 3: Elections and the Media **11**

3.1 Presidential Election Process

3.2 Influence of the Media on Elections (including the Internet)

Module 4: Civil Rights Movement **10**

4.1 African-American

4.2 Women

Recommended Reading

1. DiClerico, Robert and Hammock, Allan (ed.), *Points of View: Readings in AmericanGovernment and Politics*, McGraw-Hill, Boston, 2009.
2. Elowitz, Larry and Wilson, Mathew J (ed.): *Introduction to American Government*, Collins, New York, 2006.
3. Kernell, Samuel and Smith, Steven S (ed.): *Principles and Practice of AmericanPolitics: Classic and Contemporary Readings*, CQ. Press, Washington D.C, 2007.
4. Landy, Marc and Milkis, Sidney M: *American Government: Balancing Democracyand Rights*, Cambridge University Press, New York, 2008.
5. O' Connor, Karen and Sabato, Larry J: *American Government: Continuity andChange*, Pearson Longman, New York, 2008.

6. *Outline of US Government*, Office of International Information Programs, USDepartment of State, 2000.
7. Saye, Albert B and Allums, John F: *Principles of American Government*, Prentice-Hall, New York, 1990.
8. Wilson, James Q: *American Government: Institutions and Policies,* Wadsworth, Boston, 2009.

9A

Paper IX(A):Local Government with Special Reference to Maharashtra
Semester V: Rural Local Government

No of lectures

Module 1: Democratic Decentralization 12

1.1 Meaning and nature

1.2 Importance of Rural Local Government

1.3 73rd and 74th Amendments and its interpretations

Module 2: Introduction to Panchayati Raj Institutions: Three tier system 10

2.1 Gram Sabha and Gram Panchayat

2.2 Panchayat Samiti

2.3 ZillaParishad

Module 3: Rural Development Schemes 13

3.1 Education

3.2 Environment- Cleanliness Drive

3.3 Water Conservation

Module 4: Contemporary Issues 10

4.1 Empowerment of women through political reservation

4.2 Issue of autonomy in Panchayati Raj institutions

Semester VI: Urban Local Government

No. of Lectures

Module 1: Democratic Decentralization 10

1.1 Meaning and Nature

1.2 Importance of Urban Local Government

1.3 74th Amendment and its Implementation

Module 2: Introduction to Urban Local Self Government 11

2.1 Municipal Council

2.2 Municipal Corporation

2.3 Cantonment Board

Module 3: Urban Development Schemes 12

3.1 Housing

3.2 Slum development and rehabilitation

3.3 Water and Sanitation

Module 4: Contemporary Issues 12

4.1 Migration and Urban Governance

4.2 Transportation

Rationale

The second optional paper for Paper VII, is Local Self Government with special reference to Maharashtra. This paper was optional paper in the earlier syllabus too. The new syllabus consists of some additions to the earlier syllabus.

This paper is mainly useful for students, wishing to appear in MPSC examinations, and also for other competitive examinations. The wide gap between rural and urban sectors, the growing urbanization have brought a number of problems and issues. Even in the present scenario of globalization, local self-institutions have their own significance.

Explanatory notes

Local self government is the management of local affairs, by the elected local people, to resolve local problems. In recent years, Local Self Government has played a vital role as an instrument of democratic self government. The Rural and Urban Local Self Governments have their own structures, functions, powers and issues. A reference of 73rd and 74th

Constitution Amendment Acts have led to decentralization of powers and a significant change is brought in the Local Self Governments. Rural Governance is based upon Panchayati Raj System – a three tier system with the ZillaParishad, Blocks and Village Council. Various Development Schemes and issues are embodied in the syllabus to know more about local governing as well as the new emerging problems. Urban Local Self Governments are broadly classified as Municipal Corporation and Municipal Population and also cantonment areas. The urban areas have distinct problems like infrastructure, housing, health , which are included in the syllabus.

Recommended Reading

1. Arora, Ramesh: *HoojaMeenakshi, Panchayati Raj, Paticipation andDecentralization;* Volume – 3 series, Rawat Publications, Mumbai, 2009.
2. Carras, Mary: *The Dynamics of Indian Political Fashions;* Cambridge University Press, London, 1972.
3. Carter, Anthony*: Elite Politics in Rural India – Political Stratification and PoliticalAlliances in Western Maharashtra;* Cambridge University Press, London, 1974.
4. Das, P. K.: *Slums : The Continuing struggle for Housing;*Nivara Hakka SurakshaSamiti Publication, 2002
5. Gupta, M. P.: *Prabhat Kumar and BhattacharachyaJaijit, Government Online – opportunities and Challenges - Tata McGraw;*, Hill Publishing Company Ltd, NewDelhi, 2004.
6. Kamta, Prasad: *Planning of the Grass Roots;* Sterling Publishers Pvt Ltd., 1998.
7. Khandekar, V. S. and Bhagwat A .K. (Ed): *Maharashtra– A Profile;* Felicitation Volume, Kolhapur 1977.
8. Lele, Jayant: *Elite Pluralism and Class Rule Political Development in Maharashtra;* Popular Prakashan, Mumbai, 1982.
9. *Local Governance in India – Decentralization and Beyond;* Oxford University Press,New Delhi, 2006.
10. Minimol, M. C.: *E Governance and Rural Self Government;*Sonali Publications, New Delhi, 2007.
11. Mishra, Archana: *Water Harvesting – Ecological and Economic Appraisal;* Authorpress Global Network, New Delhi, 2006.
12. Naigail, Calder, *The Restless Earth; Penguin,* 1983.
13. Palanithurai, G: *New Panchayati Raj System – Status and Prospects;* Kanishka Publishers, New Delhi, 1996.

14. Pawar, S. N., Patil, R. B. and Salunkhe S. A.: *Strategies and Practices;* Rawat Publications, New Delhi, 2005.
15. Sareen, Shalini: *Urban Pollution and its Management;* IVY Publishing House, New Delhi, 2005.
16. Sharma, Shakuntala: *Grassroot Politics and Panchayat Raj;* Deep and Deep Publications, New Delhi, 1994.
17. Singh, U. B.: *Women in Panchayats (A Study of Role Conflict);* Serials Publications, New Delhi, 2011.
18. Tiwary, R. K.: *Training for Elected Panchayati Raj Representatives;* Shipra Publications, Delhi, 2008.

Reference Books in Marathi

1. Bang, K .R.*:BhartatilSthanikSwashasan (special ref. Maharashtra),*MangeshPrakashan, 2005.
2. Bhogle, Shantaram: *Bhartatilsthanikshasan,*Vidyaprakashan, Nagpur, 1997.
3. Daundkar, Shyam: *ApalaGaonApalaShasan – Panchayat Raj – KarbharAniYojana,* AnubandhPrakashan, Pune, 1997.
4. Devgoankar, S. G.: *Panchayatrajaanisamuhikvikas,*Sainathprakashan, Nagpur, 2009
5. Kotapalle, Laxman: *BhartattilSamajikKalyanPrakashan,*Vidya Publications, Aurangabad, 2009.
6. Nandedkar, V. G: *Panchayati Raj,*Ksagar, Pune, 2008.
7. Patil, B. B: *SthanikSwarajyaSanstha,*Prashant Publications, Jalgaon.
8. _____*: MaharashtratilPanchayat Raj AaniNargiSthanikSwarajyaSanshta,* KSagar, Pune, 2008.
9. Suresh, kaka: *Panchaytirajya,*PrachiPrakashan, Mumbai, 1990.

Semester V: Rural Local Government
Suggested List of Topics for Projects (20 Marks)

1) Attending Gramsabhas in different villages.
2) Visit to Panchayat Samiti Office.
3) Visit to ZillaParishad Office.
4) Implementation of 73rd Constitutional Amendment.
5) SarvShikshaAbhiyan.
6) Clean India Mission
7) Visit to Water Conservation Projects.

8) Issues related to Women's participation in Panchayat Raj
9) Study of various Committees of ZillaParishad.
10) Any other scheme related to the development of village
11) Issues related to Women Sarpanch.
12) Reviews of books related to the topics.
13) Reviews of Films or plays related to topics

Semester VI –Urban Local Government
Suggested Listof Topics for Projects (20 Marks)

1) Implementation of 74th Constitutional Amendment.
2) Visit to Municipal Council.
3) Visit to Municipal Corporation.
4) Comparative study of implementation of scheme / schemes in municipal councils or Municipal Corporations.
5) MHADA, CIDCO, MIDC
6) Water Conservation Schemes.
7) Rain Water Harvesting.
8) Flood Management.
9) Disaster Management Cell
10) Issues related to Slums.
11) Issues related to Sanitation.
12) Issues related to Transportation.
13) Issues in Urban Governance.
14) Any Welfare or Developmental Scheme for Urban Areas.
15) Issues related to SRA
16) Reviews of books related to the topics.
17) Reviews of Films or plays related to topics

9 B

Paper IX (B): Electoral Politics in India
Semester V: Electoral Process In India

	No. of Lecture
Module 1: Election Commission	**12**
1.1 Role	
1.2 Ensuring free and fair elections	
1.3 Maintenance of Law, Order and Security	
Module 2: Electoral Process	**12**
2.1 Representation of the People Act	
2.2 Electoral Reforms: 61st Constitution Amendment	
2.3 Proposals for Reforms	
Module 3: History of General Elections	**11**
3.1 General Elections: 1952	
3.2 General Elections: 1977	
3.3 General Elections: 1989 to the present	
Module 4: Group and Electoral Participation	**10**
4.1 Women, Dalits and Tribals	
4.2 Minorities	

Paper IX (B): Electoral Politics In India
Semester VI: Media and Electoral Processes

No of Lectures

Module 1: Election and Impact of Mass Media 15

1.1 Print Media: Newspapers and Magazines

1.2 Audio – Visual: Radio & TV

1.3 Digital Media and Social Networking Sites, Viral Communication

Module 2: Election Campaigning / Political Marketing 12

2.1 Propaganda and Election Manifesto

2.2 Public Relation Campaigns

2.3Advertising Campaign (after 1984)

Module 3: Psephology 10

3.1Opinion Polls

3.2Exit Polls

3.3Electoral Surveys and Analysis

Module 4: Critique of Media in Elections 08

4.1Objective Coverage and Paid News

4.2Accountability of Media

Rationale

Elections in India are considered to be the very backbone of Indian Democracy. Being a Parliamentary Republic, citizens of India are trusted with the responsibility to choose the head of the country as well as of the state. There are both General and State elections that are held in the country based on the Federal structure of the Indian Republic. The elections in India often transcend from being a mere political activity to a high publicized and often sensationalized national event, with clear cultural ramifications. The entire nation seems to suddenly come to life at the onset of the elections, particularly the General Elections. Even the Assembly elections, which determine the state government, are events of great significance. All state elections are closely observed throughout the nation. Often the results of the state elections are considered to be clear indications of the mood of the nation.

Elections are political events involving the behavior of politicians, ordinary people,media and pressure groups. Every election is a turning point in the history and it deserves full study to observe politicians, their party structure, their strategies, the influence of media and

involvement of voters. Elections are exciting, important and interesting. The biggest election in the world is India's Lok Sabha.

The election commission is the apex body that conducts the elections in India. Both the general and assembly elections in India are held in accordance with the clear rules laid down by the Election Commission of India. The Election Commission or the EC comprises high ranking Government officials and is formed under the guidelines of the Indian Constitution. The EC is a highly powerful body and is granted with a great degree of autonomous powers to successfully conduct the elections. Even the judiciary resists from intervening while the electoral process is on. The work of the Election Commission typically starts with the announcement of various important dates and deadlines related to the election, including the dates for voter registration, for filing of nominations, counting and results. Its activities continue throughout the time period, when the elections are conducted in the country.

The Political parties are commonly brought together by the EC to lay down the lines for the common conduct that is expected to be followed by all the relevant and participating parties. The code of conduct was brought about primarily to cut down on exorbitant amount spent on the elections in the previous versions of the Indian elections.

Presently, the Electronic Voting Machines or EVMs have replaced the traditional ballot boxes in most areas. This was done to counter the great degree of booth capturing and rigging that became a common feature of elections in certain parts of the country.

It is hoped that introduction of such a subject will not be of mere academic nature but it may generate employability for the students of the subject. This discipline of knowledge will be useful for the students. This specialization will help to have better jobs and career opportunities in media houses, market research companies, political parties and so on. Psephology as a subject and a career may help the students. That is how a knowledge society in 21st century should work.

Explanatory notes

Semester V

Module 1: Election Commission

Besides the composition and functions, the role of Election Commission is necessary to understand how free and fair elections are ensured by the Constitution and how it has been implemented in the actual practice by Election Commission. How Law, Order and Security is assured by the Election Commission through various arrangements.

Module 2: Electoral Process

Right to vote is the base of democratic system. This module covers details of all these. Electoral process takes a month by publishing electoral rolls. Generally, elections are conducted phase wise, from the date of announcement till the results are not out.

Module 3: History of General Elections

The mile stones in the history of General Elections, should be studied with its distinguishing features. 1951 - 1952, the First General Election was a new experiment. The 1977 Election was the defeat of the party led by Indira Gandhi, by a new coalition of all the major other parties, which protested against the imposition of controversial emergency from 1975-77. A similar coalition led by V.P.Singh, was swept to power in 1989. Since then, one party dominant politics gave way to coalition system, wherein no single party achieved a majority in the Parliament to form a government. Since then Coalition Governments have become a feature of Indian Democracy.

Module 4: Group and Electoral Participation

Women form a sizable percentage of population. However their participation is less at all the levels from voting till positioning at the top posts. The underrepresentation of women in elections is because of social and economic settings. A reservation for women in Policy is a significant measure in this regard.

The participation of Dalits and Tribals is not significant because of discrimination on the grounds of caste. Their political participation varies from state to state. The participation of Dalits and Tribals should increase for social equality and justice.

Political participation of minorities has been a foundational issue. They should have equal opportunity to participate freely and effectively in all aspects of governance. The effective participation in relation to the right to full and effective quality and meaningful engagement in national activities is necessary to make democracy meaningful.

Semester VI

Module 1: Election and Impact of Mass Media

It is the right of voters to full and accurate information. The media plays important and essential role to conduct elections in free and fair manner, by providing adequate information of parties, policies, candidates and about the election process itself. In the recent years, the term media has become more broad, encompassing the internet in its various forms and other new forms of electronic distribution of news. It is the media that determines the political agenda. Media should play a “watchdog” role, in this technological generation.

Module 2: Election Campaigning / Political Marketing

Election Campaigning can be termed as Political Marketing because election campaigning consists of all marketing concepts and techniques in all spheres of political activity including political parties, voter's behavior, local self governments, interests and pressure groups, media and so on. A study of Political Marketing helps students understand marketing activities in Politics and a holistic approach to understand the breadth and width of Politics. Political marketing describes certain political phenomena and as a Philosophy (Theory) pursues knowledge, understanding of exchanges and the process of enhancing values.

Election campaigning is a step by step process of planning, chalking out campaigning strategy, election manifesto, promises to be made to the voters, communication strategies,

support of opinion leaders, competing with the competitors and so on. The ultimate objective is to win the election.

Module 3: Psephology

Psephology in simple words can be defined as, "Computerized analysis of voting patterns", "a science of predicting voting patterns by conducting opinion polls and understanding the swings." Psephology is that branch of Political Science, which deals with the study of Statistical Analysis of Elections. Psephology has become a career opportunity, though a formal and institutional training is not yet given. Election Manifesto – Every Political party prepares election manifesto which is a strategy to win voter's mind by featuring prospective legislation after the election is over. Opinion Polls and Exit Polls – Opinion Poll is a survey of public opinion from a particular sample, consisting of a structured questionnaire and interviews. Some generalities come on the surface. Exit polls on the other hand, is a survey, held on the day of election with verbal communication with voters.

Electronic surveys and Analysis – With the advent of Science and Technology, methods and techniques of communication have changed effectively. From verbal to electronic telecommunication, communication, communication networks are established from grass root level to national levels. All the tools of communication can be widely used for surveys, systematics.

Module 4: Critique of Media in Elections

A Democratic Election with no freedom to media would be a contradiction in terms. However, in order to ensure that along with freedom, a degree of regulation is required. Government and Election Commissions regulations and other different models for regulations are necessary. Though media has a right to report freely and to scrutinize the whole election process, the scrutiny itself is additional safeguard. In this regard, electoral management body has a crucial role to play. Law or Regulations on Media during elections are necessary. The Media should be accountable to the Government and to the masses at large.

Recommended Reading

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2. Alam, Javeed: *Who wants Democracy*, Orient Longman, Hyderabad, 2004.
3. Calmon, Leslie. J.: *Toward Empowerment of Woman and Politics in India*, Westview Press, Boulder, 1992.
4. Dikshit, R. D. (Ed): *Geography of Elections, The Indian Context*, Rawat Publications, New Delhi, 1995.
5. Election Commission of India: Statistical reports on General Elections, India Year Books.
6. Ellhu, Katz and Yael, Warshel (Ed): *Election Studies: What's their use?*, Westview Press, Boulder, 2000.

7. Kordo, N.: *Election studies in India*, <Ideas.repec.org/p/jet/dpaper/98.html>
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9. Krishnamurthy, T. S.: *Miracle of Democracy: India's Amazing Journey*, Harper Collins, New Delhi, 2008.
10. Kumar, Venkatesh B.: *Electoral Reform in India – Current Discourses*, Rawat Publications, New Delhi, 2009.
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15. Rana, M. S.: *India Votes: LokSabha and VidhanSabhaElections : 1999, 2000, PollAnalysis, Election Data, Party Manifestos*, B.R. Publishing, Delhi.
16. Roy, Meenu: *Electoral Politics in India : Election Process and Outcomes, VotingBehavior and Current Trends*, Deep and Deep Publications, New Delhi, 2000.
17. Roy, Meenu: *India Votes – Elections 1996, A Critical Analysis*, Deep and Deep Publications, Delhi, 1996.
18. _____: *Politics in India*, Orient Longman &Bostance, New Delhi, 1970.
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Semester V: -List of Projects

A field visit can be conducted in either Semester with a report on it

1. Role and Functions of Election Commission of India
2. Maintenance of law, order and security during the electoral process
3. Review the Representation of People Act, 1951 & others
4. Electoral Reforms by Election Commission / Citizens / NGOs / Parliamentary Reforms
5. Review of General Elections of 1952 / 1977 / 1989 / 1994 / 1999 / 2004 / 2009 / 2014
6. Participation of Women in elections
7. Participation of Scheduled Castes in elections
8. Participation of Scheduled Tribes in elections
9. Participation of Minorities in elections

Semester VI: List of Projects

1. Role of Print Media in elections
2. Role of Audio-Visual media in elections
3. Role of Digital Media / Social Networking sites in elections
4. Election campaigning by political parties
5. Comparative analysis of election manifestos of political parties
6. Public Relation campaigns of political parties
7. Advertising campaigns by political parties
8. Opinion Polls and Exit Polls in India
9. Conduct a survey of private channels and NGOs with reference to elections
10. Make a comparative analysis of various governments with reference to development
11. Paid news in India
12. The accountability of media

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University of Mumbai

No. UG/124 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/151 of 2016-17 dated 16th November, 2016 relating to the revised syllabus as per (CBCS) for F.Y.B.A. degree program in Micro Economics (Sem. I).

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 7th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 **vide** item No.4.19/ & 4.20 and that in accordance therewith, the revised syllabus as per the (CBCS) for the F.Y. B.A. (Sem. I) Microeconomics – I in Economics and F.Y. B.A. (Sem. II) Microeconomics – II in Economics has been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
26th September, 2019

(Dr. Vinod P. Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges, and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.19/ & 4.20/26/07/2019

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No. UG/124 -A of 2019-20 MUMBAI-400 032 26th September, 2019

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Humanities,
2) The Chairman, Board of Studies in Economics,
3) The Director, Board of Examinations and Evaluation,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Director, Board of Students Development,
6) The Co-ordinator, University Computerization Centre,

(Dr. Vinod P. Patil)
I/c REGISTRAR

AC. 26/07/2019
Item No. 4.19

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	**F.Y.B.A.** **Semester- I** **Microeconomics - I**
2	Eligibility for Admission	HSC (Arts)
3	Passing Marks	40 Percentage (Pass Class)
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2019 - 20

Date: Signature :

Chairman/ Chairperson : _____

Dean Faculty of Humanities : _____

AC- 26/07/2019
Item No.- 4.19

UNIVERSITY OF MUMBAI

Revised Syllabus for the F.Y.B.A. (Sem I)

Microeconomics – I

Course: Economics

(As Per Choice Based Credit System with effect from the academic year 2019-20)

F.Y.B.A.
Subject: Economics
Microeconomics – I
Semester – I

(Academic Year: 2019 - 20)

Preamble: This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on the development of analytical thinking with the help of statistical tools among the students and develop the skill of application of microeconomics concepts to analyze the real life situations.

Module - I: Introduction to Microeconomics (12 Lectures)

Microeconomics: Meaning, Scope, Nature, Importance and Limitations; Basic Economic Problems; Role of Price Mechanism in a Market Economy; Positive Economics and Normative Economics; Concepts of Equation, Functions, Graphs, Diagrams, Line, Slope and Intercept

Module - II: Ten Principles of Economics (12 Lectures)

Trade-Off Faced by the Individuals; Significance of Opportunity Cost in Decision Making; Thinking at the Margin; Responses to incentives; Benefits from Exchange; Organization of Economic Activities through Markets and its Benefits; Role of Government in improving Market Outcomes; Dependence of Standard of Living on Production; Growth in Quantity of Money; Inflation and Unemployment Trade Off

Module - III: Markets, Demand and Supply (12 Lectures)

What is a Market; What is Competition; Demand Curves: Market Demand versus Individual Demand, Movements along the Demand Curve, Shifts in the Demand Curve; Supply Curves: Market Supply and Individual Supply, Shifts in Supply Curve; Market Equilibrium - Three Steps to Analyze Changes in Equilibrium; Price Elasticity of Demand, Methods of Measuring Price Elasticity of Demand – Total Outlay Method, Percentage Method and Point Method; Concepts of Income Elasticity of Demand, Cross Elasticity of Demand and Promotional Elasticity of Demand

Module IV: Consumer's Behavior (12 Lectures)

Introduction to Cardinal and Ordinal Approaches; Indifference Curve Analysis - Properties of Indifference Curves, Budget Line, and Consumer's Equilibrium; Income, Price and Substitution Effect; Derivation of Demand Curve; Consumer's Surplus: Strong Ordering and Weak Ordering

Reference

1.N.Gregory Mankiw, (2015), “Principles of Microeconomics” 7th edition- Cengage Learning.
2.Sen Anindya, (2007),“Microeconomics Theory and Applications” Oxford University press, New Delhi.
3. Salvator D, (2003) “Microeconomics Theory and Applications” Oxford University press, New Delhi.
4. M.L.Jhingan, (2006) “Microeconomics Theory”, 5th edition Vrinda Publication (P) Ltd.
5. H.L.Ahuja, (2016) “Advance Economics Theory” S.Chand & Company Ltd.
6. Paul Samuelson and W. Nordhaus, (2009): Economics, 19th Edition McGrawHill Publications.

AC- 26/07/2019
Item No.- 4.20

UNIVERSITY OF MUMBAI

Revised Syllabus for the F.Y.B.A. (Sem II)

Microeconomics – II

Course: Economics

(As Per Choice Based Credit System with effect from the academic year 2019-20)

F.Y.B.A.
Subject: Economics
Microeconomics – II
Semester – II

(Academic Year: 2019 - 20)

Preamble:

As a logical sequence to Microeconomics Paper I, this paper is aimed at giving supply side knowledge of Economics to the learner which will enhance their knowledge about aspects of production, cost and revenue analysis, theories of distribution and understanding about the market structure.

Module I: Production Analysis **(12 Lectures)**

Production Function: Concept And Types; Concepts of Total, Average and Marginal Product; Law of Variable Proportion and Returns to Scale, Isoquant and Producer's Equilibrium

Module II: Cost & Revenue Analysis **(12 lectures)**

Concepts of Costs: Money and Real Cost, Social Cost, Private Cost, Explicit and Implicit Cost, Opportunity Cost; Relationship between Average, Marginal and Total Cost; Derivation of Short Run and Long Run Cost Curves; Concepts of Revenue: Types and Interrelationship

Module III: Factor Pricing **(12 lectures)**

Marginal Productivity Theory of Distribution; Rent: Ricardian Theory of Rent, Modern Theory of Rent, Quasi Rent; Wages: Modern Theory of Wages; Collective Bargaining; Supply Curve of Labour; Interest: Classical Theory of Interest, Loanable Funds Theory of Interest; Profit: Risk and Uncertainty Theory, Innovation Theory

Module IV: Equilibrium in Different Market Structure **(12 Lectures)**

Concept Of Equilibrium: TR - TC And MR - MC Approach; Features of Perfect Competition; Monopoly and Monopolistic Competition, Short Run and Long Run Equilibrium of Firm and Industry under each Market Condition; Selling Cost and Wastages under Monopolistic Competition

Note: we may include case studies and numerical examples for modules 1, 2 and 4 from examination point of view.

Reference

1. A. Koutsoyainnis, (2015), Modern Microeconomics, 2nd edition, Palgrave Macmillan.
2. Paul Samuelson and W. Nordhaus, (2009), Economics, 19th edition: Economics, McGrawHill Publications.
3. Mankiw M.G (2015), Principles of Micro economics 7th edition - Cengage Learning.
4. Anindya Sen, (2006), Microeconomics, OUP India Publisher.
5. M.L.Jhingan, (2006), "Microeconomics Theory", 5th edition,Vrinda Publication (P) Ltd.
6. H.L.Ahuja, (2016), "Advance Economics Theory" S.Chand & Company Ltd.

University of Mumbai

No. UG/128 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/40 of 2012-13, dated 25th June, 2012 relating to the revised syllabus as per the (CBSGS) of Paper II & III in Semester III & Semester IV of B.A. programme in the course of Economics.

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 7th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 **vide** item No.4.28 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.A. (Sem. IV) Indian Economy – Paper VI in Economics has been brought into force with effect from the academic year 2020-21, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
26th September, 2019

(Dr. Vinod P. Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.28/26/07/2019

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No. UG/128 -A of 2019-20

MUMBAI-400 032

26th September, 2019

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Humanities,
2) The Chairman, Board of Studies in Economics,
3) The Director, Board of Examinations and Evaluation,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Director, Board of Students Development,
6) The Co-ordinator, University Computerization Centre,

(Dr. Vinod P. Patil)
I/c REGISTRAR

Cover Page

AC 26/07/2019
Item No. 4.28

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	**S.Y.B.A.** **Semester IV** **Economics- Paper VI** **Indian Economy**
2	Eligibility for Admission	FYBA
3	Passing Marks	40
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2020-21

Date: Signature :

Chairman/ Chairperson : _____

Dean Faculty of Humanities : _____

AC- 26/07/2019
Item No.- 4.28

UNIVERSITY OF MUMBAI

Revised Syllabus for the S.Y.B.A. (Sem IV) Paper VI

Indian Economy

Course: Economics

(As Per Choice Based Credit System with effect from the academic year 2020-21)

Economics
S.Y.B.A. Semester IV
Paper VI
Indian Economy

Preamble
This paper deals with the nature and sector wise composition of Indian economy. The learners shall be able to understand the problems and prospects of Indian Economy. The content has also intended to orient the learners about the recent developments in the economy.

Module- I: Introduction (12 Lectures)
Trends in India's National Income and PCI Since 1990; Structural Changes In Indian Economy; Brief Overview of the Employment Generation and Poverty Alleviation Programmes; Regional Inequalities; Measures to Reduce Regional Inequalities in India

Module - II: Agricultural Sector (12 Lectures)
Role of Agriculture in Economic Development; Causes of Low Productivity; Agricultural Inputs; Agricultural Price Policy: Recent Minimum Support Price Policy; Income Support for Farmers; Sources of Agricultural Finance; Micro Finance; NABARD: Role and Function; Agricultural Marketing: Structure and Problems; National Policy for Farmers, 2007; Organic Farming Policy; Food Security in India

Module -III: Industrial Sector (12 Lectures)
Infrastructure for Industrial Development; Industrial Policies in India; Industrial Policy of 1991; Micro, Small and Medium Enterprises (MSMEs): Classification, Role and Policy Measures; Growth of Large Scale Industries and Economic Development; Recent Policies and Programs for Industrial Development: Start Up India, Make in India, Skill India; Role and Trends of FDI in Industrial Sector Development

Module -IV: Service Sector (12 Lectures)
Role of Service Sector in Indian Economy; Growth and Performance of Healthcare; Performance of Trade and Tourism, Information Technology and IT - Enabled Services; Research and Development Services With Reference to Education and Skill Development in Employment Generation in India; Performance of Service Sector during XIIth Five Year Plan

Reference

1) Ashwini Mahajan, Gaurav Datt, (2018) 'Indian Economy', S. Chand and Company, New Delhi.
2) Brahmananda, P.R. and V.R. Panchmukhi (Eds.), (2001), 'Development Experience in the Indian Economy: Inter-State Perspectives', Bookwell, New Delhi.
3) Datt, Ruddra and K.P.M, Sundaram, (2017), 'Indian Economy', S. Chand & Company Ltd., New Delhi.
4) Misra, S. K. and V. K. Puri, (2018) 'Indian Economy', Himalaya Publishing House, Mumbai.

5) Gaurav Datt and Ashwani Mahajan, (2016) ‘Indian Economy’, S Chand Publishing House, New Delhi.
6) Uma Kapila, (2018),’ Indian Economy: Performance and Policies, 2018-19’, Academic Foundation, New Delhi.

AC

Item No.

University of Mumbai

Revised Syllabus

Sem. V & Sem. VI

Program: B. A.

Course: Economics

(As per the Credit Based Semester and Grading System with effect from the academic year 2021-2022)

PREAMBLE:

The syllabus of TYBA has been revised owing to the revised syllabus introduced by the University of Mumbai for FY and SYBA as per the recommendation of Board of Studies of Economics (BOS-E) by keeping in view of the recent trends in the subject of Economics. The BOS-E has further revised the syllabi of papers at the TYBA which will be made effective **from the Academic Year 2021-22**. A broad overview of the revised structure, which includes the core papers and electives as described below.

DURATION:

- The course shall be a full time course.
- The duration of B.A. course shall be of Three years across Six Semesters.

FYBA: SEMESTER – I & II (One paper each semester)
SYBA: SEMESTER – III & IV (Two papers each semester)
TYBA: SEMESTER – V & VI (Six papers each semester)

PATTERN:

The T.Y.B. A. [Entire Economics] Course shall have 12 papers. Every semester shall have six papers, each carrying 100 marks. However students can opt for combination of any two subjects in Economics and the rest in any other subject) in which every semester shall have three papers of each Subject, carrying 100 marks each. Moreover, exams based on Papers IX and Papers XII of Semester V and Paper XV and XVIII of Semester VI are bifurcated into 80 marks of written exam and 20 marks of project. It is hereby stipulated that the projects shall have a maximum page limit of 20.

CASE STUDY APPROACH

As per the latest guidelines issued by UGC in 2021, the themes of the Projects related to applied component papers VI and IX are resolved to be based on Case Study Approach. Even for the Core Papers and Electives, the relevant modules are focused on Case Study approach .

SCHEME OF EXAMINATION

The duration of the examination, paper pattern and the allotment of lectures as well as
marks are given in detail as follows:

DURATION:

- **Three Hours** for each 100 marks paper and **Two and Half an Hour** for 80 marks paper.

ALLOTMENT OF LECTURES:

- The allotment of lectures is as per the common guidelines stipulated by the Academic Council for Humanities of University of Mumbai.

PAPER PATTERN:

- There shall be five questions each of 20 marks, for 100 marks paper divided into three sub questions (a, b, c,) with an internal option to choose any two.
- There shall be four questions of 20 marks for 80 marks paper with internal options mentioned as the same above.
- All questions shall be compulsory with internal choice within the questions.
- Questions may be subdivided into sub-questions a, b, c as mentioned earlier and the allocation of marks shall depend on the weightage given to the topic.

Questions	**Modules**	**Marks**
Qn.1	Unit I	20
Qn.2	Unit II	20
Qn.3	Unit III	20
Qn.4	Unit IV	20
Qn.5	4 Sub-questions from Unit I, II, III & IV OR 20 MCQs from Unit I, II, III & IV	20

COURSE STRUCTURE

(APPLICABLE FROM ACADEMIC YEAR: 2021-22)

TYBA (SEMESTER –V)

COURSE CODE	REVISED PAPER		CREDIT	MARKS
GROUP-I : CORE PAPERS				
ECOAME501	VII	ADVANCED MICROECONOMICS – III	4	100
ECOGAD502	VIII	ECONOMICS OF GROWTH AND DEVELOPMENT	4	100
GROUP-II : ELECTIVE PAPERS				
ECOIFSA503	IX	INDIAN FINANIAL SYSTEM-I	3	80
OR				
ECOACB503	IX	ECONOMICS OF AGRICULTURE AND CO - OPERATION – I	3	80
OR				
ECOILC503	IX	INDUSTRIAL AND LABOUR ECONOMICS – I	3	80
ECORMA504	X	RESEARCH METHODOLOGY - I	4	100
OR				
ECOQEB504	X	QUANTITATIVE ECONOMICS - I	4	100
OR				
ECOESSIC504	X	ENTREPRENEURSHIP & SMALL SCALE INDUSTRIES	4	100
ECOEEA505	XI	ENVIRONMENTAL ECONOMICS -I	4	100
OR				
ECOEIB505	XI	ECONOMICS OF INSURANCE - I	4	100
OR				
ECOMEAC505	XI	MATHEMATICS FOR ECONOMIC ANALYSIS - I	4	100
ECOEMA506	XII	ECONOMY OF MAHARASHTRA -I	3	80
OR				
ECOHETB506	XII	HISTORY OF ECONOMIC THOUGHTS – I	3	80
OR				
ECOIBFC506	XII	INTERNATIONAL BANKING AND FINANCE – I	3	80

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO -VII	CREDIT	MARKS
ECOAME501	ADVANCED MICROECONOMICS - III	4	100

Course Objectives

The course is designed to provide sound understanding in micro economic theory. Since students have been taught perfect competition, this course focuses on three main pillars of microeconomics such as imperfect competition, welfare economics and information economics.

Course Outcomes

- Enables students will get knowledge on new market structure, imperfect competition.
- Provides understanding on the welfare economics and economics of information.

Module 1: General Equilibrium and Welfare Economics (12 Lectures)

Concept of General Equilibrium and Walrasian General Equilibrium Model - Pareto Optimality – The Pareto Optimality Condition of Social Welfare - Marginal Conditions for Pareto Optimal Resource Allocation - Perfect Competition and Pareto Optimality - Arrow's Impossibility Theorem

Module 2: Market Structure: Monopoly and Monopolistic Competition (14 Lectures)

Concept of Monopoly - Measurement of Monopoly Power - Price Discrimination: Types and Classification of Price Discrimination (Degrees of Price Discrimination) - Equilibrium under discriminating Monopoly - Regulation of Monopoly Market Product Differentiation in Monopolistic Competition - Chamberlin's Alternative approach- Equilibrium under Monopolistic Competition - Excess Capacity

Module 3: Oligopoly **(12 Lectures)**

The Cournot Model - Meaning and Characteristics of Oligopoly Market - Rigid Prices - The Sweezy Model of Kinked Demand Curve - Collusive Oligopoly - Cartel: Centralised and Market Sharing Cartel - Imperfect Collusion- Price Leadership Models, Game Theory - Prisoner's Dilemma, Nash Equilibrium and Dominant Strategy Equilibrium

Module 4: Information Economics **(12 Lectures)**

Economics of Search and Search Cost - The Theory of Asymmetric Information-The Market for Lemons and Adverse Selection - Risk Preference and Expected Utility - The Problem of Moral Hazard - Market Signaling - Principal-Agent Problem

References:

1. Jhingan MLL. (2012), Advanced Economic Theory, Vrinda Publications, Delhi.
2. Mankiw N. Gregory (2015), Principles of Microeconomics, Cengage Learning.
3. Mansfield, Edwin (1985), Micro-economics: Theory & Applications, 5th edition, W.W. Norton & Company, New York.
4. Patil K. A (Second edition, 2011, Marathi), Advanced Economic Theory-Micro Analysis, Shri Mangesh Prakashan, Nagpur.
5. Salvatore D. (2006), Microeconomics: Theory and Applications, Oxford University Press, New Delhi.
6. Varian Hal R. (8 Edition 2010) Intermediate Microeconomics A Modern Approach, East-West Press, New Delhi

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO - VIII	CREDIT	MARKS
ECOGAD502	**ECONOMICS OF GROWTH AND DEVELOPMENT**	**4**	**100**

Course Objectives

This paper introduces the concepts, theories, process and policies regarding growth and development. The meaning of the development as it has evolved over the years is clarified. The contemporary as well as classical theories of growth, development, and underdevelopment are considered in detail. Theories and issues related to population, poverty, inequality and human capital are considered. Urban and rural aspects of the development process studied. Importance of technology, infrastructure and planning in development process are considered. The approach has been to cover all important areas of development economics.

Course Outcomes

- Enable students to apply and analyse issues in the development process.
- Students will be able to identify the issues related to Growth and Development
- Students will be able to understand the policy options and analyzed the Measures taken for the Development of an economy.

Module 1: Meaning of Economic Growth and Development (12 Lectures)

Concepts of Economic Growth and Development-Distinction between Economic Growth and Development- Concept of Human Development- H.D.I, G.D.I, Green GDP- Sen's Capability approach- Millennium Development Goals (MDGs)- Initiative by Indian government towards MDGs.

Module 2: Theories of Economic Development (12 Lectures)

Rostow's stages of growth; Big Push Theory- Leibenstein's Critical Minimum Effort Thesis - Harrod - Domar Growth Model- Lewis Model of unlimited supply of labour - Ragner Nurkse's Theory of Disguised Unemployment- Schumpeter's Theory of Development

Module 3: Structural Issues in Development Process (12 Lectures)

Concept of Human Capital- Role of Education, Health and nutrition in Human Capital - Meaning and Measurement of Poverty and Inequality- Measures to eradicate poverty and Inequality - Meaning of Inclusive growth - SHG and Microfinance- Migration – Urbanization- Formal and Informal Sector- Urban Informal Sector

Module 4: Planning, Technology and Economic Development (12 Lectures)

Concept and Role of infrastructure in Economic Development- Role of technology in Economic Development- Labour intensive versus Capital intensive technology- Schumacher's concepts of intermediate and appropriate technology- Green Technology- Meaning and Types of Economic Planning- Role of Planning in Economic Development

References:

1. Boldwin, Economic Development: Theory, History and Policy, Willy Publishers, 1957.
2. Mamoria, Joshi, Principles and practice of marketing in India, Kitab Mahal, 1979.
3. Meier, Gerald M. and James E. Rauch. Leading Issues in Economic Development, New Delhi: Oxford Univ. Press, 2006.
4. Thirlwall, A.P. Growth and Development 8e. New York: Palgrave MacMillan, 2005. 7
5. Todaro, Michael P. and Stephen C. Smith. Economic Development, 8e. Delhi: Pearson Education, 2003.
6. V.K. Puri and S.K. Mishra, Indian Economy, Himalaya Publishing House, 2019

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO – IX	CREDIT	MARKS
ECOIFSA503	**INDIAN FINANCIAL SYSTEM – I**	**3**	**80**

Course Objectives

In this semester the students get introduced with various aspects related to Indian Financial system. Indicators of financial development will be introduced and overview of financial sector reforms will be undertaken. Students will be able to understand performance, progress and issues in Indian Banking system. An overview of development of non-banking institutions in India will be undertaken. Students will also be introduced with traditional, modern and hybrid financial instruments.

Course Outcomes

- Empowering students about Indian Financial system, indicators of financial development and overview of financial sector reforms
- Awareness on performance, progress and issues in Indian Banking and overview of non-banking institutions in India |
- The course leads to project work/ case studies based on empirical examples such as: Management of NPAs by banks, performance analysis of commercial banks, financial instruments- comparative analysis, performance of NBFIs

Module 1: Introduction to Indian Financial System (12 Lectures)

Evolution- meaning-characteristics – components - significance - Financial system and economic development - Indicators of Financial Development: FR, FIR, NIR and IR. -Reforms and trends/ turns in Indian financial sector: 1991-2019.

Module 2: Performance, Progress and Issues in Indian Banking (12 Lectures)

Overview of development of Banking in India-Commercial banking-Liquidity management-Commercial banking developments since mid 1980s- Management of NPAs-Concept of Bad bank-Mudra bank scheme - Capital adequacy norms- Basel III

Module 3: Non- banking Finance Institutions in India (12 Lectures)

Overview of development of non- banking institutions in India – Growth - Components, types, role in financial system - Regulation of NBFIs-Provident funds - Pension funds - Venture capital funds

Module 4: Financial Instruments: Traditional, Modern and Hybrid (12 Lectures)

Traditional instruments: equities- debentures and bonds -Hybrid instruments- different types of bonds such as floating rate bonds- zero interest bonds- deep discount bonds- inverse float bonds-sovereign gold bonds- municipal bonds- convertible debentures- warrants, Cryptocurrency - Derivatives - meaning, concept and types of derivatives

References:

1. Bhole, L. M. (2008): Financial Institutions and Markets, Growth and Innovation, Tata McGraw-Hill, New Delhi.
2. Khan, M.Y. (2007): Financial Services, Tata McGraw Hill, New Delhi.
3. Machiraju, Indian Financial system, Vikas publishing house, 2nd edition, 2002.
4. Pathak, Bharati (2008) : The Indian Financial System-Markets, Institutions, and Services, (2nd Edition), Pearson Education, New Delhi.
5. Strong, R. A. (2002): Derivatives: An introduction; Thomson Asia Pte Ltd, Bangalore.
6. Varshney P N and Mittal D K, Indian financial system, sultan Chand and sons , New Delhi, 2002.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – IX	CREDIT	MARKS
ECOACB503	ECONOMICS OF AGRICULTURE AND CO-OPERATION-I	3	80

Course Objectives

This paper provides an overview of the role of agriculture in the economic development of the country and the salient features associated to agricultural productivity and agricultural labour. The pertinent aspects related to agricultural credit, agricultural marketing as well as the global problems existing in the marketing are dealt in. Students can acquire understanding about the features of agricultural policy and the agrarian crisis as well as the problems and challenges in the field of Agriculture and cooperation.

Course Outcomes

- Students will obtain information regarding various agricultural issues in India and remedies for it.
- Making awareness about self- employment through various local business like agro- tourism, travel agents, horticulture, floriculture, fishery and animal husbandry.

Module 1: Agricultural Productivity **(12 Lectures)**

Role of agriculture in Economic Development - Cropping pattern in India, Recent trends, Factors affecting - cropping pattern - Physical, Technical and Economic - Agricultural Productivity, Causes of Low Productivity in Agriculture - Measures taken to improve the Agricultural Productivity in India - Irrigation and Water Management and agricultural development - Agricultural labour Problems and suggestions.

Module 2: Agricultural Credit **(12 Lectures)**

Institutional and Non-Institutional Sources of Credit Co-operative Credit and Agriculture Rural Indebtedness - Commercial Banks and Regional Rural Banks - Microfinance and NABARD - Role and Performance - Crop loan and Crop Insurance, Kisan Credit card Yojana.

Module 3: Agricultural Marketing **(12 Lectures)**

Types of Marketing - Corporate, Commodity and Global Problems and Measures of Agricultural Marketing - Regulated Market - WTO and Indian Agriculture - Problems of Agricultural Marketing and its measures - National Agricultural Market - FPO – Farmers Producer Organizations

Module 4: Agricultural Price and Policy **(12 Lectures)**

Food Security in India - Price Policy of CACP Evaluation - Agricultural Crisis and Farmers Suicide - Agro-Tourism and its policy - Organic Farming - Mechanization of Agriculture

References:

1. Bilgrami S.A.R. (2000), An Introduction of agricultural Economics, Himalaya Publishing House, Mumbai
2. Datta Ruddra and Mahajan Ashwini (2016), Indian Economy, Chand and Company Ltd., New Delhi.
3. Gupta P. K.,(2012), Agricultural Economics, Vrinda Publications (P) Ltd. Delhi.
4. Mamoria C.B. and B.B. Tripalhi (1991), Agricultural Problems in India, Kitab Mahal, Allahabad.
5. Sadhu and Singh (2008), Fundamental of Agricultural Economics, Himalaya Publishing House, Mumbai.
6. Tyagi B.P., (2016), Agricultural Economics and Rural Development, Jaiprakash Nath and Co. Meerut.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – IX	CREDIT	MARKS
ECOILC503	INDUSTRIAL AND LABOUR ECONOMICS-I	3	80

Course Objectives

There has been a paradigm shift in the structure of the Indian industrial sector and the policies governing it ever since the new era of globalization and liberalization has ushered in. This paper intends to equip the students with the knowledge about the fundamentals of Industrial Economics and also the latest policies relating to the Indian industry.

Course Outcomes

- Learners will study the different contemporary issues of industrial sector.
- Learners will know the problems of industries.
- Learners will get the idea about productivity.
- Learners will get with new Policies and its impact on industries.

Module 1: Introduction (12 Lectures)

Meaning and Scope of Industrial Economics- Industrial Profile- Private sector- Performance and Problems - Cooperatives sector and its role, merits and demerits- Public Sector – Role - Performance and Problems -Role of agriculture in Industrial development, Industrial Combinations - Motives for Mergers and Acquisitions.

Module 2: Industrial Location and Problem of Regional Imbalance (12 Lectures)

Determinants of Industrial Location, Theories of Industrial Location - Weber's and Sargent Florence's Theories, Dispersal and Decentralization of Industries, Problem of Regional Imbalance.

Module 3: Industrial Productivity and Industrial Sickness (12 Lectures)

Concept and Measurement of Industrial Productivity- Factors Affecting Industrial Productivity-Industrial Sickness - Causes, Effects and Remedial Measures - Rationalisation - Concept, Aspects and Impact.

Module 4: Industrial Development in India (12 Lectures)

New Industrial Policy, 1991; Disinvestment Policy; Small Scale Industries and Rural Industrialization; National Manufacturing Policy, 2011 - Recent Trends in India's Industrial Growth- Role of MNCs in the Indian Economy - Merits and Demerits, Industrial Finance in India.

References:

1. Barthwal R.R. (2007), Industrial Economics, New Age International Publishers, New Delhi.
2. D. Agrawal A.N. (2011), Indian Economy, New Age International Publishers, New Delhi.
3. Datt R. and Sundaram K.P.M. (2009), Indian Economy, S.Chand & Co., New Delhi.
4. Kuchhal S.C. (1980), Industrial Economy of India, Chaitanya Publishing House, Allahabad.
5. Mishra S.K. and Puri V.K.(2008), Indian Economy, Himalaya Publishing House, Mumbai.
6. Ranjana Seth, Industrial Economics (2010), Ane Books Pvt. Ltd., New Delhi.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – X	CREDIT	MARKS
ECORMA504	RESEARCH METHODOLOGY - I	4	100

Course Objectives

This paper contains within the various objectives, such as to understand and make aware as well as inculcate research in Economics amongst the learners, to encourage exchange of ideas and application of results of economic research at the same time to enable students in understanding data collection and presentation for quality research in social sciences.

Course Outcomes

- The learners will understand and inculcate research in Economics
- The learners will exchange ideas and application of results of economic research.
- The course will help in formulation of problems in social science research.
- The students will understand data collection and presentation for quality research in social sciences.

Module 1: Introduction to Research (12 Lectures)

Meaning and scope of social science research- Basic assumptions of research- Features and importance of social science research- Objectives and types of research; Basic, Applied, Pure, Descriptive, Analytical, and Empirical research- Limitations of social science research- Difficulties in social science research

Module 2: Formulation of Problem in Social Science Research (12 Lectures)

Research process: Identification, selection and formulation of research problem-Sources of research problem - Criteria of a good research problem- Review of literature-Formulation of hypothesis- Research design: Definition, Concepts, and types- Data Collection and analysis- Interpretation and report writing- Use of web search in research process.

Module 3: Types of Data: Primary and Secondary (12 Lectures)

Types of Data: Primary data and its collection methods: Observation method- Interview Technique - Design of schedule and questionnaire - Survey method and Field visits - Secondary data : Meaning- advantages- sources- relevance and limitations of secondary data- Sampling Techniques : Census and sample survey- Essentials of a good sampling - Advantages and limitations of sampling- Types of sampling: Random sampling and Non-random sampling-Sampling and Non-Sampling errors.

Module 4: Representation and Analysis of Data (12 Lectures)

Classification, Tabulation and Graphical presentation of socio-economic data- Need and importance of data analysis- Statistical analytical tools: Measures of Central Tendency - Measures of Variation : Absolute and relative measures - Quartile deviation, standard deviation, coefficient of

variation- Skewness: Meaning and measurement (Karl Pearson's and Bowley's methods) - Preliminaries of computer applications in data organization and data processing.

References:

1. Bhandarkar P.L., (1994), Samajik Sanshodhan Padhati, Himalaya Publication, New Delhi.
2. Dawson, Catherine (2002), Practical research methods, UBS Publishers, New Delhi.
3. Ghosh, B.N. (1992), Scientific methods and social research, Sterling Publishers Pvt. Ltd, New Delhi.
4. Gupta S P, (1987), Statistical methods, Sultan Chand and Sons, New Delhi.
5. Kothari R.C. (2008), Research methodology, methods and techniques, New Age International Publishers, New Delhi.
6. Krishnaswamy O.R.(1993), Methodology of research in social sciences, Himalaya publishing House, Mumbai.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – X	CREDIT	MARKS
ECOQEB504	QUANTITATIVE ECONOMICS – I	4	100

Course Objectives

Economics is increasingly becoming quantitative in nature. This course introduces a variety of quantitative skills as per the current requirements of industry. The objective of this paper is to equip students with the mathematical and statistical techniques, which are needed for analysis of data in general and economic analysis in particular.

Course Outcomes

- Students can perform graphical analysis of functions, sketch curves defined by simple equations. Furthermore, it will help to interpret the algebraic solution of economic concepts
- It will build an ability to explain the economic applications of differentiation, and use it to

understand economic concepts such as elasticity, marginal cost and input- output determination and linear programming.

- Help to develop various quantitative concepts and their application not only in economics but also for other subjects.

Module 1: Equations, Graphs and Derivatives (12 Lectures)

Linear and non-linear relationships in economic analysis – Derivatives – Higher order derivatives– Increasing and decreasing functions- Necessary and sufficient conditions for maxima and minima–Optimization of economic functions- Economic applications: equations and graphs Market demand and supply models, taxes, elasticity.

Module 2: Linear Algebra (12 Lectures)

Matrices and basic operations on matrices– Rank of a matrix– Inverse of a matrix– Cramer's rule and its application to the IS-LM model-Input-Output Analysis and policy implications– Linear Programming Problem: Formulation and graphical solution.

Module 3: Descriptive Statistics and graphing techniques for presenting data (12 Lectures)

Concept of primary and secondary data along with tabulation and graphs – Measures of central tendency (arithmetic mean, median and mode) – Absolute and relative measures of dispersion (range, quartile deviation, mean deviation and standard deviation) with simple applications – Measures of skewness and kurtosis – Lorenz Curve

Module 4: Elementary Probability Theory (12 Lectures)

Sample space and events– Mutually exclusive - Exhaustive and complementary events– Conditional probability– Binomial probability distribution– Nature and Properties of the Normal Probability Distribution -Standard Scores and the Normal Curve -The Standard Normal Curve: Finding Areas when the Score is Known- Finding Scores when the Area is Known.

References:

1. Chiang A. C.: Fundamental Methods of Mathematical Economics, 3rd edition, McGraw-Hill, 1984.
2. Dowling Edward T: Introduction to Mathematical Economics, Schaum Outline Series in Economics, Tata McGraw -Hill, New Delhi, 2004.
3. Dowling Edward T: Theory and Problems of Mathematical Methods for Business and Economics, McGraw Hill, 1993.
4. Gupta S.P.: Statistical Methods, S. Chand, New Delhi, 2014.
5. Lerner Joel J and P.Zima: Theory and Problems of Business Mathematics, McGraw Hill, New York, 1986.
6. Sancheti D.C. and V.K. Kapoor: Statistics-Theory, Methods and Applications, S. Chand, New Delhi, 2014.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – X	CREDIT	MARKS
ECOESSIC504	ENTREPRENEURSHIP & SMALL SCALE INDUSTRIES	4	100

Course Objectives

This paper is designed with the aim of encouraging students to foresee themselves as potential entrepreneurs. The paper includes within the scope for case studies, Interviews of Entrepreneurs, Preparation of project report, group discussion, survey etc.

Course outcomes

- Nurture the qualities of successful entrepreneurship
- Provides them knowledge about various processers to register for small scale industries which results in successful maintenances of such industries

Module 1: Entrepreneurship **(12 Lectures)**

Concept of an entrepreneur and entrepreneurship, qualities of the successful entrepreneurs- role and functions of entrepreneurs in economic development- factors influencing entrepreneurship- Challenges before women entrepreneurship.

Module 2: Starting a new venture **(12 Lectures)**

Project identification - selection and formulation, Registration of small scale industries - project report - Sources of finance for a business - Export documents and trends of small enterprises- major constraints in export performance.

Module 3: Small scale industries **(12 Lectures)**

Meaning and scope of small scale industries, importance of small scale industries, problem faced by small scale industries, SWOT analysis for small scale industries, forms of business organizations: Sole proprietorship – Features, advantages & disadvantages. Partnership - Features, advantages & disadvantages. Joint stock Company – Features, advantages & disadvantages. Co-operative – Features, advantages & disadvantages.

Module 4: Management and incentives for small scale industries **(12 Lectures)**

Fundamentals of management: productions and operations management- working capital management, marketing management - Human resource management- Total quality management - Management information system- Incentives to small scale industries.

References:

1. Barra G.S, Dangwal R.C.Entrepreneurship and Small Scale Industries New Potentials – Deep & Publications 1999
2. Desai Vasant, Dynamics of Entrepreneurial Development and Management, Himalaya Publication
3. Khanka C.S., Entrepreneurial Development. S. Chand and Company
4. Khushpat S. Jain House Export Import Procedures and Documentation' Himalaya Publishing House
5. Murthy C.S.V. Small Industries & Entrepreneurship Development, Himalaya Publication
6. Singh P.N. and Saboo J.C., Entrepreneurship Management, P.N.Singh Centre

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XI	CREDIT	MARKS
ECOEEA505	ENVIRONMENTAL ECONOMICS - I	4	100

Course Objectives

This course introduces the learner to the basic concepts, economic instruments and policy options in managing the environment. The impact of development on environment is suitably addressed under the rubric of sustainable development. Economic implications of environmental policy and valuation of environmental quality are important areas of concern to be covered. The students are sensitized to the role of human decisions in affecting the environmental quality and managing global environmental issues. The causes, effects and measures to control different types of pollution are impressed upon. The environmental accounting practices, policies, impact and risk analysis focusses on India.

Course Outcomes

- On the completion of this course, the student will have a good understanding of contemporary environmental issues and their relation to economic development.
- The learner will be equipped to understand the methodologies and tools of valuing the environment.
- In the light of international environmental agreements, the learners will be able to understand the global approaches and policies adopted by India to deal with the environmental issues.

Module1: Introduction to Environmental Economics (12 Lectures)

Environmental Economics: Nature, Significance and Scope; Environment and the economy; Environmental Kuznets Curve; Common resources, externalities and property rights; Coase Theorem; Rio Declaration and Agenda 21 programme of action for sustainable development.

Module 2: The Design and Implementation of Environmental Policy (12 Lectures)

Criteria for evaluating environmental policies; Tools of Environmental Policy: Standards, Pigovian taxes/effluent fees, quotas/tradable permits; Choice between taxes and quotas; Environmental Policy: Regulation and Implementation.

Module 3: Measuring Benefits of Environmental Improvements (12 Lectures)

Economic value of Environment: Use and Non-use values; Measurement methods of environmental value: Market based and Non-market based methods; Contingent Valuation Method; Travel Cost Method; Hedonic Price Method.

Module 4: Global Environmental Issues (12 Lectures)

Trade and environment-Overview of trans-boundary environmental problems-Global Warming - Climate Change - Energy Crisis - Challenges of urbanization - International environmental agreements.

References:

1. Barry Field and Martha k Field: Environmental Economics, McGraw Hill International Edition, 2017.
2. Bennear, Lori Snyder, and Cary Coglianese (2004), Evaluating Environmental Policies, KSG Faculty Research Working Paper Series RWP04-049,USA
3. Charles Kolstad : Environmental Economics, Oxford University Press, New York, 2000.
4. Hanley Nick, Shogren Jason and White Ben: Introduction to Environmental Economics, Oxford University Press, 2001.
5. Mickwitz, Per. (2003). A Framework for Evaluating Environmental Policy Instruments Context and Key Concepts. Evaluation.
6. Smith Stephen: Environmental Economics: A very Short Introduction, 1st Edition, Oxford University Press, New York, 2011.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XI	CREDIT	MARKS
ECOEIB505	ECONOMICS OF INSURANCE - I	4	100

Course Objectives

The course is designed to provide an understanding of the fundamentals of insurance. Insurance has a profound impact on the society as it manages, diversifies and absorbs the risk of individuals and organisations. Insurance companies as risk management service providers serve as bulwarks for the development of productive activities fuelling demand, facilitating supply and trade. The important role played by the insurance institutions in mobilizing savings and diverting them for capital formation is well known. In recent years, uncertainties experienced in life have been increasing and this in turn has created demand for insurance. With the opening of the insurance sector to private players, the interest in the subject has increased. The paper on Economics of Insurance attempts to provide a fairly comprehensive view of the subject to the undergraduate students in Economics.

Corse Outcomes

- Identify and define basic terms and concepts of insurance
- Describe the importance of insurance for an individual and the economy
- Understand the concept of risk and its types, and the process of risk management.

Modul 1: Introduction (12 lectures)

Definition of Insurance, Characteristics of Insurance, Principles of Insurance, Distinction between Assurance and Insurance ,Purpose and need of insurance, Functions of Insurance, Classification of Insurance, Limitations of Insurance.

Modul 2: Risk and Risk Management (12 lectures)

Concept of Risk, Risk Vs Uncertainty – Loss and chances of loss, Perils, Hazards, Types of Risk, Classification of Pure risk, Elements of insurable risk, Losses and methods of handling pure risk, Asymmetries of information - Adverse selection and Moral hazard in insurance, Risk management process - Risk analysis, Risk control, Risk financing, Risk transfer.

Modul 3: Recent Trends in Insurance Sector (12 lectures)

Insurance and economic development, Insurance institutions as financial intermediaries; insurance institution as investment institution; Growth & Performance of Public & Private Insurance Companies in India: Life and Non-Life sector including foreign collaborations; Disinvestment of LIC, Listing of Public & Private Insurance companies in Stock market; Government policies in insurance – Ayushman Bharat Yojna, Pradhan Mantri Suraksha Bima Yojna, Pradhan Mantri Jeevan Jyoti Bima Yojna.

Modul 4: Reinsurance (12 lectures)

Definition, Objectives of Reinsurance, Role of Reinsurance, Techniques of Reinsurance. Role of Reinsurer, Role of General Insurance Corporation of India (GIC Re), Issues and challenges in Indian Reinsurance.

References:

1. Dr. PK Gupta (2011), Insurance & Risk Management, Himalaya Publishing House.
2. Dr. MJ Mathew (2005), Insurance Principles & Practice, RBSA Publishers.
3. E. Rejda George, McNamara Michael (2017), Principles of Risk Management & Insurance, Pearson Education.
4. Kishore Kumar Das (2016), Insurance Sector in India: Problems, Possibilities and Prospects, IBP, New Delhi.
5. Meltem Tumay (2009), Asymmetric Information & Adverse Selection in Insurance Markets: The problem of Moral Hazard at dergipark.org.tr/tr/download/article-file/146009.
6. PK Gupta (2017), Fundamentals of Insurance, Himalaya Publishing House.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XI	CREDIT	MARKS
ECOMEAC505	MATHEMATICS FOR ECONOMIC ANALYSIS	4	100

Course Objectives

This course aims to equip students with mathematical tools, formulae and expressions, which will enhance their capacity to understand and interpret economic theory. The course introduces mathematical techniques commonly used for planning and resource allocation.

Course Outcomes

- By the completion of the course, students can solve the economic problems by using mathematical techniques.
- The application of these mathematical techniques will helps them to analyse the real world problems and to bring out impeccable interpretations in any discipline.

Module 1: Set Theory, functions and Graphs (12 Lectures)

A set and its elements- basic set operations- Functions and Graphs- Algebraic and Non- Algebraic; Slope and intercept of a straight line- Economic Applications: Demand and supply functions-Savings-Investment- Consumption function etc.

Module 2: Derivatives and its Applications (12 Lectures)

Derivative of function – Rules of differentiation, Partial derivatives - First and Second orders - Total differentiation- Maxima and minima of two or more than two variables.
Applications in Economics: Constrained and unconstrained optimization- Cost minimisation- Profit maximisation- Optimization of utility and production functions using Lagrange Multiplier.

Module 3: Integration and its Applications **(12 Lectures)**

Basic rules of integration – Definite and Indefinite integrals- Area under the curve.
Economic applications- Capital formation- Consumer's and Producer's Surplus- Measures of Inequality- Lorenz curve- Gini- coefficient and Pareto distribution.

Module 4: Matrix Algebra **(12 Lectures)**

Meaning and types of Matrices- Matrix Operations (upto 3 x 3) Matrix – Addition- Matrix multiplication, Transpose of matrix- Inverse of a Square Matrix- Rank of a matrix- Adjoint of a matrix- Characteristic Roots and Vectors- Simultaneous linear equations- Determinants- Minors and Cofactors- Solution to equations by Cramer's Rule- Applications in economics: Input -Output model.

References:

1. Chiang, Alpha (1994). Fundamental Methods of Mathematical Economics. McGraw Hill.
2. Dowling, Edward T (2004): Introduction to Mathematical Economics Schaum's Outline Series in Economics. Tata McGraw –Hill.
3. Lerner, Joel J and P. Zima (1986). Theory and Problems of Business Mathematics. McGraw Hill.
4. Rosser, Mike (2003). Basic Mathematics for Economists. Routledge, Taylor & Francis Group.
5. Soni, R. S. (2009). Essential Business Mathematics & Business Statistics, Ane Books Pvt. Ltd.
6. Sydsaeter, K and P. Hammond (2002). Mathematics for Economic Analysis. Pearson Educational Asia.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XII	CREDIT	MARKS
ECOEMA506	ECONOMY OF MAHARASHTRA-I	3	80

Course Objectives

This paper provides a detailed account of various sectors of economy of Maharashtra i.e. natural

resources, population, agriculture, industry, infrastructure, fiscal policy and human development. These units will introduce the various challenges faced by the economy of Maharashtra and efforts of the Government to tackle them.

Course Outcomes

- Students get acquainted with all varied sectors of the economy of Maharashtra
- Awareness on challenges to be faced and measures to tackle the challenges

Module 1: Introduction to Economy of Maharashtra (12 Lectures)

Location and administrative divisions- Important features of the economy of Maharashtra- land, forest, climate and rainfall, fisheries and mineral resources-Formation of Maharashtra state- Sanyukt Maharashtra Movement – structural changes in state domestic product since 1991 -Maharashtra's place in India in various economic indicators.

Module 2: **Demography of Maharashtra (12 Lectures)**

Size and growth rate –Density- Birth rate, Death rate and infant mortality rate - Urban and rural population -Literacy rate - Sex ratio - Migration - Labour force -SC and ST population - Employment Guarantee Scheme (EGS) - Unemployment and poverty.

Module 3: **Agriculture Development in Maharashtra (12 Lectures)**

Significance of agriculture in the economy of Maharashtra - Land utilisation in Maharashtra- Cropping pattern and per hectare yield -Trends in land productivity - Land reforms -Intensity of irrigation - Inequalities in land distribution in Maharashtra - Cooperatives in Maharashtra- Agricultural finance - Food security-Concept of PDS- Buffer stock of foodgrains- Allocation - Issue of farmers suicide - Agricultural policy in Maharashtra.

Module 4: **Industrial Sector & Service Sector in Maharashtra (12 Lectures)**

Major manufacturing industries - Important ratios of industrial groups in Maharashtra - Incentives and promotions to various industries in Maharashtra -Industrial policy of Maharashtra 2019 and 2024 -The

role of MIDC, SICOM, MSFC, SEZ in industrial development - Foreign Direct Investment (FDI) in Maharashtra since 1991- Role of service sector in the economy of Maharashtra - sector in employment - Banking and finance.

References:

1. JungaleMangala (2008): Maharashtrachi Arthvyavastha (Marathi), Prashant Publications, 17, Stadium Shopping Centre, Opp. State Bank, Jalgaon –age No. 9 to 19.
2. Kurulkar R. P. (1997): Maharashtrachi Arthvyavastha (Marathi), Vidya Prakashan, Ruikar Marg, Nagpur. Page No. 153 to 179.
3. Munagekar Bhalchandra (2003) :The Economy of Maharashtra – Changing Structure and Emerging Issues, Dr. Ambedkar Institute of Social and Economic Change, Mumbai.
4. Patil J. F. (2010) :Suvarna Mahotsavi Maharashtrachi Badalati Arthvyavastha (Marathi), Abhijit Pratap Pawar, Sakal Papers Ltd., 595, Budhwar Peth, Pune-411002Page No. 41 to 57.
5. Pansare Govind (2012) :Maharashtrachi Arthik Pahani – Paryayi Drushtikon (Marathi), Shramik Pratishthan, Red Plug Bldg.,Bindu Chowk, Kolhapur, Page No. 159 to 195.
6. World Bank (2002) India: Maharashtra Reorienting Govt. to Facilitate Growth and Reduce Poverty.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XII	CREDIT	MARKS
ECOHETB506	**HISTORY OF ECONOMIC THOUGHT - I**	**3**	**80**

Course Objectives

The very purpose of this course is to provide information about the biography and contribution of the most influential economists who influenced the economic fraternity and to whom we are obliged to for shaping up the economic thought process.

Course Outcome:

- Students will get information about the genesis of Economics and its modern scenario.
- Establish the co-relation of Economics with other subjects.

Module 1: Classical Economics **(12 Lectures)**

Mercantilism and Physiocracy: Introduction -Adam Smith: Liberalism -Division of Labour -Theory of Value - David Ricardo: Rent Theory- Wage Theory - Theory of Value- Karl Marx: Surplus Value Materialistic Interpretation of History -Scientific Socialism.

Module 2: Neo-Classical Economics **(12 Lectures)**

Alfred Marshall : Thought on Value - Representative Firm - Consumer's Surplus - Internal and External Economies-Quasi Rent - Schumpeter: Economic Development And Innovation- Pigou :Welfare Economics.

Module 3: Keynesian Ideas **(12 Lectures)**

Employment Theory- Money- Wage Rigidity Model- Multiplier and accelerator and their interaction - Trade Cycle - Inflation -Role of Fiscal Policy - Keynesian Economics and Developing Countries.

Module 4: Post-Keynesian Economics **(12 Lectures)**

Supply Side Economics -Hayek's Theory of Trade Cycle- Life Cycle theory Consumption- Friedman: Theory of Demand for Money - Long-Run Philips Curve - Mankiw's New Keynesian Model - Stagflation.

References:

1. Dasgupta A. K, Epochs of Economic Theory Oxford University Press. New Delhi, 1985.
2. Ernesto Screpanti and Stefano Zamagni, An Outline Of The History Of Economic Thought, OxfordUniversity Press Inc., New York, 5005.
3. Ghosh and Ghosh: Concise History of Economic Thought, Himalaya Publishers.
4. Gide, O. and G. Rist, A History of Economics Doctrine. George Harrop Co. London. 1956.
5. Harry Landreth and David C. Colander, History of Economic Thought, Houghton Mifflin Company Boston Toronto, 2001.
6. Roll, E., A History of Economics Thought. Faber Landon, 1973.

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO -XII	CREDIT	MARKS
ECOIBFC506	INTERNATIONAL BANKING AND FINANCE- I	3	80

Course Objectives

This syllabus serves as an introduction to the fundamentals of international finance. Various types of exchange rate systems and related developments are incorporated to understand the emergence of contemporary exchange rate systems. The students will make an in-depth study of foreign exchange market and international capital markets.

Course Outcomes

- Upon completion of the course the students are clear about the fundamentals of International Finance.
- They come across various types of exchange rate systems and related developments and emergence of contemporary exchange rate systems.
- It enable them in-depth study of foreign exchange market and international capital markets
- The course will result in the project work based on empirical case studies suggestive- examples: foreign exchange arithmetic, direct, indirect and cross rate and percentage spread.

Module 1: Fundamentals of International Finance (12 Lectures)

Meaning and scope of international l Finance - Balance of payments: structure and components- Convertibility of currency- International Monetary system- Gold Standard - Bretton Woods System - failure of Bretton Woods- Smithsonian agreement- Special Drawing Rights- European Monetary system.

Module 2: contemporary Exchange Rate Systems (12 Lectures)

Current exchange rate system- Fixed exchange rate - Flexible exchange rate - Merits and Demerits of fixed and flexible exchange rate - Types of fixed exchange rates hard pegs and soft pegs-Types of flexible exchange rate managed float and free float- Exchange rate determination under fixed and flexible exchange rate system.

Module 3: Foreign Exchange Market **(12 Lectures)**

Meaning and nature of foreign exchange market-Participants in foreign exchange market- Retail and wholesale components of forex market - Role of FEDAI, FEMA and regulatory framework- Foreign exchange arithmetic - Exchange rate quotation-direct, indirect and cross rate - Percentage spread.

Module 4: International Capital Markets **(12 Lectures)**

Euro currency market-origin and reasons of growth- Euro currency deposits-loan bonds and notes markets- International equity market- depositary receipt-ADR, GDR and IDR- characteristics and mechanism of depositary receipts-International bond market- domestic bonds and foreign currency bonds FCCB & FCEB.

References:

1. Cheol S. Eun ET. AL. International Finance (2012), McGraw Hill India.
2. Rajiv Srivastava, International Finance (2014) Oxford University Press, India.
3. S. AshokKumar, Global financial and Indian economy, New Century Publications, New Delhi.
4. Salvatore, Dominick, International Economics, 2008, 3rd edition, Wiley India.
5. Sodersten, Bo and Geoffery Reed, International Economics, 2006, 3rd edition.
6. V.A. Avadhani, International Finance, (2009), Himalaya Publishing House.

COURSE STRUCTURE

(APPLICABLE FROM ACADEMIC YEAR: 2021-22)

TYBA (SEMESTER –VI)

COURSE CODE	REVISED PAPER		CREDIT	MARKS
GROUP-I : CORE PAPERS				
ECOAME601	XIII	ADVANCED MACROECONOMICS – III	4	100
ECOIE602	VIV	INTERNATIONAL ECONOMICS	4	100
GROUP-II :ELECTIVE PAPERS				
ECOIFSA603	XV	INDIAN FINANIAL SYSTEM-II	3	80
OR				
ECOACB603	XV	ECONOMICS OF AGRICULTURE AND CO - OPERATION – II	3	80
OR				
ECOILC603	XV	INDUSTRIAL AND LABOUR ECONOMICS – II	3	80
ECORMA604	XVI	RESEARCH METHODOLOGY - II	4	100
OR				
ECOQEB604	XVI	QUANTITATIVE ECONOMICS - II	4	100
OR				
ECORDC604	XVI	RURAL DEVLOPMENT	4	100
ECOEEA605	XVII	ENVIRONMENTAL ECONOMICS - II	4	100
OR				
ECOEIB605	XVII	ECONOMICS OF INSURANCE - II	4	100
OR				
ECOBEC505	XVII	BASIC ECONOMETRICS	4	100
ECOEMA606	XVIII	ECONOMY OF MAHARASHTRA –II	3	80
OR				
ECOHETB606	XVIII	HISTORY OF ECONOMIC THOUGHTS – II	3	80
OR				
ECOIBFC606	XVIII	INTERNATIONAL BANKING AND FINANCE – II	3	80

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO –XIII	CREDIT	MARKS
ECOAME601	ADVANCED MACROECONOMICS - III	4	100

Course Objectives

This course introduces the students to formal modeling of a macro economic theory with analytical tools. Since students have been taught Keynesian Synthesis, this course focuses on four aspects which are the study of Post Keynesian Synthesis, Trade Cycles, Exchange Rate Regimes and International Monetary System.

Course Outcomes

- To make student aware about Post Keynesian Synthesis and understand various aspects of Trade Cycles.
- Students will be able to describe the contemporary Exchange Rate Regimes and International Monetary System.

Module 1: Post Keynesian Synthesis (14 Lectures)

Derivation of Aggregate Demand Curve with IS-LM - Aggregate Supply Curve - Determination of Equilibrium National Income and Price Level under Aggregate Demand and Aggregate Supply Model - Extension of IS-LM Model with Labour Market and Flexible Prices - Natural Rate of Unemployment- Long run Philips Curve - Friedman's Expectation Model - Tobin's Modified Philips Curve - Adaptive Expectations and Rational Expectations.

Module 2: Trade Cycles (12 Lectures)

Meaning- Nature- Features and Types of Trade Cycles - Phases of Trade Cycles - Theories of Trade Cycles- Hawtrey's, Kaldor, Paul Samuelson and Hicks - Measures to Control Trade Cycles.

Module 3: Exchange Rate Regimes and Currency Crises (12 Lectures)

Managed Exchange Rate- Advantage and Disadvantage - Policy of Managed Flexibility-Adjustable Peg System, Crawling Peg System, Managed Floating System, Clean and Dirty Float System - Balance of Payment and Exchange Rate - Is Balance of Payments Always in Balance? – Convertibility of Currency - Currency Crisis-Causes, Impact and Measures.

Module 4: International Monetary System (12 Lectures)

Rise and Fall of International Gold Standard - Bretton Woods System- Breakdown of the Bretton Woods System - Monetary System after the Collapse of Bretton Woods System - Maastricht Treaty, Features, Effects and Importance of Euro- Currency Market - Causes and Consequences of Global Economic Crisis - Impact of Global Recession on the Indian Economy - Asia Infrastructure Investment Bank (AIIB) - New Development Bank (NDB): Asian Development Bank (ADB).

References:

1. Blanchard, Oliver (2008), Macroeconomics, Pearson education, New Delhi, India.
2. Dornbusch, Fisher and Startz (2018): Macroeconomics, McGraw Hill Education (India) Pvt. Ltd.
3. Mankiw N Gregory (2003), Macroeconomics, 6" edition, Worth Publishers, New York.
4. Patil J. F (2005, Marathi Edition), Macroeconomic Analysis, Phadke Prakashan, Kolhapur.
5. Rana K. C. & Verma K.N (2017), International Economics, Vishal Publishing CO. Jalandhar.
6. Salvatore D. (1997), International Economics, Printice Hall, New York.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO – XIV	CREDIT	MARKS
ECOIE602	INTERNATIONAL ECONOMICS	4	100

Course Objectives

The course is designed to provide a general understanding of the fundamentals of International Trade Theories along with the balance of payment concepts, crisis and various policy measures to correct the

same. It also provides overview of the working of foreign exchange market, determination of exchange rate and different terms related with the foreign exchange market. The course introduces the main features of the international economic institutions and enables them to critically understand role and functions of those institutions.

Course Outcomes

- Students will be able to understand the trade theories and determinants of trade which helps them to analyze the international trade policies.
- Students will be able to understand the role of various international institutions and trade blocks and their approaches in framing the policies for trade.

Module 1: Introduction to Trade Theories (12 Lectures)

Meaning, scope and importance of International Trade- Difference between Internal and International Trade - Adam Smith's Theory of International Trade - Ricardian theory of comparative cost difference Heckscher- Ohlin Theory-Leontief's Paradox- Krugman's Model

Module 2: Balance of Trade and Balance of Payment (12 Lectures)

Concepts of Terms of Trade(Net barter, Gross barter and Income terms of trade)-Meaning and difference between Balance of Trade (BOT) and Balance of Payment (BOP)-Purchasing Power Parity theory, Law of Reciprocal Demand-Marshall-Edgeworth Offer curves, Gains from trade-Case for and against Free Trade and Protection policy

Module 3: Foreign Exchange Market (12 Lectures)

Meaning and Functions of Foreign Exchange Market-Exchange rate determination, Factors influencing foreign exchange rate-Managed Flexibility-SWAP Market, Components of foreign exchange reserves Foreign Aid Vs Foreign Trade, FDI and MNCs

Module 4: International Economic Institutions and Economic Integration (12 Lectures)

IMF, World Bank - Role and functions-WTO-Objectives, Functions and Agreements with respect to

TRIPS,TRIMS, GATS, AoA - Forms and objectives of Economic Integration-Cartels-Trade Blocs, ASEAN- European Union (EU)- NAFTA and SAARC.

References:

1. Appleyard Dennis and Alfred j Field, Jr, International Economics, 2001, 4th Edition, Tata McGraw-Hill Education Private Limited.
2. Cherunilam Francis, International Economics, 2009, 5th Edition, Tata McGraw-Hill Education Private Limited, New Delhi.
3. Krugman R Paul, Maurice Obstefeld, International Economics Theory and Policy, 2009, 8th Edition, Pearson.
4. Melitz M. and Trefler D., Gains from Trade When Firms Matter, Journal of Economic Perspectives, Spring 2012.
5. Salvatore, Dominick, International Economics, 2008, 8th Edition, Wiley India.
6. Sodersten, Bo and Geoffery Reed, International Economics, 2006, 3rd Edition.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XV	CREDIT	MARKS
ECOIFSA603	**INDIAN FINANCIAL SYSTEM-II**	**3**	**80**

Course Objectives

The paper is framed to provide information on various financial markets including the participants, regulators of the respective markets and role of intermediaries. The syllabus also provides students with an overview of the features of the markets in India and the reforms that have been carried out in them over a period of time. Certain topics have been also incorporated to facilitate the students with practical exposure to the functioning of these markets and they indicate potential topics for case studies and taking up small research projects.

Course outcomes

- Focuses on features and functioning of financial markets as well as reforms therein.

- Empowers students about the evolution and significance of financial services, overview of new products and practices in the provision of financial services.
- Project work based on empirical case studies involving data analysis; suggestive examples: equity research, derivative pricing, analysis of financial performance of corporates, study of capital structure of corporates, mapping the trends in stock market indices, CIBIL score & lending practices of banks.

Module 1: Money Market and Debt Market (12 Lectures)

Money market: meaning and functions- Structure of money market in India (dichotomous & heterogeneous) - Participants and instruments in Indian money market- Features of Indian money market - Reforms in Indian money market - Role of the RBI.

Debt market: meaning & functions - Segments in debt market- Participants & instruments in debt market - Role of intermediaries and the government in debt market - Recent trends in India's debt market.

Module 2: Capital market (12 Lectures)

Capital market: meaning, role and factors affecting growth of capital market - Structure of capital market- New issues or primary market: features, participants & intermediaries - Overview of issue mechanisms or methods of raising primary issues- Reforms in primary segment of Indian capital market & role of the SEBI.

Secondary market: features, participants & intermediaries - Listing of securities: types, advantages, requisites of listing - Basic mechanism of trading in securities - DEMAT- introduction to major stock exchanges in India: BSE, NSE and OTCEI- Reforms in secondary segment of Indian capital market.

Module 3: Derivatives Market (12 Lectures)

Derivatives: Need and significance - Participants in derivative markets- Types of derivatives (a. based on the underlying entity- financial, commodity, foreign currency, credit & interest rates and b. based on instruments- forwards, futures, options, swaps) - Pricing of derivatives: futures pricing, cost-of-carry model, options pricing -Derivative markets in India: evolution & growth, NCDEX, MCX, regulation of derivatives trading in India.

Module 4: Financial Services in India **(12 Lectures)**

Insurance: meaning, types, evolution and growth, E-portal for insurance policies, IRDA and PFRDA-Mutual Funds: meaning, composition, advantages, types of schemes-Evolution & growth, AMFI-Merchant banking: Evolution & growth, scope and recent developments in India - Credit rating: meaning, role and significance, agencies- depository services.

References:

1. Bhole, L. M. (2008): Financial Institutions and Markets, Growth and Innovation, Tata McGraw-Hill, New Delhi.
2. Khan, M.Y. (2007): Financial Services, Tata McGraw Hill, New Delhi.
3. M.Y. Khan, Indian Financial System
4. Pathak, Bharati (2008): The Indian Financial System –Markets, Institutions, and Services, (2nd Edition), Pearson Education, New Delhi.
5. Rajesh Kothari, Financial Services in India: Concept and Application
6. Vasant Desai, Indian Financial system.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XV	CREDIT	MARKS
ECOACB603	ECONOMICS OF AGRICULTURE AND CO-OPERATION-II	3	80

Course Objectives

The paper is designed to provide various aspects related to the Principles of cooperation and cooperative organizations in the globalized economy. The essentials of cooperative finance are dealt in with reference to the latest trends. The cooperative movement has a long history of more than hundred years. Indian Cooperatives Structure is one of the largest networks in the world. Under this backdrop the student should study the principles and role of cooperation in the modern era.

Course Outcomes

- Students can understand the basic Principles of Cooperation, Globalization and Cooperation.
- Provides information about co-operative Movement in India and its performance and role in rural development.
- Students get introduced to the problems and measures of agro industries and Cooperative farming and Leadership in cooperative development.

Module 1: Co-operation (12 Lectures)

Meaning and features of Co-operation- Principles of Co-operation (Manchester-1995) - Role of Co-operation in Economic development - Globalization and Co-operation-Importance and Benefits of Co-operation - Co-operative Movement in foreign Countries - Consumer Cooperative Movement in U.K- Agricultural Cooperative Movement in Israel.

Module 2: Co-operative Finance in India (12 Lectures)

Co-Operative Finance: Need, Structure. Progress and Problems - National Co-operative Development Corporation (NCDC) - Farmers service societies - Urban Co-operative banks,

Module 3: Agricultural Co-operatives (12 Lectures)

Role and Types of Agro-Industries - Problems and Measures of Agro-Industries - Sugar and Dairy Co-operatives - Food and Fruits Processing Industry - Co-Operative Farming.

Module 4: Co-operative Organizations in India (12 Lectures)

Consumer Co-operatives - Co-operative Marketing - NAFED - Housing Co-operative societies Labour Co-operative societies - Leadership in Cooperative development - Concept of Co-Operatives Audit.

References:

1. Bedi R. D. (2001), Theory, History and Practice of Co-Operation, International Publishing House, Meerut (U.P.).
2. Government of Maharashtra - Co-operative movement at a Glance (latest annual report).

3. Hajela T.N, (2000), principles, problem and practice of Co-operation, Agarwal Publication, New Delhi.
4. Mathur B. S, (2000), Co-Operation in India, Sahitya Bhavan, Agra.
5. Matthai John, (1996), Agricultural Co-Operation in India, Reliance Publishing House, New Delhi.
6. Swami Krishna, (1985), Fundamentals of Co-Operation, S. Chand and Company Ltd, New Delhi.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XV	CREDIT	MARKS
ECOILC603	INDUSTRIAL AND LABOUR ECONOMICS-I	3	80

Course Objectives

Issues pertaining to the labour market, wage policy, trade unions and amicable solutions to industrial disputes have become vital for developing countries, especially for India, where the bulk of the labourforce is employed in the unorganised sector, and the organized sector is witnessing a phenomenon of'jobless' growth. This paper intends to provide knowledge of the same and also discusses the importance of labour welfare and social security measures for the growing labour force in India.

Course outcomes

- Learners become aware about different problems and policies a labour.
- Learners will get intoned about trade unions and industrial relation in contemporary world.
- Learned will know the different policies of labour welfare.

Module 1: Introduction - Indian Labour Market (12 Lectures)

Characteristics of the Indian Labour Market, Child Labour and Women Labour -Problems and Measures, Labour Market Reforms - Exit Policy and Need for Safety Nets, Second National Commission on Labour, Globalization and its impact on Indian Labours.

Module 2: Trade Unionism **(12 Lectures)**

Definition and Functions of Trade Unions, Historical Evolution of Trade Unions in India and their Present Status- Problems of Trade Unions in India- Role of Outside Leadership- International Labour Organization.

Module 3: Industrial Relations **(12 Lectures)**

Causes of Industrial Disputes and Their Settlement Mechanism- Collective Bargaining - Concept, Features - Importance and Pre-requisites for Successful Collective Bargaining - Collective Bargaining in India -Workers' Participation in Management- Concept, Objectives and Forms of Workers'Participation in India -Working Conditions and life style of Indian workers.

Module 4: Labour Welfare and Social Security **(12 Lectures)**

Concept -Theories and Principles of Labour Welfare- Agencies for Labour Welfare, Role of the Labour Welfare Officer - Social Security-Concept; Social Assistance and Social Insurance – Social Security Measures in India - Indian Labour Legislations.

References:

1. Agrawal A.N. (2011), Indian Economy, New Age International Publishers, New Delhi.
2. CO Monappa A, (2006), Industrial Relations, Tata McGraw Hill Publishing Company Ltd, New Delhi.
3. Datt R. and Sundaram K.P.M. (2009), Indian Economy, S.Chand & Co., New Delhi.
4. Mamoria C.B. and Mamoria S. (2002), Dynamics of Industrial Relations, Himalaya Publishing House, Mumbai.
5. U. Mishra S.K. and Puri V.K.(2008), Indian Economy, Himalaya Publishing House, Mumbai.
6. U. Ratna Sen, Industrial Relations in India - Shifting Paradigms (2005), Macmillan, New Delhi.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVI	CREDIT	MARKS
ECORMA604	RESEARCH METHODOLOGY - II	4	100

Course Objectives

This paper 'Research methodology-II' has various objectives, like to enable students in understanding application of statistics in research, to prepare learners to realize about various analytical tools and methods in research, to orient the students to know index numbers, hypothesis formulations and testing and to make student understand about the research report writing.

Course Outcomes

- The learners get assimilated to the research culture in Economics through application of statistics.
- The learners will understand the concept of index number with its use and applications.
- The course will help in formulation of hypotheses and its testing in social science research.
- The students will understand the writing of social science research reports with its various types, organization and styles.

Module 1: Application of Statistics in Research (10 Lectures)

Methods of studying correlation- measurement of simple correlation: graphic method- Scatter diagram- Coefficient of correlation- Karl Pearson and rank correlation- Interpretation of r = +1. Linear regression analysis: Meaning, regression lines, regression equation, regression equation relationship between correlation and regression- Analysis of time series- Components- Trend analysis- Moving averages (3, 4 and 5 Yearly)- Method of least square.

Module 2: Index Number: (14 Lectures)

Meaning and classification of index number - Problems encountered while constructing index numbers- Uses and limitation of index numbers - Methods of constructing index numbers: Simple index:

i) Aggregate method ii) Simple average of Relative method - Weighted index: Laspeyer's, Paache's, Fisher's and Marshall- Edgeworth - Base shifting - Deflating and Cost of living index number: Weighted average of Relative method - Aggregate Expenditure method- Chain based index - Concepts of base shifting, splicing, and deflating - Consumer price index- Meaning, need and construction.

Module 3: Hypothesis Formulation and Testing (10 Lectures)

Definition and functions of Hypothesis - Criteria of workable Hypothesis - Forms and sources of hypothesis- Concepts in testing of hypothesis: Universe / Population parameter and sample statistics- Types of hypotheses: Null and Alternative Hypotheses-Levels of significance-Critical region -Type I and Type II Errors -Student t- test.

Module 4: Research Report Writing (14 Lectures)

Types of research reports: Technical, Popular, Interim, Summary, Article- Format of a research report- Principles of writing the research report: Organization and style - Contents- Styles of reporting- Steps in drafting reports- Editing the final draft-Evaluating the final draft -Organization of the research report: Preliminaries, Contents of report, Structuring the report: Chapter format- Pagination- Identification- Using quotations, Presenting footnotes- Abbreviations- Presentation of tables and figures- Referencing documentation-Use and format of appendices- Indexing - Bibliography, Appendices.

References:

1. Allen, T. Harrell (1978), New methods in social science research, Praeges Publishes, New York
2. Bhandarkar P.L.,(1994), Samajik Sanshodhan Padhati, Himalaya Publication, New Delhi, (Marathi)
3. Ghosh, B.N, (1992). Scientific methods and social research, Sterling publishers Pvt. Ltd, New Delhi.
4. Gupta S. P, (1987), Statistical methods, Sultan Chand and Sons, New Delhi
5. Kothari R.C. (2008), Research methodology, methods and techniques, New Age International Publishers, 2nd revised edition, New Delhi.
6. Krishnaswamy O.R. (1993), Methodology of research in social sciences, Himalaya Publishing House, Mumbai

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVI	CREDIT	MARKS
ECOQEB604	QUANTITATIVE ECONOMICS – II	4	100

Course Objectives

This paper proposes to equip the students with the idea of derivatives and integration along with its application in economic theory. The aim is to empower students with quantitative techniques such as correlation, regression and time-series, which will aid in for data analysis.

Course Outcomes

- Upon the completion of course Students will be able to apply the techniques of derivatives and integration to economic theory
- Students can handle time series data and interpret the results.

Module 1: Techniques and applications of partial derivatives (12 Lectures)

Functions of several variables and partial derivatives - Second order partial derivatives - Optimization of multivariable functions-Constrained optimization with Lagrange multiplier and its economic interpretation -Marginal productivity, Income and cross price elasticity of demand - Homogeneous production functions and returns to scale - Cobb- Douglas production function

Module 2: Integral Calculus (12 Lectures)

Integration and Definite integral; area under the curve - Economic applications - Present value of cash flows (present value of a sum to be received in future and present value of a stream of future income) - Consumer's and Producer's Surplus.

Module 3: Correlation and Regression Analysis (12 Lectures)

The meaning and significance of Correlation; Scatter plot of Bivariate Distributions; Correlation and

Causation - Karl Pearson's coefficient of correlation: Spearman's rank correlation coefficient - Simple regression analysis- Method of Least Squares and Regression Lines, Regression Coefficients, Relationship between correlation coefficients and regression coefficients, Estimation and forecasting of trend by the Least Squares Method.

Module 4: Index Numbers and Sampling Methods (12 Lectures)

Simple and composite index numbers- Construction, uses and problems of index numbers- Laspeyre's, Paasche's and Fisher's Index numbers- Cost of living index numbers-real income - wholesale price index number- Splicing of index numbers, Sampling -Principal steps in a sample survey, methods of sampling, the role of sampling theory.

References:

1. Chiang A.C (1984). Fundamental Methods of Mathematical Economics, 3rd ed., MeGraw-Hill.
2. Dowling Edward T. (1993). Theory and Problems of Mathematical methods for Business and Economics. McGraw - Hill.
3. Dowling Edward T. (2004). Introduction to Mathematical Economics Schaum's Outline Series in Economics, Tata McGraw Hill.
4. Gupta S.P. (2014). Statistical Methods, S. Chand publishing.
5. Lerner Joel J and P. Zima (1986). Theory and Problems of Business Mathematics. McGraw Hill.
6. Sancheti D.C. and V.K. Kapoor (2014). Statistics-Theory Methods and Applications, S. Chand.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVI	CREDIT	MARKS
ECORDC604	RURAL DEVELOPMENT	4	100

Course Objectives

This course would helpful to understand the various types of relationships in rural area. The learners will understand the basic issues in rural development. The course sheds light on a range of new developments

and a host of issues studied by generations of rural area experts. The course is constructed from the point of rural development arrangement.

Course Outcomes

- On the completion of the course, the students will be able to understand the basic Concept of rural development.
- Learners will also be understanding objectives and importance of rural development.
- Learners will have good understanding of problems in relation of rural development.
- Learners will come to know what rural development programmes have initiated by the government to overcome the problems of rural development

Module 1: Rural Development: Introductory Aspects (12 Lectures)

Concept, Nature and Scope of Rural Development, Charactersties of the Rural Economy, Objectives and Importance of Rural Development, The problems of Rural Development in India

Module 2: Approaches to Rural Development (12 Lectures)

Gandhian Approach, Rural Reconstruction Approach, Community Development Approach, Sectoral Approach, Participatory Approach, Area- Specific and Target Group Oriented Approach, Integrated Rural Development and Economic Development with Social Justice Approach

Module 3: Diversification of Rural Economy (12 Lectures)

Livestock economics, Dairy Development, Social Forestry, Agro-Based Industries: Problems & Remedial Measures, Role of KVIC in Rural Development, Recent Development of Science & Technology in Rural Development.

Module 4: Rural Empowerment Programmes (12 Lectures)

An Overview of Rural Development Programmes, Provisions of Urban Amenities in Rural Area (PURA), Rural Employment: Mahatma Gandhi National Rural Employment Guarantee Act-2005 (MGNREGA),

Rural Livelihoods: Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM), National Social Assistance Programme (NSAP), Microfinance and Self-help Groups

References:

1. Thomas William and A.J. Christopher (2011), Rural Development: Concept and Recent Approaches, Rawat Publication, Jaipur.
2. Annual Report 2019-20, 2018-19 & State performance report-2018-19 and Action plan 2019-20, Volume-I, Ministry of Rural Development, Department of Animal Husbandary & Dairying, Government of India, New Delhi.
3. Datt & Sundharam (2012), Indian Economy, S. Chand & Company LTD. Mumbai.
4. Desai Vasant (2012), Rural Development in India, Himalaya Publishing House, Mumbai.
5. Dr. I. Satya Sundaram (2002), Rural Development, Himalaya Publishing House, Mumbai. Page No. 3 to 24
6. Eleventh Five Year Plan 2007-12, Planning Commission, Government of India, New Delhi.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVII	CREDIT	MARKS
ECOEEA605	**ENVIRONMENTAL ECONOMICS - II**	**4**	**100**

Course Objectives

This paper introduces vital aspects related to environmental degradation and advocates the need for environmental accounting. The paper also focuses on the attainment of SDGs

Course Outcomes

- Students are empowered about the environmental challenges and the need for environmental accounting
- Develop understanding on the policy measures to attain SDGs

Module1: Environmental Degradation **(12 Lectures)**

Concept and types of Environmental Degradation; Renewable and Non-renewable natural resources: Land, Air, Water and Noise Pollution: Causes, effects and measures.

Module 2: Environmental Accounting **(12 Lectures)**

Accounting for environmental and natural resources: Meaning and importance; System of Environmental-Economic Accounting (SEEA) and Environmental and Natural Resources Accounting (ENRA); Integration of Environmental Accounts with System of National Accounts: Green GDP; Concept of Green Growth and its Indicators; Concepts of Green Consumer and Green Business.

Module 3: Sustainable Development and India **(12 Lectures)**

Concept of Sustainable Development; Characteristics and dimensions of Sustainable Development; Sustainable Development Goals and Measures with special reference to India; Smart Cities Mission in India; National Mission For Sustainable Agriculture (NMSA): Objectives, strategy and components.

Module 4: Environmental Policy in India **(12 Lectures)**

Overview of laws to improve the environment in India; Central pollution Control Board; Industrial Pollution Control Measures in India; Pradhan Mantri Ujjwala Yojana (PMUY); National Green Tribunal.; Environmental Education in India.

References:

1. Barry Field and Martha k Field: Environmental Economics, McGraw Hill International Edition, 2017.
2. Bhattacharya R.N. (Ed) (2001), Environmental Economics: An Indian Perspective, Oxford University Press, New Delhi.
3. Charles Kolstad : Environmental Economics, Oxford University Press, New York, 2000.
4. Hanley Nick, Shogren Jason and White Ben: Introduction to Environmental Economics, Oxford University Press, 2001.
5. Kaltschmitt, Martin, Streicher, Wolfgang, Wiese, Andreas, Renewable Energy: Technology, Economics and Environment, Springer, Germany, 2007.
6. V.S. Ganesamurthy: Environmental Economics in India, New Century Publications, New Delhi, 2009.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVII	CREDIT	MARKS
ECOEIB605	**ECONOMICS OF INSURANCE - II**	**4**	**100**

Course Objectives

The course is designed to provide an understanding of the fundamentals of insurance. Insurance has a profound impact on the society as it manages, diversifies and absorbs the risk of individuals and organizations. Insurance companies as risk management service providers serve as bulwarks for the development of productive activities fuelling demand, facilitating supply and trade. The important role played by the insurance institutions in mobilizing savings and diverting them for capital formation is well known. In recent years, uncertainties experienced in life have been increasing and this in turn has created demand for insurance. With the opening of the insurance sector to private players, the interest in the subject has increased. The paper on Economics of Insurance attempts to provide a fairly comprehensive view of the subject to the undergraduate students in Economics.

Course Outcomes:

At the end of this course students will be able to:

- Identify and define basic terms and concepts of life, health & general insurance
- Assess the role of Insurance Sector regulator
- Understand risk classification, underwriting & premium calculation associated with insurance sector

Module 1: Introduction to Life Insurance (12 lectures)

Meaning and Definition, Features of Life Insurance, Benefits of Life Insurance - Method of risk classification in Life Insurance - Treatment of Sub-standard risk in Life Insurance - Types of life insurance policies -Term insurance plan, Endowment policy - ULIP plan - Retirement plan - Calculation of net Premium - Calculation of single premium for one year term insurance policy - Calculation of single premium for five year term policy - Calculation of single premium for pure endowment insurance policy and calculation of single premium for ordinary endowment policy.

Module 2: Fundamentals of Life, General and Health Insurance (12 lectures)

Functions of Health & General Insurance - Underwriting process and methods: Definition - Objectives and Principles of Underwriting - Life insurance; Group Insurance: Meaning - Importance-Types of Group Insurance schemes.

Module 3: IRDAI & Rural Insurance (12 lectures)

The Insurance Act, 1938 (as amended)-The Insurance Regulatory and Development Authority Act, 1999 (as amended) -The Regulatory Body- IRDAL duties- functions-powers and role- Rural Insurance: Need and potential of rural insurance - IRDAI provisions on obligations of insurers to rural and social sector- Need and significance of Micro Insurance.

Module 4: Information Technology & Marketing in Insurance (12 lectures)

Need for Information technology-Technologies for Insurance (Artificial Intelligence and Machine Learning)- IT application in functional areas - Marketing of Insurance products - Critical success factors for insurance players - Distribution channels - Marketing strategies of insurance players in India.

References:

1. Dr. MJ Mathew (2005), Insurance Principles & Practice, RBSA Publishers.
2. Dr. PK Gupta (2011), Insurance & Risk Management, Himalaya Publishing House.
3. Mahipal Naresh (2017), Insurance Laws, Central Law Publications.
4. Patukale Kshitij (2016), Mediclaim & Health Insurance, Prabhat Prakashan.
5. PK Gupta (2017), Fundamentals of Insurance, Himalaya Publishing House.
6. Zweifel Peter and Roland Eisen (2012), Insurance Economics, Springer Publication.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVII	CREDIT	MARKS
ECOBEC505	BASIC ECONOMETRICS	4	100

Course Objectives

The objective of this course is to impart a basic understanding of econometrics. At the same time, it will enhance the student's ability to apply the theoretical techniques to solve the problems of the real world.

Course Outcomes

By the completion of this course student will be able to do

- Testing of hypothesis and interpret the results in research.
- Regression analysis and interpret the results of the same in any discipline.
- Applications of relevant techniques for empirical problems in any discipline.

Module 1: **Idea of a random variable & Probability Distribution** **(12 lectures)**

Concept of a random variable: Expected values of a random variable - Variance of a random variable – Types of distributions: Bernoulli, Binomial and Poisson, snormal distribution. Conditional probability- Conditional mean and variance – Covariance and Correlation -Central limit theorem (without proof).

Module 2: Elements of Hypothesis Testing **(12 lectures)**

Point and interval estimation - The Z distribution - The Null and Alternate hypotheses and significance testing for mean using Z distribution when population variance is known-The chi-square distribution and testing for sample variance with known population variance - The F distribution and comparing sample variances - The t distribution and hypothesis tests when population variance in unknown.

Module 3: Classical Linear Regression Model: Two Variable Case **(12 lectures)**

Two variable regression model-The concept of the PRF-Classical assumptions of regression - Derivation of the OLS estimators and their variance - Properties of OLS estimators under classical assumptions, Gauss-Markov Theorem (without proof) – Tests of Hypothesis, confidence intervals for OLS estimators - Measures of goodness of fit: R square and its limitations, adjusted R square and its Limitations.

Module 4: Violation of Classical Assumptions and Specification Analysis (12 lectures)

Multi-collinearity and its implications - Auto-correlation: Consequences and Durbin- Watson test- Heteroskedasticity: Consequences and the Goldfeld -Quandt test - Omission of a relevant variable - Inclusion of irrelevant variable.

References:

1. Damodar Gujarati (2011). Econometrics by Example. Palgrave Macmillan.
2. Damodar N., Gujarati (2003). Basic Econometrics. McGraw-Hill.
3. Hatekar N. (2010). Principles of Econometrics: An Introduction. Sage publications.
4. Jeffrey M. Wooldridge (2009). Econometrics, Cengage Learning.
5. Murray R. Spigel (1998). Schaum's Outline of Theory and Problems of Statistics. McGraw- Hill.
6. Stock J. Watson (2003) Introduction to Econometrics. Prentice Hall.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVIII	CREDIT	MARKS
ECOEMA606	ECONOMY OF MAHARASHTRA-II	3	80

Course Objectives

This paper enables the students to get awareness on the infrastructural aspects and policy related issues. The paper also throws light on the regional imbalances within the state.

Course Outcomes

- Provides deep understanding on the infrastructural and imbalances confronting the state.
- Throws light on the skills needed to tackle such issues

Module 1: Infrastructure in the Economy of Maharashtra (12 Lectures)

Importance of infrastructure in economic development -Types of infrastructure: 1. Economic infrastructure; Energy, Transport & Communication - Sources of energy -Power generation - Existing Capacity - Power crises -Development of roads - Rail transport- Water transport- Civil aviation- Irrigation projects - Communication Network 2. Social Infrastructure: Health and education facilities in Maharashtra.

Module 2: Fiscal Policy of Maharashtra (12 Lectures)

State Finance Commission, budget of state Government - Revenue Expenditure - Development and non development expenditure- Capital Expenditure- Development and non development expenditure - Trends in state Government expenditure Share in Central Government tax revenue -Taxes collected by state Government- Sources of non-tax revenue- Capital revenue sources- Trends in state Government revenue

Module 3: Regional Imbalance in Maharashtra State (12 Lectures)

Meaning of regional imbalance -Nature of regional imbalances in Maharashtra - Causes of Regional Imbalance in Maharashtra - Problems Creates by Regional Imbalance in Maharashtra -Policy measures by State Government of Maharashtra for Regional Development.

Module 4: Human Development in Maharashtra (12 Lectures)

Concept and importance - Comparison of HDI with other states in India - Region-wise HDI - Indicators of HDI - District-wise HDI in Maharashtra - Present situation and problems of weaker section in Maharashtra - Schemes of empowerment of weaker section in Maharashtra - Women empowerment in Maharashtra.

References:

1. Government of Maharashtra: Economic Survey of Maharashtra, Various Issues.
2. Jungale Mangala (2008): Maharashtrachi Arthvyavastha (Marathi), Prashant Publications, 17, Stadium Shopping Centre,Opp. State Bank, Jalgaon -age No. 9 to 19.
3. Munagekar Bhalchandra (2003): The Economy of Maharashtra - Changing Structure and Emerging

Issues, Dr. Ambedkar Institute of Social and Economic Change, Mumbai.
4. Pansare Govind (2012) :Maharashtrachi Arthik Pahani — Paryayi Drushtikon (Marathi), Shramik Pratishthan, Red Plug Bldg.,Bindu Chowk,Kolhapur, Page No.159 to 195.
5. Patil J. F. (2010): Suvarna Mahotsavi Maharashtrachi Badalati Arthvyavastha yio)) (Marathi), Abhijit Pratap Pawar, Sakal Papers Ltd., 595, Budhwar Peth, Pune- 411002.
6. World Bank (2002) India: Maharashtra Reorienting Govt. to Facilitate Growth and Reduce Poverty.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVIII	CREDIT	MARKS
ECOHETB606	HISTORY OF ECONOMIC THOUGHT-II	3	80

Course Objectives

This paper aims to provide the information about the biography and contribution of various economic thinkers. This paper is framed with the objective of making students aware of the varying phases of economic thoughts and development of that into economic science.

Course Outcome

- Students will get information about the genesis of Economics and its modern scenario.
- Students get familiarized with the leading Indian economists who significantly contributed to the stream of Indian economic thought.

Module 1: Indian Economic Thought (12 Lectures)

Kautilya on welfare state -Dadabhai Naoroji's Thoughts on Drain Theory- Ranade's Case on Protection - R. C. Dutt on Imperialism - Land Tax and Public Finance - Gopal Ganesh Agarkar.

Module 2: Economic Thought of Mahatma Phule and Gandhi (12 Lectures)

Mahatma Phule's Views on Agriculture - Reasons of Farmer's Poverty - Gandhian Economic Thoughts on Self-Sufficient Village Economy - Dignity of Labour – Trusteeship - and Sarvodaya.

Module 3: Economic Thought of Dr. B.R.Ambedkar, G.K.Gokhale and Dr. Manmohan Singh (12 Lectures)

Dr.Ambedkar's Case for State Socialism - Problem of Rupee - Public Finance – G.K.Gokhale on Development and Welfare - Dr. Manmohan Singh's ' Three Steps' to Stem India's Economic Crisis.

Module 4: Nodel Prize Winners in Economics (12 Lectures)

Dr. Amartya Sen (1998) -Robert. A. Mundell (1999) -Joseph Stiglitz(2001) -Dr. Abhijeet Banarjee (2019)

References:

1. B.R.Nanda Gokhale (1977):- The indian moderates and the British raj, Delhi.
2. Ajit K.Dasgupta,A History of Indian Economic Thought, (1993)Routledge London and New York.
3. Bipin Chandra (ed) (1999) Rande's economic writings, Gyan Publication House, New Delhi.
4. Encyclopaedia of Nobel Laureate, Ed's, (2002) R. Kapila & A. Kapila, Academic Foundation.
5. Gandhi. M. K., (1959), India of my dreams, Navjivan publishing house Ahmadabad.
6. R. P. Mansi, Dadabhai Naoroji, (1960) publication Division, Government of India Delhi.

TYBA ECONOMICS (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO –XVIII	CREDIT	MARKS
ECOIBFC606	INTERNATIONAL BANKING AND FINANCE- II	3	80

Course Objectives

This paper introduced to the fundamentals of international Banking to the students. The recent trend in international banking such as Islamic banking, Crypto currencies and their advantages and disadvantages will be familiarized. Role of International banking in foreign trade finance is incorporated to understand the international finance. In this semester, the students will make an in-depth study of international banking, financing and risk management.

Course Outcomes

- Equip students with fundamentals of International Banking.
- Provides an insight on emergence of Crypto currencies and Types of International Banking.
- Awareness on Foreign trade finance and Letter of Credit (L/C) & its types.
- The course will lead to the project work-based on empirical case studies

Module 1: International Banking –I (12 Lectures)

Introduction to International banking- Reasons for growth of international banking-Recent trends in international banking- Emergence of Crypto currency -Advantages and disadvantages of Cyptocurrencies- Bit coins

Module 2: International Banking II (12 Lectures)

Functions of international banking- Correspondent banking-International payment system - NRI accounts - Foreign Trade Finance - International Merchant banking - Offshore banking - International banking investment- Islamic banking.

Module 3: International Bank Financing (12 Lectures)

Financing Export project- International Remittances-Letter of Credit - L/C -Bank guarantee-International lending operations-Loan syndication-Phases of loan syndication-Types of loan syndication-Role of International Credit Rating agencies.

Module 4: Risk Management **(12 Lectures)**

Risk management and Derivatives- Types of Risks: Transaction risk, Translation risk, Economic risk, Settlement risk - Arbitrage- Hedging-Internal and External hedging- Derivative instruments for Risk Management -Forwards- Futures--Swaps- Options.

References:

1. Cheol S. Eun ET. AL., International Finance (2012), McGraw Hill India.
2. Edition by IIBF, International Banking (2011), pan McMillan.
3. Hull John C, Options, Futures and other derivatives, Pearson Education, 2005.
4. Rajiv Srivastava, International Finance (2014) Oxford University Press, India.
5. S. AshokKumar, Global financial and Indian economy' New Century Publications, New Delhi.
6. V.A. Avadhani, International Finance, (2009), Himalaya Publishing House.

University of Mumbai

No. UG/14 of 2020-21

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities, Science and Technology Faculties is invited to the syllabus uploaded Academic Authority Unit which was accepted by the Academic Council at its meeting held on 26th February, 2015 vide item No. 4.13 and this office circular UG/135 of 2011 13th June, 2011 relating to the to the revised Syllabus as per the (CBSGS) of F.Y.B.A. course Geography Sem. I & II & F.Y.B.Sc. Program in Geography respectively.

They are hereby informed that the recommendations made by the Board of Studies in Geography at its online meeting held on 28th April, 2020 vide Item No.1 and subsequently made by the Board of Deans at its meeting held on 26th June, 2020 vide item No. 11(42) have been accepted by the Academic Council at its meeting held on 23rd July, 2020 vide item No. 4.62 and that in accordance therewith, to the revised syllabus as per the (CBCS) of F.Y.B.A. / F.Y.B.Sc. Sem. I and II in Geography has been brought into force with effect from the academic year 2020 -21 accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
11th November, 2020

(Dr. Vinod Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities, Science and Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.62/23/07/2020

****

No. UG/ 14 -A of 2020-21 MUMBAI-400 032 11th November, 2020

Copy forwarded with Compliments for information to:-

1) The Dean, Faculty of Humanities, , Science and Technology
2) The Chairman, Board of Studies in Geography,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-ordinator, University Computerization Centre,

(Dr. Vinod Patil)
I/c REGISTRAR

Copy to :-

1. **The Director of Board of Student Development.,**
2. **The Deputy Registrar (Eligibility and Migration Section)**
3. **The Director of Students Welfare,**
4. **The Executive Secretary to the to the Vice-Chancellor,**
5. **The Pro-Vice-Chancellor**
6. **The Registrar and**
7. **The Assistant Registrar, Administrative sub-centers, Ratnagiri, Thane & Kalyan, for information.**

1. **The Director of Board of Examinations and Evaluation**
2. **The Finance and Accounts Officers**
3. **Record Section**
4. **Publications Section**
5. **The Deputy Registrar, Enrolment, Eligibility and Migration Section**
6. **The Deputy Registrar (Accounts Section), Vidyanagari**
7. **The Deputy Registrar, Affiliation Section**
8. **The Professor-cum- Director, Institute of Distance and Open Learning Education,**
9. **The Director University Computer Center (IDE Building), Vidyanagari,**
10. **The Deputy Registrar (Special Cell),**
11. **The Deputy Registrar, (PRO)**
12. **The Deputy Registrar, Academic Authorities Unit (1 copies) and**
13. **The Assistant Registrar, Executive Authorities Unit**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. **The Assistant Registrar Constituent Colleges Unit**
2. **BUCTU**
3. **The Deputy Accountant, Unit V**
4. **The In-charge Director, Centralize Computing Facility**
5. **The Receptionist**
6. **The Telephone Operator**
7. **The Secretary MUASA**
8. **The Superintendent, Post-Graduate Section**
9. **The Superintendent, Thesis Section**

for information.

Cover Page

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	F.Y.B.A./F.Y.B.Sc – GEOGRAPHY PAPER-I
2	Eligibility for Admission	
3	Passing Marks	40
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	Sem - I & II
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2020-2021

Date: 23/04/2020 Signature :

Name of BOS Chairman / Dean :Dr. S. A Thakur

AC_23/07/2020
Item No. 4.62

UNIVERSITY OF MUMBAI

Program :F.Y.B.A. /F.Y.B.Sc

Course :Geography Paper-I

Syllabus for Semester-I and II

(Choice Based and Credit System with effect from the Academic year 2020-21)

University of Mumbai

Revised Syllabus w.e.f. Academic Year, 2020-21 (CBSGS)

F.Y.B.A./F.Y.B.Sc. Geography, Semester – I, Paper – I

Subject Title: Human Geography

UNIT-I Human Geography: An Introduction

- Human Geography - Meaning, Definition, Nature, Scope
- Branches of Human Geography
- Different Approaches of Human Geography
- Man Environment relation, Determinism Possibilism , Probabilism

UNIT-II Population

- Trends and Patterns of World Population change
- Demographic Transition Model
- Population Density ,its distributionand its growth
- Concept and Problems of Under-population, over-population and optimum population

UNIT-III Settlement

- Concept of Urban and Rural Settlements
- Types and Pattern of settlement
- Site and Situation
- Functional classification of Urban settlement

UNIT-IV Migration

- Concept and Types of Migration
- Causes of migration – pull and push; Consequences/effects of migration
- Patterns and processes of migration
- Emerging trends of migrations or Issues of legal and illegal international migration Migrant refugee crisis

UNIT-V Practical

- Map - Definition, Components, Type and Importance
- Map scale - Definition, Verbal Scale and Graphical Scale
- **Construction** of Choropleth Maps, Isopleth, Dot and Flow Maps

- Construction of Population Pyramid

Bibliography

Johnson R. J. & Others (1983) : The Dictionary of Human Geography, Blackwell England

Singh, L. R. (2009): “Fundamentals of Human Geography”, ShardaPustakBhavan, Allahabad

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Singh, R. Y. (2002): “Geography of Settlements”, Rawat Publications, Jaipur

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Chandna, R. C. (2016): “Geography of Population: Concepts, Determinants and Patterns”, Kalyani Publishers, Ludhiana Bhende, A. and Kanitkar, T. (2015): “Principles of Population Studies”, Himalaya Publishing House, Mumbai

Koser, K. (2007): “International Migration: A Very Short Introduction”, Oxford University Press, UK

Castles, S., Haas, H., and Miller, M. (2013): “The Age of Migration: International Movements in the Modern World”, Guilford Pr.

Leong, G. C. and Morgan, G. C. (1982): “Human and Economic Geography”, Oxford University Press, Delhi

Knowles, R. and Warding, J. (2012): “Economic and Social Geography”, Rupa and CO., Kolkata Waugh, D. (2009): “The New Wider World”, Oxford University World, Oxford

Mahmood, A. (2008): Statistical Methods in Geographical Studies”, Rajesh Publications, New Delhi

Singh, L. R. (2009): “Fundamentals of Practical Geography”, ShardaPustakBhavna, Allahabad

Mishra, R. P. and Ramesh, A. (2002): “Fundamentals of Cartography”, Concept Publishing Company, New Delhi

University of Mumbai Revised Syllabus w. e. f. Academic year, 2020 - 21 (CBSGS)

F.Y.B.A. / F.Y.B.Sc. Semester - II Geography Paper - I,

Title -GEOGRAPHY OF ENVIRONMENT

UNIT - I: FUNDAMENTALS OF ENVIRONMENTAL GEOGRAPHY

1. Definition, Meaning of environment Environmental Geography: Concepts, Scope and Contents

2. Nature, scope and importance

3. Man's interaction with Environment

4. Relationship of Environmental geography with other sciences

UNIT - II: ECOSYSTEM STRUCTURE AND FUNCTIONS

1: Ecosystem - meaning and definition and its Structure

2: Functions: Energy flow in ecosystem, food chains, food webs, food pyramid

3: Classification of Ecosystem detail study of Desert, Rainforest and fresh water lake ecosystem

4: Biogeochemical Cycles: Hydrological, Carbon and Nitrogen

UNIT - III: CONTEMPORARY ENVIRONMENTAL ISSUES

1: Pollution - Air and Water Pollution - causes, effects

2. Land and Noise Pollution - causes, effects

3: Major environmental issues - global warming, Ozone depletion and acid rain

4: Major Environmental Movements - Save Amazon forest or Green peace Movement, Chipko movement, Save Narmada,

UNIT - IV: NATURAL RESOURCES AND BIODIVERSITY

1: Natural resources - meaning, definitions and importance

2. Types of natural resources:

3. Causes of depletion and methods/measures of natural resources conservation

4: Bio-diversity in India and its conservation

UNIT: V- MAP FILLING AND CONSTRUCTION OF CARTOGRAPH (PRACTICAL)

a) Map Filling - World

b) Interpretation or question answer on thematic maps drawn with techniques - Choropleth Maps, Isopleth, Dot Maps and Flow Maps

Bibliography

- Asolekar S, Gopichandran R. 2005, 'Preventive Environmental Management -an Indianperspective', CEE, Ahmedabad, Foundation Books Pvt Ltd, Daryaganj
- Chambers N., Simons C., Wackernagel M., 2006, 'Sharing Nature's Interest –Ecologicalfootprints as an indicator of sustainability'.
- Cunningham W., Cunningham M., 2003, 'Principles of Environmental Science –Inquiryand Applications', Tata McGraw Hill Publication Company Ltd, New Delhi.
- Doniwal H. K., 'Urban Geography', GNOSIS, Delhi, 2009.
- Dresner S., 2005, 'The principles of sustainability', Earthscan publication Ltd, London.
- Gandotra V., Patel S., 2008, 'Environmental problems and strategies', SerialsPublication, New Delhi
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UNIVERSITY OF MUMBAI

SYLLABUS FOR THIRD YEAR BACHELOR OF ARTS AND

BACHELOR OF SCIENCE

Program: T.Y.B.A. and T.Y. B.Sc.

Course: Geography

Semester - V and VI at the T.Y.B.A. and T.Y. B.Sc.

Paper IV to IX

(Credit Based Semester and Grading System (CBSGS)with effect from the academic year 2018-19)

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester – V, Paper – IV

Subject Title: GEOGRAPHY OF SETTLEMENTS

COURSE CODE: _____ (2018-19), Credit: __04_____

UNIT – I: Introduction of Settlement Geography		**No. of Lectures**
1.1	Settlement geography: definitions, nature and scope	**12**
1.2	Settlement types, their characteristics and differences	
1.3	Factors influencing growth and distribution of settlements	
1.4	Importance of settlement studies in geography	
UNIT – II: Geography of Rural Settlements		**12**
2.1	Origin and growth of settlements - evolution of rural settlements	
2.2	Site and situation of rural settlements	
2.3	Classification of rural settlements on the basis of population and patterns	
2.4	Classification of rural settlements on the basis of spacing and functions	
UNIT – III: Rural Settlements in India		**12**
3.1	Distribution and density of rural settlements in India	
3.2	Structure of house and building materials in India	
3.3	Regional variations in rural settlement patterns in India	
3.4	Morphology of rural settlement in India	
UNIT – IV: Urban Settlements		**12**
4.1	Origin and growth of urban settlements	
4.2	Classification of urban settlements on the basis of culture and functions	
4.3	Hierarchy of urban Settlement: rank size rule and primate city	
4.4	Ashok Dutts's models of South Asian city: port city and bazaar city	
UNIT – V: Urban Settlements in India		**12**
5.1	Urbanisation in India: Trends, patterns and types of towns	
5.2	Morphology of urban settlements in India (With reference to a port and inland city)	
5.3	Urban problems in Indian cities	
5.4	Smart city: Concept, need and implementation in India	

REFERENCES:

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- Jyptirmoy Sen (2007): A Text Book of Social and Cultural Geography," Kalyani Publsiher, New Delhi.

- Knowles, R and Wareing, J. (1996): "Economic and Social Geography", the Made Simple Series, Rupa & Co., Calcutta

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- Noble, A. (1998): "Using Descriptive Models to Understand South Asian Cities", *Education About Asia*, Vol. 3, No. 3, Downloaded from http://aas2.asian-studies.org/EAA/EAA-Archives/3/3/205.pdf

- Siddhartha, K and Mukherjee, S. (2016): "Cities, Urbanisation and Urban Systems (Settlement Geography)", KitabMahal, Allahabad

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- घारपुरे विठ्ठल (१९९९)वस्ती भूगोल, पिंपळापुरे अँड कं.,नागपूर

- सावंत प्रकाश (१९९८) नागरी भूगोल, फडके प्रकाशन, कोल्हापूर
- सवदी ए,बी. (२०१०) नागरी भूगोल, निराली प्रकाशन, पुणे

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
	OR	
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. Geography, Semester – V Paper: V-A
GEOGRAPHY OF MAHARASHTRA

COURSE CODE: _____, Credit: _04_____

Unit-I : Maharashtra: Geographical Setting		**TOTAL LECTURES**
1.1	Location, extent and boundaries	**12**
1.2	Administrative setup and divisions	
1.3	Relief and climate	
1.4	Drainage system	
Unit-II : Natural Resources		**12**
2.1	Soils	
2.2	Natural vegetation	
2.3	Minerals	
2.4	Power resources	
Unit-III : Human Resources		**12**
3.1	Population growth	
3.2	Distribution –urban-rural and population density	
3.3	Structure of population : Age-sex	
3.4	Occupational structure of population	
Unit-IV :Agriculture, Fishing and Livestock Resources		**12**
4.1	Salient features of agriculture	
4.2	Agricultural regions, recent issues and policies	
4.3	Fisheries, recent issues and policies	
4.4	Livestock resources recent issues and policies	
Unit-V: Industries, Trade and Transport		**12**
5.1	Major industrial regions	
5.2	Role of transport in industrial development	
5.3	Industrial issues and policies	
5.4	Trade and transport	

References:

- Jaymala Diddee, S.R. Jog, V.S. Kale Geography of Maharashtra
- Johns: Economic Geography -
- Khullar: Geography of India
- Majid Hussein: Geography of India
- Oxford: Oxford School atlas-
- Savinder Singh Environmental Geography
- Sharma: India's economic and commercial geography
- **प्रा.सवदी**: **महाराष्ट्रभूगोल**
- **देशपांडेएसएस**: **महाराष्ट्राचेअर्थशास्त्र**
- **महाराष्ट्राचाभूगोल - प्रा.सी.डीदेशपांडे**
- **महाराष्ट्र- सवदीआणिकेचे**
- **महाराष्ट्राचाभूगोल - बी.अरूणाचलम**
- **महाराष्ट्र** 2006 - **संतोषदास्ताने**
- **जनगणनाऑटलस – महाराष्ट्रसरकार**
- **महाराष्ट्राचेनकाशे–डॉ.के.आरदिक्षित**
- **महाराष्ट्रातीलजलसंपदा- प्रा. डॉ.एस.व्ही.ढमढेरे**
- **महाराष्ट्रातीलनद्या – श्रीकांततापीकर**
- **महाराष्ट्राचाभूगोल – डॉ.सुरेशफुले**

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
	OR	
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. Geography, Semester – V, Paper : V-B

Subject Title: POPULATION GEOGRAPHY
COURSE CODE: _____, Credit: 04_____

UNIT- I, Introduction to Population Geography		**TOTAL LECTURES**
1.1	Concept, definition, nature, scope, importance	**12**
1.2	Evolution and recent trends	
1.3	Basic sources of population data and their important elements	
1.4	Population geography and other social sciences	
UNIT- II, Population Dynamics		**12**
2.1	Population growth in the world (continent wise and level of development)	
2.2	Population growth in India	
2.3	World : Population density and its determinants	
2.4	Structure of population in developed and developing world (Age and Sex, Rural and Urban)	
UNIT- III, Theories of Population Growth		**12**
3.1	Demographic Transition Model	
3.2	Malthu's Population Theory	
3.3	Leibestein's motivational theory of population growth	
3.4	Theory of optimum population	
UNIT- IV, Migration		**12**
4.1	Definition and Classification of Migration	

4.2	Causes and Consequences of Migration	
4.3	Recent trend of migration in India	
4.4	Issues of infiltration and its impacts in India	
UNIT- V, Contemporary Issues		**12**
5.1	Ageing population	
5.2	Gender issues -declining sex ratio, literacy gap,	
5.3	Poverty and unemployment in India	
5.4	Rapid urbanization in India	

Reference:

- Bhende A. and Kanitkar T.,(2000):*Principles of Population Studies*, Himalaya Publishing House
- ChandnaR.C.andSidhuM.S.,1980:*An Introduction to Population Geography*, Kalyani Publishers
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- Thakur, Patil, Datta, Pednekar, Roy, and Kamble (2016):*Population Geography*, Konkan Geographers Association in India
- Roy. D. (2015) Population Geography, Books &Allied Publication, Kolkata

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or	20 Marks

	Two short answer questions each 10 Marks	
Q. 2	Long answer question on Unit-II	20 Marks
OR		
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
OR		
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
OR		
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
OR		
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. Geography, Semester – V. Paper No: VI

Subject Title: TOOLS AND TECHNIQUES IN GEOGRAPHY FOR SPATIAL ANALYSIS-I (Practical)

COURSE CODE: _____, Credit: __03_____

Unit -I	**Map Projections**	Lectures
		09
	1.1. Basic Concepts – Definition, scale, direction, azimuth, graticule, great circle, true meridian, types of projections, choice of projections	
	1.2. Zenithal Polar Projections – Equal Area, Equidistant	
	1.3. Cylindrical Projections - Equal Area, Equidistant	
	1.4. Conical Projections - One standard parallel, two standard parallel	
Unit-II	**Map Basic**	
	2.1. Basic elements of map and calculation or identification of relief, direction, bearing and distance	09
	2.2. Area calculation with square method and strip method	
	2.3. Demarcation of watershed on toposheet, Tracing of stream network and contours	
Unit-III	**Survey of India Toposheets**	
	3.1. Signs and symbols, marginal information	09
	3.2. Study of physiography, drainage and vegetation (one full toposheet of hilly and plateau region each)	
	3.3. Study of settlements – size, pattern, utilities (one full toposheet of plains and urban region each)	
	3.4. Study of transport network (one full toposheet of plains and urban area each)	
Unit-III	**Preparation of Thematic maps (Manually)**	
	4.1. Preparation of a district thematic maps with actual data- Dot and Pictogram	09
	4.2. Preparation of a district thematic maps with actual data- Choropleth and Isopleth	
	4.3. Preparation of a district thematic maps with actual data- Located bar, located circle and pie chart	
Unit-V	**Use of computers in geographical data representation**	
	5.1. Construction of line graphs & simple and multiple bar graphs	09

	using MS-excel	
	5.2. Construction of divided bar graphs & pie charts using MS-excel	
	5.3. Preparation of datasheet in SPSS	
	5.4. Calculation of central tendency and standard deviation using SPSS	

References -

- Ahirrao ani Karanjkhele – **प्रात्यक्षिक भूगोल**,
- Karlekar Shrikant- **प्रात्यक्षिक भूगोल**, **डायमंड पब्लिकेशन्स**
- KarlekarShrikant- Bhoogol shastratil Sanshodhan Paddhati, **डायमंड पब्लिकेशन्स**
- Monkhouse F.J. - Maps & Diagrams, Methuen and Co., London, 1971 (3rd Edition, Revised).
- NCERT - Textbook for Class-12, Practical Work in Geography Part II
- Peter A. Rogerson - Statistical Methods for Geography, Sege Publishers -2001
- Robinson A.H. - Elements of Cartography, Wiley
- Sarkar Ashis - Practical Geography, Orient Black Swan – 2015
- Sarkar Ashis –Quantitative Geography, Orient Black Swan – 2013
- Singh R.L. & Singh P. B. - Elements of Practical Geography, Kalyani Publishers 2005
- Stoddard Robert – Field techniques and research methods in geography, Geography faculty publication http://digitalcommons.unl.edu/geographyfacpub/26
- Thakur S. A. - **प्रात्यक्षिक भूगोल**, Konkan Geographer's publication (2016)

QUESTION PAPER PATTERN
(SEM - VI)
MARKS: - 100 TIME: 4 HRS

N.B:

1. All questions are compulsory.
2. Figures to the right indicate marks to a sub-question.
3. Use of map stencils and simple calculator is allowed.

Q. 1	Unit-I	16 Marks
Q. 2	Unit–II	16 Marks
Q. 3	Unit–III	16 Marks
Q. 4	Unit–IV	16 Marks
Q. 5	Unit–V	16 Marks
Q. 6	Journal and Viva	20 Marks

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Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester – V, Paper – VII

Subject title: REGIONAL PLANNING AND DEVELOPMENT

COURSE CODE: _____ (2018-19), Credit: 04____

UNIT – I: Understanding Regional Planning		**No. of Lectures**
1.1	Planning: Concept, types and need	**12**
1.2	Regional planning: Concept, nature, relation with Geography	
1.3	Role of surveys and geospatial technology in regional planning	
1.4	Problems associated with regional planning	
UNIT – II: Concept of Region in Planning		**12**
2.1	Region: Concept, types and delineation	
2.2	Planning Regions: Need, characteristics and hierarchy	
2.3	Demarcation of planning regions: Principles, criteria and methods	
2.4	Perroux's Growth Pole Theory and regional planning	
UNIT – III: Understanding Regional Development		**12**
3.1	Development: Concept and indicators	
3.2	Regional disparities in development: Concept and measurements	
3.3	Spatial and Non-Spatial Models of Development with Special Reference to Rostow's Model and Myrdal's Model	
3.4	Strategies for regional development	
UNIT – IV: Regional Planning in India – I		**12**
4.1	Five-Year Plans: Features, achievements and failure	
4.2	Multi-level planning in India	
4.3	Planning regions of India	
4.4	Changing planning mechanism of India: NITI Ayog	
UNIT – V: Regional Planning in India – II		**12**
5.1	Micro level planning in rural area	
5.2	Backward area development programme	
5.3	Urban fringe of Indian cities: Problems and planning	
5.4	Metropolitan Planning: A Case of Mumbai Metropolitan Region	

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- Chandana, R. C. (2016): "Regional Planning and Development", Kalyani Publishers, New Delhi
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- NITI Ayog (2017): "Three Year Action Plan (2017-18 to 2019-20)", NITI Ayog, New Delhi
- Tiwari, R. C. (2016): "Geography of India", Pravalika Publications, Allahabad

Books for further reading:

- Bhargava, G. (2001): "Development of India's Urban, Rural, and Regional Planning in 21st Century: Policy Perspective", Gyan Publishing House, Delhi
- Datt, G. And Mahajan, A. (2016): "Datt and Sundaram's Indian Economy", S. Chand Publishing, New Delhi
- Devi, Laxmi (2000): "Planning Development and Regional Disparities", (ed.) Anmol Publications, New Delhi
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- Knowles, R and Wareing, J. (1996): "Economic and Social Geography", the Made Simple Series, Rupa& Co., Calcutta

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- Sundaram, K. V. (1989): "Regional Planning and Development: Essays on Space, Society, and Development in Honour of Professor R. P. Misra", Heritage Publishers, New Delhi

- Vidyarthi, A. et al (2017): "Understanding India's New Approach to Spatial Planning and Development: A Spatial Shift?", Oxford University Press, New Delhi

- Yojana, Monthly Journal Published in English and Marathi by Government of Maharashtra

IMPORTANT WEBSITES / WEB LINKS:

mmrda.maharashtra.gov.in

niti.gov.in

planningcommission.gov.in

yojana.gov.in

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks	20 Marks

	or Two short answer questions each 10 Marks	
Q. 4	Long answer question on Unit-IV	20 Marks
OR		
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
OR		
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)
T.Y.B.A./T.Y.B.Sc. Geography, Semester – V, Paper – VIII - A

Subject Title: GEOGRAPHY OF RESOURCES

COURSE CODE: _____ (2018-19), Credit: ___04_____

UNIT – I: Introduction to the Resources		TOTAL LECTURES
1.1	Meaning and importance of the natural resources	12
1.2	Factors influencing on resource utilization and related theories	
1.3	Classification of resources	
1.4	Issues with renewable and non-renewable resources	
UNIT – II: Natural resources: over exploitation and conservation measures		12
2.1	Over exploitation and depletion of natural resources	
2.2	Resource consumption pattern in the developed and underdeveloped countries	
2.3	Need and measures for resource conservation	
2.4	Sustainable use of natural resources	
UNIT – III: Natural Resources, Part –I		12
3.1	Distribution of water resources on the Earth	
3.2	Water consumption pattern, water pollution and water conservation	
3.3	Distribution of forest resources in the world	
3.4	Deforestation and forest conservation	
UNIT – IV: Natural Resources Part –II		12
4.1	Soil composition and factor affecting soil formation	
4.2	Soil degradation and its conservation	
4.3	Minerals and their classification	
4.4	Use of energy minerals and their conservation	
UNIT – V: Human Resources		12
5.1	Concept of human resource: skilled and unskilled workers	
5.2	Distribution of population in the world	
5.3	Concept of over, under and optimum population	
5.4	Population Resource regions	

Reference Books:

1. Chandna R.C. (2014): Geography of Population, Kalyani Publishers, Ludhiana, India

2. Gautam Alka (2010) Environmental Geography: Sharda Pustak Bhavan, Allahabad

3. GautamAlka: 2013: Advanced Economic Geography, Sharda Pustak Bhawan, Allahabad, India, Third Edition

4. Gautam Alka: Resource Geography, Sharda Pustak Bhawan, Allahabad, India,

5. Husain Majid, 2003: Resources Geography, Anmol Publications Pvt. Ltd. (2003) ISBN: 9788170418764

6. Khullar D. R. (2014) India: A Comprehensive Geography, Kalyani Publishers, ISBN-13**:** 978-9327246759

7. Mondal P and Dalai (2017) Sustainable Utilization of Natural Resources: CRC Press (2017) ISBN 9781498761833

8. Singh Savinder (2015): Environmental Geography: Prayag Pustak Company, Allahabad

9. Singh Vipul (2012) The Human Footprint on Environment: Issues in India, Macmillan Publishers India Pvt. Ltd, ISBN: 935-059-098-0

10. Verma C.L. (2014): Economic and Resource Geography, Forward Books; 1ST edition (2014) ISBN-10: 9381763534

11. Website: https://www.researchgate.net/publication/280298490_Resource_Geography

12. William A.: Nonfuel Minerals and the World Economy", Vogely, World Resources Institute Book Yale University Press

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks

Q. 3	Long answer question on Unit-III	20 Marks
OR		
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
OR		
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
OR		
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester –V, Paper: VIII-B

Subject Title: GEOGRAPHY OF HEALTH

COURSE CODE: _____, Credit: 04___

Unit I - Introduction to Geography of Health		**TOTAL LECTURES**
1.1	Nature, scope and evolution geography of health	**12**
1.2	Conceptual background and components geography of health	
1.3	Significance and approaches geography of health	
1.4	Relation of geography of health with other branches of social science	
Unit- II -The Pollution Syndrome		**12**
2.1	Air Pollution: Causes, Effects and remedial measures	
2.2	Water Pollution: Causes, Effects and remedial measures	
2.3	Radioactive Pollution: Causes, Effects and remedial measures	
2.4	Plastic Pollution: Causes, Effects and remedial measures	
Unit III - Geography of Diseases		**12**
3.1	Weather-related diseases and climate change and Global health	
3.2	Types of diseases and their regional pattern	
3.3	Case studies of communicable diseases –malaria and HIV – Aids	
3.4	Case studies of non-communicable diseases – cancer and malnutrition	
Unit IV -Health and Environment		**12**
4.1	Linkages of health with environment	
4.2	Relation between development and health	
4.3	Population dynamics, urbanisation, poverty and inequality	
4.4	Migration and related health issues	
Unit V - Health Care Facilities		**12**
5.1	Health care facilities in India	
5.2	Spatial Distribution of health care facilities in Maharashtra	
5.3	Health care policies in India	
5.4	Health Organisations: WHO, UNISEF, Red Cross Society and NGOs	

References

1. Alice E. Marczewski and Michael Kamrin: Toxicology for the Citizen.
2. B. Brockband, J.Cohrsson, and V.T. Covello: The Risk Assessment Manual: A Guide to Understanding and Using Health and Environmental Assessments
3. Marilyn O. Ruiz: Geography of Disease
4. Michael Emch, Elisabeth Dowling Root, and Margaret Carrel: Health and Medical Geography Fourth Edition
5. Rhonda Humbird: AP Environmental Science - Part 1: The Living World

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks

Q. 5	Long answer question on Unit-V	20 Marks
OR		
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester – V, Paper: VIII-C

Subject Title: GEOGRAPHY OF DISASTER MITIGATION and MANAGEMENT

COURSE CODE: _____, Credit: __04_____

UNIT – I , Meaning & Concept of Disaster & Hazard		No. of Lectures
1.1	Concepts of Disaster, Hazard, Vulnerability and Risks	12
1.2	Typology of hazards & Disasters- Natural Disasters & Man-made Disasters	
1.3.	Impacts of Disasters – Socio–economic and political	
1.4.	Need of Disaster Management in India	
UNIT – II, Elements of Disaster Management		
2.1.	Disaster Management : Meaning & Concept	12
2.2.	Role of International Organisations for Disaster Management – UNISDR, INSARAG, Red Cross	
2.3	Role of National Organisations for Disaster Management	
2.4	Role of NGOs & Community in Disaster Management	
UNIT – III, Disaster Management : Methods & Approaches		
3.1	Disaster Management : Historical Perspective	12
3.2	Disaster Management : Methods & Approaches	
3.3	Pre- Disaster Stage of Management	
3.4	Post- Disaster Stage of Management	
UNIT- IV, Natural Disaster and its Management in India		
4.1	Earthquake & Tsunami –Causes, Effects, Management	12

4.2	Flood – Distribution, Causes, Effects , Management	
4.3	Cyclone – Distribution, Causes, Effects , Management	
4.4	Famine – Distribution, Causes, Effects , Management	
UNIT –V, Anthropogenic Disaster and its Management in India		
5.1	Industrial Hazards – Causes, effects and management with reference to Bhopal Gas Tragedy	12
5.2	Terrorism – Causes, effects and management with reference to 26/11 Mumbai attack	
5.3	Wild Fire – Types, Causes, effects and management with reference to Uttarakhand forest fire 2016	
5.4	Accidents - Causes, effects and management with reference to Savitri river bridge collapse accident August 2016	

References:

1. Coppola, D.P. (2011): Introduction to International Disaster Management. Elesvier, Butterworth- Heinemann
2. Dasgupta R. (2007): Disaster Management and Rehabilitation, Mittal Publications. New Delhi
3. Govt. Of India : Disaster Management in India , Ministry of Home Affairs, New Delhi
4. Murthy, D.B.N. (2008) : Disaster Management, Deep & Deep Publications Pvt. Ltd., New Delhi
5. Singh, Savindra and Singh, Jeetendra (2016) : Disaster Management, Pravalika Publications, Allahabad
6. गोडबोले, मराठे: आपत्ती व्यवस्थापन संकल्पना,डायमंड पब्लिकेशन्स, पुणे.
7. पठारे संभाजी, अजय चाकाने: आपत्ती निराकरण, डायमंड पब्लिकेशन्स, पुणे.
8. मोरे जोतीराम, अर्जुन मुसमाडे: आपत्ती व्यवस्थापनाचा भूगोल, डायमंड पब्लिकेशन्स, पुणे.

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
	OR	
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. Geography, Semester – V, Paper – IX
Subject Title : GEOSPATIAL TECHNOLOGY

Course Code: Creadit-0 3

UNIT - I	**Remote Sensing – I**	**9**
1.1	Geospatial Technology: Concept, Components and Importance	
1.2	Remote Sensing: Concept, Process and Geographical Applications	
1.3	Electromagnetic Energy, EMR and EMS - Spectral Reflectance and Spectral Signature or Curve - Platforms, Sensors and Resolution	
1.4	Elements of Visual Image Interpretation - Mapping of Thematic Layers and Visual Image Interpretation of Physical and Manmade Features	
UNIT - II	**Remote Sensing – II**	**9**
2.1	Digital image analysis: landuse and landform classification, 3D view of DEM	
2.2	Aerial Photographs: Concept, Process and Types	
2.3	Interpretation of Aerial Photographs	
2.4	Advanced Remote Sensing Technology - Use of Bhuvan website	
UNIT - III	**Global Positioning System**	
3.1	GPS : Concept, Segments, Applications	
3.2	Types of GPS – GPS Data Accuracy and Errors	
3.3	Factors Affecting GPS Data - Global Navigation System	
3.4	Ground Survey and Demarcation of Point, Line and Polygon Features with GPS Device – Transfer GPS Data to Computer with Softwares like Easy GPS	
UNIT - IV	**Geographic Information System – I**	**9**
4.1	GIS : Concept, Components and Applications - Map Projection and Coordinate System	
4.2	GIS Data Acquisition and Types	
4.3	Importing Image into GIS Software and Geo-referencing	
4.4	Creating Layers by Digitization of Point, Line and Polygon Features	
UNIT V	**Geographic Information System – II**	**9**
5.1	Functions of Database Creation – Input, Editing and Linking	
5.2	Spatial Database Analysis: Overlay, Merge, Query	
5.3	Using Map-Composer for Map Layout and Design	
5.4	Preparation of Thematic Maps	

	Paper – IX : GEOSPATIAL TECHNOLOGY **Question Paper Pattern**	
Q. 1	Unit –I	16
Q. 2	Unit –II	16
Q. 3	Unit –III	16
Q. 4	Unit –IV	16
Q. 5	Unit –V	16
Q. 6	Preparation Thematic Maps by using Geospatial Technology Tools	10
Q. 7	Journal and Viva	10

References:

1. कार्लेकर, श्रीकांत (२००६): भौगोलिक माहिती प्रणाली, डायमंड प्रकाशन, पुणे.
2. कार्लेकर, श्रीकांत (२०१२): दूर संवेदन, डायमंड प्रकाशन, पुणे.
3. Afzal Sharieff and et. al. (Ed.) (2010): An Introduction to Remote Sensing, SARUP Book Publishers Pvt. Limited, New Delhi.
4. Anson, R. W. and Ormeling, F. J., (Ed.) (1993): Basic Cartography for Students and Technicians, Vol.I, International Cartographic Association and Elseiver Applied Science Publishers, London.
5. American Society of Photogrammetry (1983): Manual of Remote Sensing, ASP PalisChurch,V.A.
6. Agrawal, N.K.(2006), Essentials of GPS (Second Edition), Book Selection Centre, Hyderabad
7. Bhatia (2016): Remote Sensing and GIS, Oxford University Press, New Delhi.
8. Bhatia, S. C. (2008): Fundamentals of Remote Sensing, Atlantic Publishers and Distributors (P) Limited, New Delhi.
9. Bhatta Basudeb 2016: Remote Sensing and GIS, Oxford University Press, New Delhi
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11. Bernhardsen, Tor (2002): Geographical Information Systems: An Introduction, Third Edition, John Wiiey& Sons, Inc., New York.
12. Burrough, Peter A and McDonnell, R.A. (1998): Principles of Geographical Information Systems, Oxford University Press, Mumbai.
13. Campbell. J. (1989): Introduction to Remote Sensing, Guilford, New York.
14. Clarke, Keith C. (1998): Getting Started with Geographic Information Systems, Prentice-Hall Series in Geogl. Info. Science, Prentice-Hall, Inc. N.J.
15. Central Board of Secondary Education (New Delhi): Geospatial Technology – Textbook, Class XI and XII

16. Chaisman, N. 1992: Exploring Geographical Information Systems, John Wiley and Sons Inc., New York. Lillesand, T.M. and Kiefer, R. W. 1994: Remote Sensing and Image Interpretation, 3rd edition, John Wiley and Sons, New York.

17. Dickinson, G. C. (1977) Statistical Mapping and the Presentation of Statistics, Edward Arnold Ltd., London.
18. George B and Kolte P. E. (2010): The GIS Book, Cengage Learning India Private Limited, New Delhi.
19. George Joseph (2013): Fundamentals of Remote Sensing, Second Edition, Universities Press (India) Private Limited, Himayatnagar, Hyderabad.
20. Heywood, I.et al (2002): An Introduction to Geological Systems, Pearson Education Limited,
21. New Delhi.
22. Iliffe, J.C (2006), Datums and Map Projections for Remote Sensing, GIS and Surveying, Whittles Publishing, New York.
23. Jonson. R. J. (2003): Remote Sensing of the Environment-An Earth Resources Perspective
24. Kang-Tsang Chang (2010): Introduction to Geographic Information Systems, Tata McGraw Hill Edition, New Delhi.
25. Lillesand and Keifer (2010) Remote Sensing and Image Interpretation, Fourth Edition, Wiley.
26. Pearson Education Series in Geographical Information Science, Keith C. Clarke (Series editor) Pearson Educators Private Limited. (Singapore), New Delhi.

27. Monkhouse, F. J. and H. R. Wilkinson, (1971): Maps and Diagrams, Methuen & Co. Ltd., London.
28. Robinson, A. H. and Others (1995): Elements of Cartography, VI Edition, John Wiley & Sons, New York.
29. Sudhakar S (1993) : Forest Type and Density Mapping in Meghalaya through Digital Image Processing of Indian Remote Sensing Satellite Data, Collaborative project report by Meghalaya State Forest Dept. and RRSSC, Kharagpur.
30. Thomson O and Frank S (2000): Time – Integrative Geographic Information System, Springer, New York.
31. Training Module of Capacity Building Training Programme in Geospatial Technology sponsored by Department of Science and Technology, Government of India in collaboration of Himachal Pradesh University.

32. Tutorials from the - http://dst-iget.in/tutorials

33. bhuvan.nrsc.gov.in/
34. https://www.isro.gov.in
35. *https://www.iirs.gov.in/*

SEMESTER –VI

University of Mumbai

Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester – VI, Paper: IV

Subject Title: ENVIRONMENTAL GEOGRAPHY

COURSE CODE: _____ Credit: 04

UNIT -I	**Introduction to Environmental Geography**		**No. of Lectures**
	1.1	Environmental Geography: Definition, Nature, Scope and Importance	**12**
	1.2	Environment: Meaning, Factors and Types	
	1.3	Approaches to the Study of Man – Environment Relationship	
	1.4	Changing Man - Environment Relationship in Historical Perspective	
UNIT-II	**Ecosystem**		**12**
	2.1	Meaning and Structure of Ecosystem	
	2.2	Ecological Pyramids and Productivity of Ecosystem	
	2.3	Functions of Ecosystem: Food Chain & Web, Energy Transfer, Biogeochemical Cycles	
	2.4	Types of Ecosystems: Aquatic, Terrestrial, and Aqua-Terrestrial Ecosystems	
UNIT-III	**Biodiversity**		**12**
	3.1	Biodiversity: Concept, Types and Distribution	
	3.2	Biodiversity Hotspots: Concept, and Distribution in India with Special Reference Western Ghats	
	3.3	Threat to Biodiversity: Causes	
	3.4	Conservation of Biodiversity and Management of Biological Reserves	
UNIT-IV	**Environmental Challenges in India**		**12**
	4.1	Air pollution and Water Pollution: Cases and Effects	
	4.2	Land and Noise Pollution: Cases and Effects	
	4.3	Environmental Issues Related to High/large Dams	
	4.4	Major environmental Movements in India	
UNIT-V	**Sustainable Development and Environmental Management**		

	5.1	Concepts and Need of Sustainable Development and Environmental Management	**12**
	5.2	Eco-friendly Lifestyle and Need of Environmental Education	
	5.3	Biosphere Reserves and Wildlife Management in India	
	5.4	Environmental Impact Assessment	

Reference book:

- Bharucha, E. (2004): "A Textbook for Environmental Studies", University Grants Commission, New Delhi, Downloaded from https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf

- Cunningham, W, and Cunnigham, M. (2017): "Principles of Environmental Science: Inquiry and Applications", McGraw Hill Education, Delhi

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- Rajagopalan, R. (2016): "Environmental Studies: From Crisis to Core", Oxford University Press, New Delhi

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- Saxena, H. (2017): "Environmental Geography", Rawat Publishers, Jaipur.

- Singh, S. (2017):"Environmental Geography", Prayag Pustak Bhawan, Allahabad

- Parmar and other –"Pryavaran Bhugol" Himalaya Publishing House – Mumbai 2013

- Thakur and other - –"Pryavaran Bhugol" Konkan Geographer's Publication

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
	OR	
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

University of Mumbai
Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)
T.Y.B.A. / T.Y.B.Sc. Geography, Semester – VI
Paper No. – V -A
GEOGRAPHY OF TOURISM and RECREATION

COURSE CODE: _____, Credit: ___04_____

Unit-I -Introduction to Tourism Geography		**TOTAL LECTURES**
1.1	Definition , Nature and Scope	**12**
1.2	Trends of Tourism Development in World	
1.3	Factors of Tourism Development - Geographical components	
1.4	Factors of Tourism Development - Socio-cultural and political	
Unit-II Types & Impact of Tourism		**12**
2.1	Types of Tourism,	
2.2	New Trends in Tourism,	
2.3	Positive impact of Tourism on Environment, Socio-culture and Economy	
2.4	Negative Impact of Tourism on Environment, Socio-culture and Economy	
Unit-III - Infrastructure of Tourism and Ancillary Services		**12**
3.1	Accommodation	
3.2	Transportation	
3.3	Travel Agencies and Tour Guide	
3.4	Documentation and Ticketing	
Unit-IV - Planning of Tourism and Organisation		**12**
4.1	Need of Planning and Elements of Planning	
4.2	Levels of Planning	
4.3	Tourism Organizations - IATA, PATA, I.T.D.C. and M.T.D.C	
4.4	Incredible India campaign	
Unit-V Potential Tourism Sectors in Maharashtra and Tourism Policy		**12**
5.1	Coastal tourism in Maharashtra	
5.2	Adventure tourism in Sahyadri	
5.3	Heritage tourism in Maharashtra	
5.4	Tourism Policy of Maharashtra State	

- **Reference Books**

1. Anand M.M., Tourism & Hotel Industry in India, Prentice Hall of India, New Delhi,

2. Bhatia A.K., Tourism Development, Sterling Publishers Pvt. Ltd. New Delhi.
3. Bhatia A.K., International Tourism, Sterling Publishers Pvt. Ltd. New Delhi
4. Bhatia A.K.,- Tourism in India , Sterling Publishers Pvt. Ltd. New Delhi
5. Geetanjali, Tourism Geography, Centrum press publishers, New Delhi
6. T.K. Sathyadev, P. Manjunath- Tourism Planning, Pacific books Internationals, Delhi.
7. Thakur S A (2016) : पर्यटन भूगोल, Konkan Geographer's Publication
8. घारपुरे ,विठ्ठल) २०१०:(पर्यटन भूगोल ,पिंपळापुरेआणिप्रकाशक ,नागपूर.

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks or	20 Marks

	Two short answer questions each 10 Marks	
Q. 5	Long answer question on Unit-V	20 Marks
OR		
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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UNIVERSITY OF MUMBAI

Syllabus for T.Y.B.A. Geography

(CBSGS with effect from Academic Year 2018-19)

SEMESTER-VI, Paper No. V -B

Subject Title: POLITICAL GEOGRAPHY

COURSE CODE: _____ (2018-19), Credit: __04_____

Units	Name of the Unit/Subunit	No of Lectures
Unit – 1. : Introduction of Political Geography		**(12)**
1.1	Definition, Nature and Scope of Political Geography	
1.2	Historical Development and Recent Trends in Political Geography	
1.3	Concept of state and factors	
1.4	Concept of Nation, Nation-State, and Nationalism	
Unit – 2. : Approaches and Concepts in Political Geography		**(12)**
2.1	Hartshorne's Fundamental Approach: Centrifugal and Centripetal Forces	
2.2	Unified Field Theory	
2.3	Core Areas: Concept, Characteristics, and Distribution	
2.4	Capitals: Concept, Functions, and Classification	
Unit – 3. : Frontiers and Boundaries		**(12)**
3.1	Frontiers and Boundaries: Concepts and Distinction	
3.2	Functions of Frontiers and Boundaries	
3.3	Classification of Boundaries	
3.4	India's Boundaries: Characteristics and Disputes	
Unit – 4. : Geostrategic and Geopolitical Views		**(12)**

4.1	Mackinder's Heartland and Spykman's Rimland Model	
4.2	Geopolitics of Indian Ocean	
4.3	Geopolitics of International Water Disputes with Special Reference to India	
4.4	Changing Political Map of India	
Unit – 5. : Electoral Geography		**(12)**
5.1	Concept, Nature and Approaches of Electoral Geography	
5.2	Geography of Voting: Geographical Factors Affecting Elections	
5.3	Spatial Organisation of Electoral Areas and Geography of Representation	
5.4	Challenges to Election System in India	

Reference Books:

- Adhikari, S. (2015): "Political Geography", Rawat Publications, Jaipur
- Adhikari, S. (2011): "Political Geography of India: A Contemporary Perspective", Sharda Pustak Bhawan, Allahabad
- Dikshit R. (1985): "Political Geography: A Contemporary Perspective" McGraw, Hill, New Delhi
- Dikshit, S. (1993): "Electoral Geography of India", Vishwavidyalaya Prakashan, Varanasi
- Dwivedi, R. (1996): "Political Geography" Chaitanya Prakshan, Allahabad
- Jones, M. (2004): "An Introduction to Political Geography: Space, Place and Politics", Routledge
- Muir, R. (1995): "Modern Political Geography", McMillan, London
- Painter, J. and Jeffrey, A. (2009): "Political Geography", Sage Publications
- Sinha, M. (2007): "Electoral Geography of India", Adhyayan Publications and Distributers, New Delhi
- घारपुरेविठ्ठल (२०१३)राजकीयभूगोल, पिंपळापुरेअँडकं.,नागपूर
- लाटकर, आपटे (१९९८)राजकीयभूगोल, विद्याप्रकाशन, नागपूर
- पाटीलविलास (२०१५)राजकीयभूगोल, प्रशांतपब्लिकेशन, जळगाव

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
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Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
	OR	
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester –VI, Paper No: VI

Subject Title: TOOLS AND TECHNIQUES IN GEOGRAPHY FOR SPATIAL ANALYSIS-II (Practical)

COURSE CODE: _____, Credit: __03_

Unit -I	**Nature of data and central tendency**	Lectures
	1.1. Meaning and types of data, variable, observation, observation value, simple, discrete data and continuous data	09
	1.2. Frequency Distribution, Histogram, Frequency Polygon and Ogive	
	1.3. Measures of Central Tendency- mean, median and mode	
Unit -II	**Dispersion and Deviation**	
	2.1.Mean Deviation and Quartile Deviation	09
	2.2. Standard Deviation	
	2.3. Moving Averages (3 years and 5 years)	
Unit -III	**Correlation, Regression & Hypothesis Testing**	
	3.1. Calculation of correlation coefficient - Pearson's and Spearman's methods	09
	3.2. Regression analysis	
	3.3. Chi square test	
Unit-IV	**Sampling**	
	4.1. Sample and sample design in geography	09
	4.2. Point sampling –Systematic and random	
	4.3. Line sampling – Systematic and random	
	4.4. Area sampling – Systematic and random	
Unit-V	**Field work in Geography of any one place/village**	09
	5.1. C**ollection of physiographic data** – Field observation, field sketching, collection of soil and rock samples, identification of vegetation etc.	
	5.2. C**ollection of socio-economic data** – interviews, questionnaire survey, visit to local governing office, NGO's etc.	
	5.3. C**ollection of geospatial data** – toposheets, aerial photographs, Google images/maps, Bhuvan images etc.	
	To prepare a geographical report **of a place** with the help of an available 5.1, 5.2, and 5.3 aspects	

References -

- Ahirrao ani Karanjkhele – **प्रात्यक्षिक भूगोल**,
- Karlekar Shrikant- **प्रात्यक्षिक भूगोल**, **डायमंड पब्लिकेशन्स**
- Karlekar Shrikant- Bhoogol shastratil Sanshodhan Paddhati, **डायमंड पब्लिकेशन्स**
- Monkhouse F.J. - Maps & Diagrams, Methuen and Co., London, 1971 (3rd Edition, Revised).
- NCERT - Textbook for Class-12, Practical Work in Geography Part II
- Peter A. Rogerson - Statistical Methods for Geography, Sege Publishers -2001
- Robinson A.H. - Elements of Cartography, Wiley
- Sarkar Ashis - Practical Geography, Orient Black Swan – 2015
- Sarkar Ashis –Quantitative Geography, Orient Black Swan – 2013
- Singh R.L. & Singh P. B. - Elements of Practical Geography, Kalyani Publishers 2005
- Stoddard Robert – Field techniques and research methods in geography, Geography faculty publication http://digitalcommons.unl.edu/geographyfacpub/26

QUESTION PAPER PATTERN
(SEM - VI)
MARKS: - 100 TIME: 4 HRS

N.B:

4. All questions are compulsory.
5. Figures to the right indicate marks to a sub-question.
6. Use of map stencils and simple calculator is allowed.

Q. 1	Unit-I	16 Marks
Q. 2	Unit–II	16 Marks
Q. 3	Unit–III	16 Marks
Q. 4	Unit–IV	16 Marks
Q. 5	Unit–V	16 Marks
Q. 6	Journal and Viva	20 Marks

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Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester – VI, Paper – VII

Subject Title: ECONOMIC GEOGRAPHY

COURSE CODE: _____ (2018-19), Credit: __04_____

Units	Name of the Unit/Subunit	No of Lectures
Unit – 1. : Introduction of Economic Geography		**(12)**
1.1	Definition, Nature, Scope and Branches of Economic Geography	
1.2	Approaches of Economic Geography and Relation with other social sciences	
1.3	Concept and Operation of Economy	
1.4	Resources: Concept, Classification and Importance in Economy	
Unit – 2. : Economic Activities		**(12)**
2.1	Economic Activities: Type and Characteristics	
2.2	Factors Affecting Economic Activities	
2.3	Agriculture and Lumbering: Types and Distribution	
2.4	Fishing and Animal Husbandry: Types and Distribution	
Unit – 3. : Minerals and Industries		**(12)**
3.1	Minerals: Importance, Characteristics and Distribution of Iron Ore, Manganese, Coal and Mineral Oil	
3.2	Factors Affecting Industrial Locations	
3.3	Weber's Industrial Location Theory	
3.4	Major Industrial Regions of the World	
Unit – 4. : Transport and International Trade		**(12)**
4.1	Transportation: Importance and influencing factors	
4.2	Major Transport Patterns in the World	
4.3	Patterns of International Trade: Composition and Direction	
4.4	Major International Trade Organisations: WTO, OPEC, SAARC, G-20 and BRICS	
Unit – 5 : Economic Development of India		**(12)**
5.1	Levels of Economic Development in India	
5.2	Globalisation and its impact on Indian economy	
5.3	Special Economic Zones: Concept and issues in India	
5.4	Environment and Economic Development and related issues	

Reference Books:

1. Datt, G. And Mahajan, A. (2016): “Datt and Sundaram’s Indian Economy”, S. Chand Publishing, New Delhi
2. Drezee J and Sen A.: “Indian Economic Development and Social Opportunity”, Oxford University Press, London
3. Gautam, A. (2010): “Advanced Economic Geography”, ShardaPustakBhawan, Allahabad
4. Hartshorne T. & Alexander J.W.: “Economic Geography”, Prentice New Delhi
5. Hodder, B. and Lee, R. (2008):“Economic Geography”, Rawat Publishers, Jaipur
6. Khanna K.K., Gupta V. K., (1987): “Economic and Commercial Geography”, Sultan Chand and Com.
7. Memoria, C. B. : “Economic and Commercial Geography of India”
8. Saxena, H. (2016): “Economic Geography”, Rawat Publishers, Jaipur
9. Singh, J. and Dhillon, S.: “Agricultural Geography”, Tata McGraw hill Publication Company Ltd., New Delhi.
10. Vaidya B.C. (1998): “Readings in Transportation Geography”, Devika Publications, New Delhi.
11. Vaidya B.C. (2003): “Geography of Transport Development”, Concept Publication, New Delhi.
12. Weber Alfred (1957): “Theory of Location of Industry”Chicago Press
13. अहिरराव, धापटे, पाटील, शिंदे (१९९७): आर्थिक भूगोल, निराली प्रकाशन, पुणे
14. एस. ए. ठाकूर, आर. बी. पाटील, पेडणेकर, धुरी(२०१२) : आर्थिक भूगोल, कोकण जोग्रफर्स असोसिएशन
15. खतीब (२००७): आर्थिक भूगोल, मेहता पब्लिशिंग हाउस, कोल्हापूर
16. फुले, शिंदे, पवार, अडसूळ, पाटील (१९९८): आर्थिक भूगोल, सप्रेमप्रकाशन, कोल्हापूर
17. विठ्ठल घारपुरे (२०१३): आर्थिक भूगोल, पिंपळापुरे अंड पब्लिशर्स, नागपूर.
18. शिंदे, केंगारे, माने-देशमुख (१९९९): आर्थिक भूगोल, फडके प्रकाशन, कोल्हापूर
19. सवदी, कोळेकर (२०१०): अभिनव भूगोल : , निराली प्रकाशन, पुणे

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
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Q. 4	Long answer question on Unit-IV	20 Marks
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	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
	OR	
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

University of Mumbai

Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A./T.Y.B.Sc. Geography, Semester –VI, Paper: VIII – A

Subject Title: BIOGEOGRAPHY

COURSE CODE: _____, Credit: __04_____

Unit-I: Introduction to Biogeography		**TOTAL LECTURES**
1.1	Biogeography-Concept, definition, nature and scope	**12**
1.2.	Historical development and branches of Biogeography	
1.3.	Approaches in Biogeography	
1.4.	Importance of Biogeographic studies	
Unit-II: Ecosystem and Biosphere		**12**
2.1.	Ecosystem: Concept, meaning and types	
2.2.	Components of ecosystem and ecosystem productivity	
2.3.	Biosphere: Concept, meaning and components	
2.4.	Biogeographic processes	
Unit -III: Plant Community		**12**
3.1.	Concept of plant community and classification of plants	
3.2.	Biotic succession and climax vegetation	
3.3.	Major plant formation and biomes- Tropical	
3.4.	Major plant formation and biomes- Temperate	
Unit –IV: Marine Biogeography		**12**
4.1.	Marine Biogeography meaning and concept	
4.2.	Types of ocean habitats	
4.3.	Biogeography of estuaries	
4.4.	Island biogeography	
Unit-V: Biodiversity		**12**
5.1.	Meaning and types of Biodiversity	
5.2.	Importance of Biodiversity	
5.3.	Causes of Biodiversity loss	
5.4	Biodiversity conservation	

References:

- Flannery, T. 2015. The Eternal Frontier: An Ecological History of North America and Its Peoples. Grove/Atlantic, Inc.
- Gavin, D. G. 2012. Biogeography. Pages 77â€“89 in J. P. Stoltman, editor. 21st Century Geography: A Reference Handbook. SAGE Publications, Thousand Oaks, CA.
- Jackson, S. T. 2004. Quaternary biogeography: Linking biotic responses to environmental variability across timescales. Pages 47â€“65 in M. V. Lomolino and L. R. Heaney, editors. Frontiers of Biogeography: New Directions in the Geography of Nature. Sinauer, Sunderland, MA.
- Lomolino, M. V., B. R. Riddle, J. H. Brown, and R. J. Whittaker. 2010. Biogeography. Fourth Edition. Sinauer Associates, Sunderland, MA.
- MacDonald, G. M. 2003. Biogeography: Space, Time and Life. Wiley, New York.
- McCarthy, D. 2011. Here Be Dragons: How the study of animal and plant distributions revolutionized our views of life and Earth. OUP Oxford.
- Molles, M. C. 1999. Ecology: Concepts and Applications. WCB/McGraw-Hill.
- Perry, D. A., R. Oren, and S. C. Hart. 2013. Forest Ecosystems. JHU Press.

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
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Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks	20 Marks

	or Two short answer questions each 10 Marks	
Q. 4	Long answer question on Unit-IV	20 Marks
OR		
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
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	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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University of Mumbai

Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester – VI, Paper – VIII-B:

Subject Title: SOCIAL GEOGRAPHY

COURSE CODE: _____ (2018-19), Credit: __04_____

UNIT – I: Introduction to Social Geography		**TOTAL LECTURES**
1.1	Social Geography: Definitions, Nature, Scope and importance	**12**
1.2	Branches and Approaches in Social Geography	
1.3	Concept of Social Space and Socio-cultural Regions	
1.4	Globalisation: The Process of Social and Spatial Change	
UNIT – II: Elements of Social Geography -World		**12**
2.1	Race: Concept and Basis of Classification and distribution	
2.2	Religion: Characteristics, Distribution and Spread of Major Religions in the World	
2.3	Language: Characteristics and Distribution of Major Linguistic Families in the World	
2.4	Tribes: Concept, Characteristics and Patterns of Distribution of Major Tribes in the World	

UNIT – III: : Elements of Social Geography –India		**12**
3.1	Race: Major races and its distribution in India	
3.2	Religion: Major Religions and its distribution and its distribution in India	
3.3	Language: Major Linguistic Families in India	
3.4	Tribes: Distribution of Scheduled Tribes in India	
UNIT - IV: Social Geography of City		**12**
4.1	Social groups – identification and distribution	
4.2	Residential segregation	
4.3	Functional segregation	
4.4	Social issues in the city	
UNIT – V: Contemporary Issues in India		**12**
5.1	Religion related social issues	
5.2	Language related social issues	
5.3	Patterns of gender issues in India	
5.4	Socio-economic problems of indigenous communities in India	

REFERENCES:

- Ahmad, A. (1999): "Social Geography", Rawat Publications, Jaipur
- Bannerjee-Guha, S. (2004): "Space, Society and Geography", Rawat Publications, Jaipur
- CMS (2010): "India Corruption Study 2010: Is the Scenario Changing?", CMS Research House, New Delhi, Downloaded from http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan047870.pdf
- Desai, M. (2007): "Women and the Built Environment", Zuban Publications, Delhi.
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- Jyptirmoy Sen (2007): A Text Book of Social and Cultural Geography," Kalyani Publsiher, New Delhi.
- Karmarkar, D. (2012): "Fishy Spaces: Globalisation and Livelihood of Indigenous Fishermen – A Case of Mumbai", LAP LAMBERT Academic Publishing, Germany
- Knowles, R and Wareing, J. (1996): "Economic and Social Geography", the Made Simple Series, Rupa& Co., Calcutta

- Krishnaraj, M. (2012): "The Women's Movement in India: A Hundred Year History", Sage Publications, New Delhi

- Leong, Goh-Cheng and Morgan, G. (1994): "Human and Economic Geography", Oxford University Press, Oxford

- Puniyani, R. (2018): "Communalism: India's Struggle for Democracy and Pluralism",

- Raju, S. (2011): "Gendered Geographies: Space and Place in South Asia", Oxford University Press, New Delhi.

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- Singh, B. N.: "Human Geography", PrayagPustakBhavan, Allahabad

- Singh, L. R. (2009): "Fundamentals of Human Geography", ShardaPustakBhawan, Allahabad

- Sukhtankar, S. and Vaishnav, M. (2015): "Corruption in India: Bridging Research Evidence and Policy Options", An Independent Paper downloaded from https://www.dartmouth.edu/~sandip/Sukhtankar-Vaishnav-Corruption-IPF_Full.pdf

- Warburton, J. (2013): "Corruption as Social Process", in P. Larmour and N. Wolanin (eds), *Corruption and Anti-Corruption*", ANU E Press, Downloaded from http://press-files.anu.edu.au/downloads/press/p228301/pdf/ch13.pdf

- www.nptel.ac.in/courses/109103022/40

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
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Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks	20 Marks

	or Two short answer questions each 10 Marks	
Q. 3	Long answer question on Unit-III	20 Marks
OR		
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
OR		
	Long answer question on unit –IV for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 5	Long answer question on Unit-V	20 Marks
OR		
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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University of Mumbai

Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)

T.Y.B.A. / T.Y.B.Sc. Geography, Semester – VI,Paper: VIII-C

Subject Title: GEOGRAPHY OF TRANSPORT

COURSE CODE: _____, Credit: _04_____

Unit-I : Introduction to Transport Geography		**TOTAL LECTURES**
1.1	Concept and Definition of Geography of Transport	**12**
1.2	Nature and Scope Geography of Transport	
1.3	Definition of Distance and its types, Factors affecting on Transportation	
1.4	Significance of the study of Geography of Transport	

Unit-II – Transport net work system		**12**
2.1	Transport net work system – structure and properties	
2.2	Application of graph theory measures	
2.3	Location of routes and efficiency of network	
2.4	Conflicting aspects of decision making	
Unit-III : Evolution of Modes of Transport		**12**
3.1	Evolution of transport network and their environment	
3.2	Phases of growth and development of different modes of transport	
3.3	Factors influencing comparative cost structures and locational responses	
3.4	Global patterns of land, water and air transports	
Unit-IV : Theoretical Framework of Transport		**12**
4.1	Connectivity and its Measurement	
4.2	Accessibility and its Measurement	
4.3	Taffe's model	
4.4	Gravity model	
Unit-V: Transportation Issues in India		**12**
5.1	Issues associated with roadways transport network	
5.2	Issues associated with railways transport network	
5.3	Issues associated with water transport development	
5.4	Issues associated with air transport development	

REFERENCES:

1. Chorley R.J. & Haggett P. (1967): Models in Geography Methuen & Co. London.
2. Hagget, F and Chorley, R.J. Network Analysis', Edward Arnold, London, 1968.
3. Hay, A.: Transport Economy, MacMillan, London, 1973.
4. Hoyle, B.S.(ed.): Transport and Development, MacMillan, London, 1973.
5. Hurst, M.E.(ed.) (1974): Transportation Geography, McGraw-Hill.
6. Raza, M. and Agrawal Y.P. : Transport Geography of India, Concept. New Delhi, 1985.

7. Robinson H &Bamford C.G. : Geography of Transport Macdonald & Evans., London 1978.
8. Saxena, H. M. (2010): Transport Geography, Rawat Publications, Jaipur
9. Taffe, E.J. & Gauthier (Jr.) H.L.: Geography of Transportation, Prentice-Hall, Englewood Cliffs, N.J., 1973.
10. Ullman E.L.: American Commodity Flow University of Washington Press 1957.
11. White H.P. and Senior, M.L. Transport Geography, Longman, London, 1983.
12. घारपुरे, विठ्ठल (२०१०): भारताचाभूगोल, पिंपळापुरेआणिप्रकाशक, नागपूर.
13. मगर, जयकुमार (२००८): भारताचाभूगोल, विद्याप्रकाशननागपूर.

QUESTION PAPER PATTERN:

Time: 3 hours		**Marks; 100**
N.B. 1. All questions are compulsory and carry equal marks. 2. Use of Map Stencils is permitted. 3. Draw sketches and diagrams wherever necessary.		
Q. 1	Long answer question on Unit-I	20 Marks
	OR	
	Long answer question on unit –I for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 2	Long answer question on Unit-II	20 Marks
	OR	
	Long answer question on unit –II for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 3	Long answer question on Unit-III	20 Marks
	OR	
	Long answer question on unit –III for 20 Marks or Two short answer questions each 10 Marks	20 Marks
Q. 4	Long answer question on Unit-IV	20 Marks
	OR	
	Long answer question on unit –IV for 20 Marks	20 Marks

	or Two short answer questions each 10 Marks	
Q. 5	Long answer question on Unit-V	20 Marks
OR		
	Long answer question on unit –V for 20 Marks or Two short answer questions each 10 Marks	20 Marks

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	University of Mumbai **Revised Syllabus w.e.f. Academic Year, 2018-19 (CBSGS)** **T.Y.B.A. / T.Y.B.Sc. Geography, Semester – VI, Paper – IX :** **PROJECT REPORT** **Course Code: Credits: 03**	

J.S.M.College, Alibag-Raigad

Academic Planning for The Year 2021-22

- **Department: Chemistry**
- **Class: S.Y.B.Sc.**
- **Semester : III and IV**
- **Subject: Chemistry**

Month: June 2021

Week	PAPER	unit	Topic	Teacher	L /P
1'st	I		----------		
	III		----------		
	Practical Batch 1 to 5		----------		
2'nd	I		----------		
	III		----------		
	Practical Batch 1 to 5		----------		
3'rd	I	I	Introduction of Physical Chemistry	Dr. J.S.Patil	3
	II III	I I	Introduction of Chemical Kinetics Introduction of Analytical Chem	Dr. S.S.Patil	1 1
	II	III	Introduction of Carbonyl Compounds	Smt. V.S.Patil	2
	III	II	Introduction of Analytical Chemistry	Dr. J.S. Patil	2
	Practical Batch 1		Introduction of Chemistry practical of Physical Chemistry	Dr. J.S.Patil	3

	Practical Batch 2		Introduction of Organic Chemistry	Dr. J.S.Patil	3
	Practical Batch 3		Introduction of Chemistry practical of Physical Chemistry	Dr. S.S.Patil	3
	Practical Batch 4		Introduction of Organic Chemistry	Dr. S.S.Patil	3
4'th	I	I	Physical Chemistry Chemical Thermodynamics Free energy and Helmholtz free energy and variation of Gibbs free energy with pressure	Dr. J.S.Patil	3
	II III	I I	Types of Complex reactions Language of Analytical Chemistry	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2
	III	II	Titrimetric Methods Terms involved in titrimetric methods	Dr. J.S.Patil	2
	Practical Batch 1	I	To verify Ostwald's dilution law Calculations	Dr. J.S.Patil	3
	Practical Batch 2	I	To verify Ostwald's dilution law Calculations	Dr. J.S.Patil	3
	Practical Batch 3	I	To verify Ostwald's dilution law Calculations	Dr. S.S.Patil	3
	Practical Batch 4	I	To verify Ostwald's dilution law Calculations	Dr. S.S.Patil	3
5'th	I	I	Chemical thermodynamics Gibbs Helmholtz equation	Dr. J.S.Patil	2
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2
	III		----------		
	Practical Batch 1	I	To determine dissociation constant of weak acid Conductometrically (Expt. and calculations)	Dr. J.S.Patil	2
	Practical Batch 2	I	Conductometry	Dr. J.S. Patil	
	Practical Batch 3	I	Conductometry	Dr. S.S.Patil	2

	Practical Batch 4	I	Conductometry	Dr. S.S.Patil	

Month: July 2021

Week	**PAPER**	**unit**	**Topic**	**Teacher**	**L /T**
1'st	I	I	Thermodynamics of open system: Partial molal properties and problems solved	Dr. J.S. Patil	1
	III	II	The conditions suitable for Titrimetry	Dr. J.S.Patil	2
	II III	I I	Thermal Chain reactions Purpose of chemical Analysis	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2
	Practical Batch 1	II	1. Preparation of Cyclohexanone Oxime from Cyclohexanone	Dr. J.S.Patil	3

			2. Estimation of hardness of water		
	Practical Batch 2	I	To determine dissociation constant of weak acid conductometrically (Expt. and calculations)	Dr. J.S.Patil	3
	Practical Batch 3	I	1. Sparingly soluble salt conductometry 2. CST of phenol water system	Dr. S.S.Patil	3
	Practical Batch 4	I	1. Sparingly soluble salt conductometry 2. CST of phenol water system	Dr. S.S.Patil	3
2'nd	I	I	Gibbs Duhem Equation (Solved Problems), Concept of fugacity and Activity, Van't Hoff reaction isotherm and Isochore	Dr. J.S.Patil	2
	II III	I I	Effect of temperature Proximate partial trace analysis	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2
	III	II	Types of Titrimetry	Dr. J.S.Patil	2
	Practical Batch 1	III	Gravimetric Estimation of Nickel (Drying, Weighing and calculation)	Dr. J.S.Patil	3
	Practical Batch 2	II	1. Preparation of Cyclohexanone Oxime from Cyclohexanone 2. Estimation of hardness of water	Dr. J.S.Patil	3
	Practical Batch 3		1. Purity of substance 2. Copper Sulphate EDTA	Dr. S.S.Patil	3
	Practical Batch 4		1. Purity of substance 2. Copper Sulphate EDTA	Dr. S.S.Patil	3
			Assignments	Dr. J.S.Patil	1
3'rd	I	I	Electrochemistry	Dr. J.S.Patil	3
	II III	I I	Theories of reaction rate Complete analysis	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2

	III	III	Tools of Titrimetry	Dr. J.S.Patil	2
	Practical Batch 1		Journal checking and Revision	Dr. J.S.Patil	3
	Practical Batch 2	III	Gravimetric Estimation of Nickel (Drying, Weighing and calculation)	Dr. J.S.Patil	3
	Practical Batch 3		1. Cyclohexanone oxime Prep. 2. Total hardness	Dr. S.S.Patil	3
	Practical Batch 4		1. Cyclohexanone oxime Prep. 2. Total hardness	Dr. S.S.Patil	3
4'th	I	I	Electrochemistry	Dr. J.S.Patil	3
	II III	I I	Numericals Classical and non- classical methods of analysis	Dr. S.S.Patil	1 1
	II	II	Carbonyl Compounds	Smt. V.S.Patil	2
	III	II	Intrumentation of Absorption Spectroscopy	Dr. J.S.Patil	2
	Practical Batch 1	I	Colorometric determination of Copper ions Graph and Calculations)	Dr. J.S.Patil	3
	Practical Batch 2		Journal checking and Revision	Dr. J.S.Patil	3
	Practical Batch 3		1. Tribromoaniline from aniline 2. Bromination of phenol	Dr. S.S.Patil	3
	Practical Batch 4		1. Tribromoaniline from aniline 2. Bromination of phenol	Dr. S.S.Patil	3
5'th	I	I	Organic Chemistry (Alkyl halide)	Dr. J.S.Patil	3
	II III	I I	Comparison of two theories Terms involving in sampling	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2
	III	II	Block diagram for single beam colorimeter	Dr. J.S.Patil	2
	Practical 1	I	----------	Dr.J.S.Patil	3

	Practical Batch 2		1. PH Metry 2. Estimation of Copper Ions	Dr. S.S.Patil	3
	Practical Batch 3		1. PH Metry 2. Estimation of Copper Ions	Dr. S.S.Patil	3
	Practical Batch 4	I	Colorometric determination of Copper ions (Graph and Calculations)	Dr. J.S.Patil	2

Month: August 2021

Week	**PAPER**	**unit**	**Topic**	**Teacher**	**L /T**
1'st	I	III	Organic Chemistry (Aryl Halide)	Dr. J.S. Patil	1
	II III	I I	Thermodynamics of ideal Solutions Types of sampling	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2

	III		-------		
	Practical Batch 1	II	Preparation of Glucosazone from dextrose or fructose	Dr. J.S.Patil	1
	Practical Batch 2		Estimation of Aspirin and Ni - DMG Gravimetry	J.S. Patil	3
	Practical Batch 3		Estimation of Aspirin and Ni - DMG Gravimetry	Dr. S.S.Patil	3
	Practical Batch 4		Estimation of Aspirin and Ni - DMG Gravimetry	Dr. S.S.Patil	3
2'nd	I	III	Organic Chemistry (Organomagnesium and Organolithium)	Dr. J.S.Patil	3
	II III	I I	Theory of activated complex Sampling Techniques	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2
	III	II	Beer's Lambert's Law and Problems solved	Dr. J.S.Patil	2
	Practical Batch 1	I II	1. To determine the Critical solution temperature 2. Preparation f Tribromoaniline from Aniline	Dr. J.S.Patil	3
	Practical Batch 2	I II	3. To determine the Critical solution temperature 4. Preparation of Tribromoaniline from Aniline	Dr. J.S.Patil	3
	Practical Batch 3		Determination of dissociation constant and Chemical Kinetics	Dr. S.S.Patil	3
	Practical Batch 4		Determination of dissociation constant and Chemical Kinetics	Dr. S.S.Patil	3
			Assignments	Dr. J.S.Patil	
3'rd	I	III	Organic Chemistry (Alcohols, Phenols and Epoxides)	Dr. J.S.Patil	3
	II III	I I	Rault's Law and its Deviation Errors in analysis	Dr. S.S.Patil	1 1
	II	III	Carbonyl Compounds	Smt. V.S.Patil	2

	III		----------		
	Practical Batch 1		Semimicro qualitative analysis 1 mixture	J.S. Patil	
	Practical Batch 2		----------		
	Practical Batch 3		Semimicro qualitative analysis 2 mixtures	Dr. S.S.Patil	3
	Practical Batch 4		Semimicro qualitative analysis 2 mixtures	Dr. S.S.Patil	3
4th	I	III	Organic Chemistry (Alcohols, Phenols and Epoxides)	Dr. J.S. Patil	1
	II III	I I	Vapour pressure composition and temperature Types of Errors	Dr. S.S.Patil	1 1
	II	II	P-block elements	Smt. V. S.Patil	2
	III	II	Photometric Titration	Dr. J.S.Patil	3
	Practical Batch 1	I	1. To investigate the reaction between $K_2S_2O_8$ and KI Prep.	Dr. J.S.Patil	2
	Practical Batch 2	I II	1. To determine the energy activation of acid catalysed hydrolysis of methyl acetate Preparation of m-dinitrobenzene from nitrobenzene	Dr. J.S.Patil	3
	Practical Batch 3		2. Semi microqualitative Analysis 2 Mixtures	Dr. S.S.Patil	3
	Practical Batch 4		3. Semi microqualitative Analysis 2 Mixtures	Dr. S.S.Patil	3
			4. Assignments	Dr. J.S.Patil	1

Month : September. 2021

Week	**PAPER**	**unit**	**Topic**	**Teacher**	**L /T**
1st	I	III	Organic Chemistry (Alcohols, Phenols and Epoxides)	Dr. J.S.Patil	3

	II III	I I	Composition Curve for ideal and non ideal Solution Classification of Errors	Dr. S.S.Patil	1 1
	II	II	P-block elements	Smt. V. S.Patil	2
			Ganapati Vacation		
			Ganapati Vacation		
			Ganapati Vacation		
2'nd			Ganapati Vacation		
			Ganapati Vacation		
			Ganapati Vacation		
	III	III	Instrumental Methods I Basic concept	Dr. J.S.Patil	3
	Practical Batch 1	II	Identification of Cations 3 mixtures	Dr. J.S.Patil	3
	Practical Batch 2		Energy of activation and calculations and graph	Dr. S.S.Patil	3
	Practical Batch 3		Energy of activation and calculations and graph	Dr. S.S.Patil	3
	Practical Batch 4	II	Identification of Cations 3 mixtures	Dr. J.S.Patil	3
3'rd	I	II	Chemical Bonding	Dr. J.S.Patil	3
	II III	I I	Partial Miscibility of liquids Precision and accuracy	Dr. S.S.Patil	1 1
	II	II	P-block elements	Smt. V. S.Patil	2
	III	III	Instrumental Methods I	Dr. J.S.Patil	3
	Practical Batch 1	II	Identification of Cations 3 mixtures	Dr. J.S.Patil	3
	Practical Batch 2	II	Identification of Cations 3 mixtures	Dr. J.S.Patil	3

	Practical Batch 3		Analytical Tools	Dr. S.S.Patil	3
	Practical Batch 4		Analytical Tools	Dr. S.S.Patil	3
4'th	I	I	Chemical Bonding	Dr. J.S.Patil	3
	II III	I I	Critical solution temperature Correction for determine errors	Dr. S.S.Patil	1 1
	II	II	P-block elements	Smt. V. S.Patil	2
	III	III	Instrumental Methods I	Dr. J.S.Patil	3
	Practical Batch 1	I	1. Solubility of sparingly soluble salts 2. Purification of Salts	Dr. J.S.Patil	3
	Practical Batch 2	I	1. Solubility of sparingly soluble salts 2. Purification of Salts	Dr. J.S.Patil	3
	Practical Batch 3		Iodoform from acetone and P-bromoacetanilide from acetanilide	Dr. S.S.Patil	3
	Practical Batch 4		Iodoform from acetone and P-bromoacetanilide from acetanilide	Dr. S.S.Patil	3
5'th	I	I	Chemical Bonding	Dr. J.S.Patil	2
	II III	I I	Phenol water and other system Numericals	Dr. S.S.Patil	1 1
	II	II	P-block elements	Smt. V. S.Patil	2
	III		--------		
	Practical 1	I	1. Estimation of Aspirin 2. Gravimetric estimation of Barium	Dr. J.S.Patil	3
	Practical Batch 2		Revision	J.S.Patil	3
	Practical Batch 3		m-DNB from nitrobenzene and Acetanilide from aniline	Dr. S.S.Patil	3
	Practical Batch 4		m-DNB from nitrobenzene and Acetanilide from aniline	Dr. S.S.Patil	3

Month: October 2021

Week	PAPER	unit	Topic	Teacher	L /T
1'st	I	I	Chemical Bonding	Dr. J.S. Patil	3
	II III	I I	Numericals Numericals	Dr. S.S.Patil	1 1
	II	II	P-block elements	Smt. V. S.Patil	2
	III	III	Instrumental Methods I	Dr. J.S.Patil	3
	Practical Batch 1		----------		
	Practical Batch 2	III	1. Estimation of Aspirin 2. Gravimetric estimation of Barium	Dr. J.S.Patil	3
	Practical Batch 3		Revision	Dr. S.S.Patil	3
	Practical Batch 4		Revision	Dr. S.S.Patil	3
2'nd	I	I	Chemical Bonding	Dr. J.S.Patil	3
	II III	I I	Steam distillation, solvent extraction Revision	Dr. S.S.Patil	1 1
	II	II	P-block elements	Smt. V. S.Patil	2
	III	III	Instrumental Methods I	Dr. J.S.Patil	3
	Practical Batch 1	III	1. To determine the energy activation of acid catalysed hydrolysis of methyl acetate Prep. Of m-dinitrobenzene from nitrobenzene	Dr. J.S.Patil	3
	Practical Batch 2	III	Analytical Tools	Dr. J.S.Patil	3
	Practical Batch 3		Journal checking and certification	Dr. S.S.Patil	3
	Practical Batch 4		Journal checking and certification	Dr. S.S.Patil	3

3'rd	I		Problems Solved and practice of Chemical Reactions	Dr. J.S.Patil	3
			Examinations		
			Theory and Practical Examinations		
			Theory and Practical Examinations		
			Theory and Practical Examinations		
			Theory and Practical Examinations		
4'th	I	I	Theory Practical Examinations		
	III		Theory and Practical Examinations		
	Practical Batch 1 to 5	I	Theory and Practical Examinations		
5'th	I	I	Theory and Practical Examinations		
	III		Theory and Practical Examinations		
	Practical batches1 to 5	I	Theory Examinations		

Month : November 2021

Week	**PAPER**	**unit**	**Topic**	**Teacher**	**L /T**
1st			Diwali Vacation		
			Diwali Vacation		
			Diwali Vacation		
2nd			Diwali Vacation		
			Diwali Vacation		
			Diwali Vacation		

			Diwali Vacation		
3'rd	I		Syllabus of Electrochemistry II	Dr. J.S. Patil	3
	II III	I III	Syllabus First law of crystallography Nature of indeterminant errors	Dr. S.S.Patil	1 1
	II	III	Introduction Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2
	III		Syllabus Instrumental Methods 2	Dr. J.S.Patil	2
4'th	Practical Batch 1		Introduction of Organic spotting 1	Dr. J.S.Patil	2
	Practical Batch 2		Instrumental Analysis	Dr. J.S.Patil	3
	Practical Batch 3		Introduction of Organic spotting 1	Dr. S.S.Patil	3
	Practical Batch 4		Instrumental Analysis	Dr. S.S.Patil	3
			Assignment	Dr. J.S.Patil	1
5'th	I		Introduction of Electrochemistry II	Dr. J.S. Patil	3
	II III	I III	Laws of crystallography Nature of determinant errors	Dr. S.S.Patil	1 1
	II	III	Reactions of Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2
	III		Types of Instrumental Methods 2	Dr. J.S.Patil	2
	Practical Batch 1		Instruments involved in Experiments, nature of graphs and calculations	Dr. J.S.Patil	2
	Practical Batch 2		Instruments involved in Experiments, nature of graphs and calculations	Dr. J.S.Patil	3
	Practical Batch 3		Instruments involved in Experiments, nature of graphs and calculations	Dr. S.S.Patil	3
	Practical Batch 4		Instruments involved in Experiments, nature of graphs and calculations	Dr. S.S.Patil	3

			Assignment	Dr. J.S.Patil	1

Month :December 2021

Week	PAPER	unit	Topic	Teacher	L /T
1'st	I		Electrochemistry II	Dr. J.S. Patil	3
	II III	I III	First law of crystallography Nature of indeterminant errors	Dr. S.S.Patil	1 1
	II	III	Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2
	III		Instrumental Methods 2	Dr. J.S.Patil	2
	Practical Batch 1		1. Standard free energy change 2. Organic spotting 1	Dr. J.S.Patil	2
	Practical Batch 2		1. To determine the amount of HCl by potentiometrically 2. Organic spotting 2	Dr. J.S.Patil	3
	Practical Batch 3		Daniel cell, Titration of strong acid Vs Strong base	Dr. S.S.Patil	3
	Practical Batch 4		Daniel cell, Titration of strong acid Vs Strong base	Dr. S.S.Patil	3
			Assignment	Dr. J.S.Patil	1
2'nd	I		Electrochemistry II	Dr. J.S.Patil	3
	III		Instrumental Methods 2	Dr. J.S.Patil	2
	II III	I III	Characteristics of FCC and BCC cubes Measures of centralising tendencies	Dr. S.S.Patil	1 1
	II	III	Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2

	Practical Batch 1		1. Compare the strength of HCl and H_2SO_4 using Methyl Acetate 2. Organic spotting 3	Dr. J.S.Patil	3
	Practical Batch 2		1. Compare the strength of HCl and H_2SO_4 using Methyl Acetate 2. Organic spotting 4	Dr. J.S.Patil	3
	Practical Batch 3		Fe- Potassium dichromate potentiometrically and inorganic prep.	Dr. S.S.Patil	3
	Practical Batch 4		Fe- Potassium dichromate potentiometrically and inorganic prep.	Dr. S.S.Patil	3
3'rd	I		Electrochemistry II	Dr. J.S.Patil	3
	III		Instrumental Methods 2	Dr. J.S.Patil	2
	II III	I III	Use of X-rays in crystal structures Distribution of Random errors	Dr. S.S.Patil	1 1
	II	III	Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2
	Practical Batch 1		1. Inorganic Preparation of Ni-DMG 2. Organic spotting 5	Dr. J.S.Patil	3
	Practical Batch 2		1. Inorganic Preparation of Ni-DMG 2. Organic spotting 6	Dr. J.S.Patil	3
	Practical Batch 3		Inorganic prep.2 and Barium Gravimetry	Dr. S.S.Patil	3
	Practical Batch 4		Inorganic prep.2 and Barium Gravimetry	Dr. S.S.Patil	3
4'th	I	I	Electrochemistry II	Dr. J.S.Patil	3
	III		Instrumental Methods 2	Dr. J.S.Patil	2
	II III	I III	Bragg's equation Guassian distribution curve	Dr. S.S.Patil	1 1
	II	III	Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2

	Practical Batch 1	I	1. Inorganic Preparation 2. Organic Spotting 7	Dr. J.S.Patil	3
	Practical Batch 2		----------		
	Practical Batch 3		Chemical Kinetics	Dr. S.S. Patil	3
	Practical Batch 4		Chemical Kinetics	Dr. S.S. Patil	3
5'th	I	I	Christmas Vacation		
	III		Christmas Vacation		
	Practical 1	I	Christmas Vacation		
	Practical2		Christmas Vacation		

Month: January 2022

Week	**PAPER**	**unit**	**Topic**	**Teacher**	**L /T**
1'st	I		Problems solved	Dr. J.S. Patil	3
	III		Instrumental methods II introduction	J.S. Patil	2
	II III	I III	Determination of Avagadro's number Population standard deviation	Dr. S.S. Patil	1 1
	II	III	Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2
	Practical Batch 3		Organic spotting 3 compounds	Dr. S.S.Patil	3
	Practical Batch 4		Organic spotting 3 compounds	Dr. S.S.Patil	3
2'nd	I		Phase Equilibria	Dr. J.S.Patil	3
	III		Instrumental methods II introduction	J.S. Patil	2
	II III	I III	Types of Catalysis Student T test, Range	Dr. S.S. Patil	1 1

	III		Instrumental Methods II	Dr. J.S.Patil	2
	Practical Batch 1		1. Inorganic Preparation of Ni-Thiosulphate 2. Organic spotting 9	Dr. J.S.Patil	3
	Practical Batch 2		1. Inorganic Preparation of Ni-Thiosulphate 2. Organic spotting 9	Dr. J.S.Patil	3
	Practical Batch 3		Organic spotting 3 compounds	Dr. S.S.Patil	3
	Practical Batch 4		Organic spotting 3 compounds	Dr. S.S.Patil	3
			Assignment	Dr. J.S.Patil	1
3'rd	I		Phase Equilibria	Dr. J.S.Patil	3
	III		Instrumental Methods II	Dr. J.S.Patil	2
	II III	I III	Catalyst poisoning and deactivation Criteria of rejection of doubtful results	Dr. S.S. Patil	1 1
	II	III	Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2
	Practical Batch 1		1. Inorganic Preparation of Sodium Hexanitrocobaltate 2. Organic spotting 10	Dr. J.S.Patil	3
	Practical Batch 2		1. Inorganic Preparation of Sodium Hexanitrocobaltate 2. Organic spotting 10	Dr. J.S.Patil	3
	Practical Batch 3		Organic spotting 3 compounds	Dr. S.S.Patil	3
	Practical Batch 4		Organic spotting 3 compounds	Dr. S.S.Patil	3
4'th	I	I	Carboxylic acids and their derivatives	Dr. J.S.Patil	3
	II III	I III	Mechanism and kinetics of reaction Q test	Dr. S.S. Patil	1 1

	II	III	Nitrogen containing compounds and heterocyclic comp.	Smt. V.S. Patil	2
	III		Instrumental Methods II	Dr. J.S.Patil	2
	Practical Batch 1	I	Journal checking	Dr. J.S.Patil	3
	Practical Batch 2		Journal checking	Dr. J.S.Patil	3
	Practical Batch 3		Inorganic preparation 3 and conductometric titration	Dr. S.S.Patil	3
	Practical Batch 4		Inorganic preparation 3 and conductometric titration	Dr. S.S.Patil	3
	III		Instrumental Methods II	Dr. J.S.Patil	2
	Practical Batch 1	I	1. Inorganic preparation of Calcium 2. Journal checking	Dr. J.S.Patil	2
	Practical Batch 2		1. Inorganic preparation of Calcium And Journal checking	Dr. S.S.Patil	3
	Practical Batch 3		1. Inorganic preparation of Calcium and Journal checking	Dr. S.S.Patil	3
	Practical Batch 4		1. Inorganic preparation of Calcium and Journal checking	Dr. J.S.Patil	3

Month: February 2022

Week	PAPER	unit	Topic	Teacher	L /T
1'st	I		Carboxylic acids and their derivatives	Dr. J.S. Patil	3
	III		Methods of separation	Dr. J.S.Patil	2
	II III	I III	Enzyme catalysed reaction Test of significance	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	Practical Batch 1		1. Analytical tools 2. Revision	Dr. J.S.Patil	3
	Practical Batch 2		1. Analytical tools 2. Revision	Dr. J.S.Patil	2
	Practical Batch 3		1. Paper Chromatography and Organic spotting 10	Dr. S.S.Patil	3
	Practical Batch 4		1. Paper Chromatography and Organic spotting 10	Dr. S.S.Patil	3
			Assignment	Dr. J.S.Patil	1
2'nd	I		Sulphonic Acids	Dr. J.S.Patil	3
	II III	I III	Effect of particle Size Null hypothesis	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	III		Methods of separation	Dr. J.S.Patil	2
	Practical Batch 1		2. Paper Chromatography 3. Organic spotting 10	Dr. J.S.Patil	3
	Practical Batch 2		1. Paper Chromatography 2. Organic spotting 10	Dr. J.S.Patil	3
	Practical Batch 3		Revision	Dr. S.S.Patil	3
	Practical Batch 4		Revision	Dr. S.S.Patil	3

3'rd	I		Sulphonic Acids	Dr. J.S.Patil	3
	III		Methods of separation	Dr. J.S.Patil	2
	II III	I III	Nanoparticles as a catalyst Graphical representation of data	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	Practical Batch 1		1. Solvent Extraction 2. Calculations	Dr. J.S.Patil	3
	Practical Batch 2		1. Solvent Extraction 2. Calculations	Dr. J.S.Patil	2
	Practical Batch 3		3. Solvent Extraction Calculations	Dr. S.S.Patil	3
	Practical Batch 4		3. Solvent Extraction Calculations	Dr. S.S.Patil	3
4'th	I	I	Revision on topic Carboxylic acid and sulphonic acids	Dr. J.S.Patil	3
	III		Problems solved	Dr. J.S.Patil	3
	II III	I III	Numericals Line passing through origin	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	Practical Batch 1	I	Potentiometry, graph and calculations	Dr. J.S.Patil	3
	Practical Batch 2		Potentiometry, graph and calculations	Dr. J.S.Patil	3
	Practical Batch 3		Potentiometry, graph and calculations	Dr. S.S.Patil	3
	Practical Batch 4		Potentiometry, graph and calculations	Dr. S.S.Patil	3
5'th	I	I	----------		
	III		----------		
	Practical 1	I	----------		

	Practical 2		----------		

Month: March 2022

Week	PAPER	unit	Topic	Teacher	L /T
1'st	I		Comparative Chemistry of Transition metals	Dr. J.S. Patil	3
	III		Methods of Separation	Dr. J.S.Patil	2
	II III	I III	Numericals Line not passing through origin	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	Practical Batch 1		Journal Checking and Revision	Dr. J.S.Patil	3
	Practical Batch 2		Journal Checking and Revision	Dr. J.S.Patil	3
	Practical Batch 3		Analytical tools	Dr. S.S.Patil	3
	Practical Batch 4		Analytical tools	Dr. S.S.Patil	3
2'nd	I		Comparative Chemistry of Transition metals	Dr. J.S.Patil	3
	II III	I III	Assignment Method of least squares	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	III		Methods of Separation	Dr. J.S.Patil	2
	Practical Batch 1		Revision	Dr. J.S.Patil	3
	Practical Batch 2		Revision	Dr. J.S.Patil	2
	Practical Batch 3		Revision	Dr. S.S.Patil	3
	Practical Batch 4		Revision	Dr. S.S.Patil	3

3'rd	I		Comparative Chemistry of Transition metals	Dr. J.S.Patil	3
	III		Methods of Separation	Dr. J.S.Patil	2
	II III	I III	Revision Numericals	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
			Assignment	Dr. J.S.Patil	1
	Practical Batch 1		Practical Eaminations	Dr. J.S.Patil	3
	Practical Batch 2		Practical Eaminations	Dr. J.S.Patil	3
	Practical Batch 3		Practical Eaminations	Dr. S.S.Patil	3
	Practical Batch 4		Practical Eaminations	Dr. S.S.Patil	3
4'th	I	I	Co-ordination compounds	Dr. J.S.Patil	3
	III		Methods of separation	Dr. J.S.Patil	2
	II III	I III	Revision Assignment	Dr. S.S. Patil	1 1
	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	Practical Batch 1	I	Practical Eaminations		
	Practical Batch 2		Practical Eaminations		
	Practical Batch 3		Practical Eaminations		
	Practical Batch 4		Practical Eaminations		
	Practical Batch 5		Practical Eaminations		
5'th	I	I	Co-ordination compounds	Dr. J.S.Patil	2

	II	II	Ions in Aqueous Median	Smt. V.S. Patil	2
	III		----------		
	Practical 1	I	----------		
	Practical2		----------		

Month: April 2022

Week	**PAPER**	**unit**	**Topic**	**Teacher**	**L /T**
1'st	I		Theory Examinations		
	III		Theory Examinations		
			Theory Examinations		
			Theory Examinations		
	Practical Batch 1		Theory Examinations		
	Practical Batch 2		Theory Examinations		
2'nd	I		Theory Examinations		
	III		Theory Examinations		
			Theory Examinations		
			Theory Examinations		
	Practical Batch 1		Theory Examinations		
	Practical Batch 2		Theory Examinations		
3'rd	I		Theory Examinations		

	III		Theory Examinations		
	Practical Batch 1		Theory Examinations		
	Practical Batch 2		Practical Examination		
4'th	I	I	Theory Examination		
	III		Theory Examination		
	Practical Batch 1	I	Practical Examination		
	Practical Batch 2		Practical Examination		
5'th	I	I	Theory Examination		
	III		Theory Examination		
	Practical 1	I	Practical Examination		
	Practical 2		Practical Examination		

University of Mumbai

No. AAMS(UG)/104 of 2021-22

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

They are hereby informed that the recommendations made by the Board of Studies in Chemistry at its online meeting held on 8th June, 2021 vide Item No. 1 and subsequently passed by the Board of Deans at its online meeting held on 11th June, 2021 vide item No. 6.34 (R) have been accepted by the Academic Council at its meeting held on 29th June, 2021 vide item No. 6.34 (R) and that in accordance therewith, Approval for revised syllabi of T.Y.B.Sc. (Sem – V & VI) in order to include Case study component at T.Y.B.Sc. in Sem – VI in place of applied component practicals of 2 credits in Chemistry, has been brought into force with effect from the academic year 2021-22 accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
8th October, 2021

(Dr. B.N.Gaikwad)
I/c REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

A.C/6.34 (R) 29/06/2021

****

No. AAMS(UG)/104 -A of 2021-22 MUMBAI-400 032 8th October, 2021

Copy forwarded with Compliments for information to:-

1) The Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Chemistry,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-ordinator, University Computerization Centre,

(Dr. B.N.Gaikwad)
I/c REGISTRAR

Copy to :-

1. **The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
2. **The Deputy Registrar, College Affiliations & Development Department (CAD),**
3. **The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
4. **The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
5. **The Deputy Registrar, Executive Authorities Section (EA),**
6. **The Deputy Registrar, PRO, Fort, (Publication Section),**
7. **The Deputy Registrar, (Special Cell),**
8. **The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
9. **The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. **P.A to Hon'ble Vice-Chancellor,**
2. **P.A Pro-Vice-Chancellor,**
3. **P.A to Registrar,**
4. **All Deans of all Faculties,**
5. **P.A to Finance & Account Officers, (F.& A.O),**
6. **P.A to Director, Board of Examinations and Evaluation,**
7. **P.A to Director, Innovation, Incubation and Linkages,**
8. **P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
9. **The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
10. **The Director of Board of Student Development,**
11. **The Director, Department of Students Walfare (DSD),**
12. **All Deputy Registrar, Examination House,**
13. **The Deputy Registrars, Finance & Accounts Section,**
14. **The Assistant Registrar, Administrative sub-Campus Thane,**
15. **The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
16. **The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
17. **The Assistant Registrar, Constituent Colleges Unit,**
18. **BUCTU,**
19. **The Receptionist,**
20. **The Telephone Operator,**
21. **The Secretary MUASA**

for information.

AC - 29/6/2021
Item No. - 6.34 (R)

University of Mumbai

T. Y. B. Sc. Chemistry

Applied Component

Drugs and Dyes Practicals

SEMESTER V

COURSE CODE: USACDD5P1 **CREDITS: 02**

Estimations:

1. Estimation of Ibuprofen from the commercial tablet (back titration method)
2.Estimation of Acid neutralizing capacity of a drug
3. Estimation of Tincture iodine from commercial sample

Preparations:
4. Preparation of Aspirin from salicylic acid.
5. Preparation of Fluorescein
6. O-Methylation of β-naphthol
7. Separation of components of natural pigments by paper chromatography (eg: chlorophylls)
8. TLC of a mixture of dyes (safranine-T, Indigo carmine, methylene blue)

University of Mumbai

T. Y. B. Sc. Chemistry

Applied Component

PETROCHEMICALS

SEMESTER V

COURSE CODE: USACPET5P1 CREDITS: 02

Applied Experiments:

1. Determination of Specific gravity and viscosity of Oil
2. To check the quality of Petrol
3. To check the quality of Diesel

Experiments:

4. Determination of acid number of an oil.
5. Determination of acidity and alkalinity of given hydrocarbon
6. Estimation of Formaldehyde from given formalin sample

Preparations:

7. Benzoylation of β-naphthol
8. Phthalic anhydride to phthalimide
9. Cinnamic acid to dibromocinnamic acid

University of Mumbai

T. Y. B. Sc. Chemistry

Applied Component

Heavy and Fine Chemicals

SEMESTER V

COURSE CODE: USACHFC5P1 **CREDITS: 02**

Preparation: (Micro scale)

1. Double salt (Ferric alum)
2. Copper sulphate pentahydrate.
3. Green synthesis of benzillic acid from benzil

Estimations:

4. Determination of the amount of phosphoric acid from a given sample using 1-naphtholphthalein and phenolphthalein indicator. (Students to prepare succinic acid solution for standardization of NaOH).
5. Determination of the amount of magnesium hydroxide in a commercial sample of milk of magnesia.
6. Estimation of tincture iodine from commercial sample.
7. Estimation of methyl salicylate. (Back titration method)

University of Mumbai
T. Y. B. Sc. Chemistry

The Regional Case-Study Project
COURSE CODE: USACDD6P2/ USACPET6P2/ USACHFC6P2
CREDITS: 02
SEMESTER VI

Introduction:

As per the guidelines from UGC, HEIs are expected to introduce a compulsory course to provide community engagement to all undergraduate students so that their appreciation of social realities is holistic, respectful and inspiring. Such course will enable students to learn about rural/urban challenges and develop understanding of social wisdom and life-style in a respectful manner.

Objectives:

- To develop an appreciation of rural/urban culture, life style and wisdom amongst students.
- To understand a real life situation about a problem.
- To apply classroom knowledge of Chemistry courses to field realities and thereby improve quality of learning.
- To interact with key stakeholders such as government officials, people representatives, common people etc.
- To communicate key findings of the study to stakeholders.

Learning Outcomes:

After completing course, students will be able to

- Gain an understanding of rural/urban life, culture and social realities
- Gain an understanding real-life problems
- Develop a sense of empathy and bonds of mutuality with local community
- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio-economic improvement

Credits: 2 credits, 30 hours

Course Contents:

Part-I Theory of case study:

- Introduction to case study
- What is a case study?
- Types of case studies
- Planning a Case Study
- Researching a Case Study
- Strengths and Weaknesses of Case Studies
- Writing a Case Study
- References

Part II Case study Project (Field work)

Typical Key Areas for field-based project activities:

- **Environmental Problems:** For exampleestimation of PAH from soil/sewage samples, estimation of water pollution in nearby locality, estimation of the micro plastics in Soil in the nearby locality, study of solid and liquid waste generation in a ward/city/village etc.
- **Analysis of food Material**: For exampleidentification and estimation of food adulterants, estimation of selenium content in bread available in the local market etc.
- **Soil, Water, material analysis**: For example, examination and analysis water quality in nearby locality, study of materials and dyes used in a local industry, conduct soil health test (for analysis of Pb, N, P, K, S, C, moisture content, pH and micronutrient contents such as Cu, Zn, Mn, Fe) etc.
- **Study of government development programs**: For example effects of Swachh Bharat Abhiyan on the quality of soil and water, to prepare a village sanitation plan, Energy use and fuel efficiency surveys etc.
- **Agriculture:** For example,Organise orientation programmes for farmers regarding organic cultivation, rational use of irrigation and fertilizers and promotion of traditional species of crops and plants etc.

(Above activities represent some of the possible activities that can be undertaken by students. However, depending upon local needs students can select and undertake relevant case-study projects. It is recommended that a practical batch of 20 students can undertake minimum 5-6 case-study projects i.e. one case-study project can be undertaken by group of maximum four students)

Case-Study Project Evaluation:

Project Report:

After successful completion of a case-study project, the student group will prepare a consolidated report covering title, Rational and gap analysis, objectives, hypothesis, project design and methodology, preliminary work/survey, expected out-come, benefits to society (Project outcome), SWOC analysis and important references etc.

Project presentation (by students Group):

The students group will present the case study project at the time of practical examination.

Evaluation scheme:

Evaluation of student based on Part I	20 Marks
Identification of problem, Rational, Problem statement and expected benefits	10 Marks
Case-study design and methodology, Data management and interpretation, , clarity, coherence and appropriateness of case study design, Organisation and logical flow of ideas and materials	30 Marks
Presentation skills, role, responsibilities involvement of group members, learning mechanism in group, clear, concise and thoughtful responses to questions, team work	30 Marks
Major findings and outcome reported, Stakeholders feedback	10 Marks

Suggested Readings:

1. Abramson, P.R. (1992). A Case for Case Studies: An Immigrant's Journal. Newbury Park: Sage.
2. Bassey, M. (1999). Case Study Research in Educational Settings. Buckingham: Open University.
3. Campbell, D.T. & Stanley, J.C. (1966) Experimental and Quasi-experimental Designs for Research. Chicago: Rand McNally.
4. Kazdin, A. E. (1982). Single-case Research Designs: Methods for Clinical and Applied Settings. New York: Oxford Press.
5. Zaidah Zainal, Case study as a research method, *JurnalKemanusiaan bil.9, (2007)*
6. WALTER ISARD, Methods of Regional Analysis: An Introduction to Regional Science, THE M. I. T. PRESS, Cambridge, Massachusetts, (1960).

UNIVERSITY OF MUMBAI
No. UG/ 69 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Sc. degree course , **vide** this office Circular No. UG/131 of 2011, dated 13th June, 2011 and the Principals of affiliated Colleges in Science are hereby informed that the recommendation made by Board Studies in Physics at its meeting held on 24th May, 2016 has been accepted by the Academic Council meeting held on 24th June, 2016 **vide** item No. 4.50 and that in accordance therewith, the revised syllabus as per the Credit Based Semester and Grading System for F.Y. B.Sc. Physics (Sem.I & II), which are available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

(Dr.M.A.Khan)
REGISTRAR

MUMBAI – 400 032
21st September, 2016

To,

The Principals of the affiliated Colleges in Science.

A.C/4.50/24.06.2016

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No. UG/69-A of 2016 MUMBAI-400 032 21st September, 2016

Copy forwarded with Compliments for information to:-

1) The Deans, faculties of Science,
2) The Chairman, Board of Studies in Physics,
3) The Professor-cum-Director, Institute of Distance & Open Learning (IDOL)
4) The Director, Board of College and University Development,
5) The Co-Ordinator, University Computerization Centre,
6) The Controller of Examinations.

(Dr.M.A.Khan)
REGISTRAR

PTO..

UNIVERSITY OF MUMBAI

Syllabus for Sem I & II
Program: B.Sc.
Course: Physics

(Credit Based Semester and Grading System for Academic year 2016-17)

Syllabusfor B.Sc. Physics(Theory&Practical)
Aspercreditbasedsystem
FirstYearB.Sc.2016–2017.

TherevisedsyllabusinPhysicsasper creditbasedsystemfortheFirstYearB.Sc.Course willbeimplementedfromtheacademicyear**2016–2017.**

Preamble:

The systematic and planned curricula from these courses shall motivate and encourage learners to understand basic concepts of Physics.

Objectives:

- To develop analytical abilities towards real world problems
- To familiarize with current and recent scientific and technological developments
- To enrich knowledge through problem solving, hands on activities, study visits, projects etc.

Course code	Title	Credits
	Semester I	
USPH101	Classical Physics	2
USPH102	Modern Physics	2
USPHP1	Practical I	2
		Total= 06
	Semester II	
USPH201	Mathematical Physics	2
USPH202	Electricity and Electronics	2
USPHP2	Practical II	2
		Total=06

SEMESTER-I

Name of the Programme	Duration	Semester	Subject
B.Sc.inPhysics	Sixsemesters	I	Physics
CourseCode	Title	Credits	
USPH101	**Classical Physics**	2for USPH101	

Learning Outcomes:

On successful completion of this course students will be able to:

1. Understand Newton's laws and apply them in calculations of the motion of simple systems.
2. Use the free body diagrams to analyzetheforces on the object.
3. Understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them.
4. Understand the concepts of lens system and interference.
5. Apply the laws of thermodynamics to formulate the relations necessary toanalyze athermodynamic process.
6. Demonstrate quantitative problem solving skills in all the topics covered

Unit:I **15lectures**

1. Newton's Laws**:**

Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, Inertial and non-inertial frames of reference.Worked out examples (with friction present)

2. Elasticity:

Review of Elastic constants Y, K, η and σ;Equivalence of shear strain to compression and extension strains. Relations between elastic constants, Couple for twist in cylinder.

3. Fluid Dynamics**:**

Equation of continuity, Bernoulli's equation, applications of Bernoulli's equation, streamline and turbulent flow, lines of flow in airfoil, Poiseuille's equation.

Unit:II **15lectures**

1. Lens Maker's Formula (Review), Newton's lens equation,magnification-lateral, longitudinal and angular.

2. Equivalent focal length of two thin lenses, thick lens, cardinal points of thick lens, Ramsdenand Huygens eyepiece.
3. Aberration: Spherical Aberration, Reduction of Spherical Aberration, Chromatic aberration and condition for achromatic aberration.
3. Interference: Interference in thin films, Fringes in Wedge shaped films, Newton's Rings (Reflective).

UNIT III **15 lectures**

1. Behavior of real gases and real gas equation, Van der Waal equation
2.Thermodynamic Systems, Zeroth law of thermodynamics, Concept of Heat, The first law, Non Adiabatic process and Heat as a path function, Internal energy, , Heat Capacity and specific heat, Applications of first law to simple processes, general relations from the first law, Indicator diagrams, Work done during isothermal and adiabatic processes, Worked examples, Problems.

Note:Agoodnumberofnumericalexamplesareexpectedtobecoveredduringthe prescribed lectures.

References:

1. Halliday, Resnick and Walker, Fundamental of Physics (extended) – (6th Ed.), John Wiley and Sons.
2. H. C. Verma, Concepts of Physics – (Part–I), 2002 Ed. BharatiBhavan Publishers.
3. Iradov
4. Brijlal,Subramanyam and Avadhanulu A Textbook of Optics, 25th revised ed.(2012) S. Chand
5. Brijlal, Subramanyam and Hemne, Heat Thermodynamics and Statistical Physics, S Chand, Revised, Multi-coloured,2007 Ed.
6. Jenkins and White, Fundamentals of Optics by (4th Ed.), McGraw Hill International.

Additional References :

1. Thornton and Marion, Classical Dynamics – (5th Ed)
2. D S Mathur, Element of Properties of Matter, S Chand & Co.
3. R Murugeshan and K Shivprasath, Properties of Matter and Acoustics S Chand.
4. M W Zemansky and R H Dittman, Heat and Thermodynamics, McGraw Hill.
5. D K Chakrabarti, Theory and Experiments on Thermal Physics, (2006 Ed) Central books.
6. C L Arora, Optics, S Chand.
7. Hans and Puri, Mechanics –, 2nd Ed. Tata McGraw Hill

SEMESTER-I

Nameofthe Programme	Duration	Semester	Subject
B.Sc.inPhysics	Sixsemesters	I	Physics
CourseCode	Title	Credits	
USPH102	**Modern Physics**	2for USPH102	

Learning Outcomes:

After successful completion of this course students will be able to

1. Understand nuclear properties and nuclear behavior.
2. Understand the type isotopes and their applications.
3. Demonstrate and understand the quantum mechanical concepts.
4. Demonstrate quantitative problem solving skills in all the topics covered.

Unit I **15lectures**

1. Structure of Nuclei:Basic properties of nuclei, Composition, Charge, Size, Rutherford's expt. for estimation of nuclear size, density of nucleus, Mass defect and Binding energy, Packing fraction, BE/A vs A plot, stability of nuclei (N Vs Z plot) and problems.
2. Radioactivity: Radioactive disintegration concept of natural and artificial radioactivity, Properties of α, β, γ-rays, laws of radioactive decay, half-life, mean life (derivation not required), units of radioactivity, successive disintegration and equilibriums, radioisotopes. Numerical Problems.
3. Carbon dating and other applications of radioactive isotopes (Agricultural, Medical, Industrial, Archaeological -information from net).

Unit II **15 lectures**

Interaction between particles and matter, Ionization chamber, Proportional counter and GM counter, problems

Nuclear Reactions: Types of Reactions and Conservation Laws. Concept of Compound and Direct Reaction, Q value equation and solution of the Q equation, problems.

Fusion and fission definitions and qualitative discussion with examples.

Unit III **15 lectures**

1. Origin of Quantum theory, Black body (definition), Black Body spectrum, Wien's displacement law, Matter waves, wave particle duality, Heisenberg's uncertainty Principle. Davisson-Germer experiment, G. P. Thompson experiment.
2. X-Rays production and properties. Continuous and characteristic X-Ray spectra, X-Ray Diffraction, Bragg's Law, Applications of X-Rays.
3. Compton Effect, Pair production, Photons and Gravity, Gravitational Red Shift.

Note: Agoodnumberofnumericalexamplesareexpectedtobecoveredduringthe prescribed lectures

References:

1. Kaplan: Nuclear Physics, Irving Kaplan, 2nd Ed. Narosa Publishing House
2. SBP: Dr. S. B. Patel, Nuclear Physics Reprint 2009, New Age International

3.BSS: N Subrahmanyam, Brijlal and Seshan, Atomic and Nuclear Physics Revised Ed. Reprint 2012, S. Chand

4. Arthur Beiser, Perspectives ofModernPhysics : Tata McGraw Hill

Additional References:

1 S N Ghosal, Atomic Physics S Chand

2 S N Ghosal, Nuclear Physics 2nd ed. S Chand

SEMESTER-I

Name of the Programme	Duration	Semester	Subject
B.Sc.inPhysics	Sixsemesters	I	Physics
CourseCode	Title	Credits	
USPHP1	**Practical I**	2	

Leaning Outcome:

On successful completion of this course students will be able to:

i) To demonstrate their practical skills.
ii) To understand and practice the skills while doing physics practical.
iii) To understand the use of apparatus and their use without fear.
iv) To correlate their physics theory concepts through practical.
v) Understand the concepts of errors and their estimation.

A. <u>Regularexperiments:</u>

1	J by Electrical Method: To determine mechanical equivalent of heat (Radiation correction by graph method)
2	Torsional Oscillation: To determine modulus of rigidity η of a material of wire by torsional oscillations
3	Bifilar Pendulum
4	Spectrometer: To determine of angle of Prism.
5	Y by vibrations: To determine Y Young's Modulus of a wire material by method of vibrations- Flat spiral Spring
6	To determine Coefficient of Viscosity (η) of a given liquid by Poisseuli's Method
7	Surface Tension/ Angle of contact
8	Combination of Lenses To determine equivalent focal length of a lens system by magnification method.
9	Spectrometer: To determine refractive index μ of the material of prism
10	To study Thermistor characteristic Resistance vs Temperature
11	Constant volume/constant pressure
12	Newton's Rings To determine radius of curvature of a given convex lens using Newton's rings.
13	Wedge Shaped Film

B. Skill Experiments:

1.	Use of Verniercalipers, Micrometer Screw Gauge, Travelling Microscope
2.	Graph Plotting : Experimental, Straight Line with intercept, Resonance Curve etc.
3.	Spectrometer: Schuster's Method
4.	Use of DMM
5	Absolute and relative errors calculation.

C) Any one out of following isequivalent to two experiments from section A and/ or B

1. Students should collect the information of at least five Physicists with their work. Report that in journal.
2. Students should carry out mini-project upto the satisfaction of professor In-charge of practical.
3. Study tour. Students participated in study tour must submit a study tour report.

Minimum 8experimentsfrom the listshouldbecompletedinthe first semester. Any four skill experimentsaretobereportedinjournalCertifiedjournalis a must tobeeligibletoappearforthesemesterendpractical.

Theschemeofexaminationfortherevisedcoursein Physicsat theFirstYearB.Sc.Semester endexaminationwillbeasfollows.

SemesterEnd Practical Examination:
Schemeof examination:

There will be no internal assessment for practical.
Acandidatewillbeallowedtoappearforthesemester end practical examinationonlyifthecandidatesubmits aCertified journalatthetimeofpracticalexaminationofthe semester oracertificatefrom theHeadoftheDepartment /Institute totheeffectthathecandidate hascompleted the practicalcourseofthatsemesterofF.Y.B.Sc.Physicsasperthe minimumrequirement. The duration of the practical examination will be two hours per experiment. There will be two experiments through which the candidate will be examined in practical. The questions on slips for the same should be framed in such a way that candidate will be able to complete the task and should be evaluated for its skill and understanding of physics.

SEMESTER II

Nameofthe Programme	Duration	Semester	Subject
B.Sc.inPhysics	Sixsemesters	II	Physics
CourseCode	Title	Credits	
USPH201	**Mathematical Physics**	2for USPH201	

Learning Outcomes:

On successful completion of this course students will be able to:

1. Understand the basic mathematical concepts and applications of them in physical situations.
2. Demonstrate quantitative problem solving skills in all the topics covered.

Unit I **15 lectures**

1. Vector Algebra :

Vectors, Scalars, Vector algebra, Laws of Vector algebra, Unit vector, Rectangular unit vectors, Components of a vector, Scalar fields, Vector fields, Problems based on Vector algebra.

Dot or Scalar product, Cross or Vector product, Commutative and Distributive Laws, Scalar Triple product, Vector Triple product (Omit proofs). Problems and applications based on Dot, Cross and Triple products.

2. Gradient, divergence and curl:

The ∇ operator, Definitions and physical significance of Gradient, Divergence and Curl; Distributive Laws for Gradient, Divergence and Curl (Omit proofs); Problems based on Gradient, Divergence and Curl.

Unit: II **15lectures**

1. Differential equations**:**

Introduction, Ordinary differential equations, First order homogeneous and non- homogeneous equations with variable coefficients, Exact differentials, General first order Linear Differential Equation, Second-order homogeneous equations with constant coefficients. Problems depicting physical situations like LC and LR circuits, Simple Harmonic motion (spring mass system).

2. Transient response of circuits: Series LR, CR, LCR circuits. Growth and decay of currents/charge.

Unit:III **15lectures**

1. Superposition of Collinear Harmonic oscillations: Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats).

2. Superposition of two perpendicular Harmonic Oscillations: Graphical and Analytical Methods. Lissajous Figures with equal an unequal frequency and their uses
3. Wave Motion: Transverse waves on string, Travelling and standing waves on a string. Normal modes of a string, Group velocity, Phase velocity, Plane waves, Spherical waves, Wave intensity.

Note: Agoodnumberofnumericalexamplesareexpectedtobecoveredduringthe prescribed lectures

References:

1.MS:Murray R Spiegel, Schaum's outline of Theory and problems of Vector Analysis, Asian Student Edition
2. CH**:** Charlie Harper, Introduction to Mathematical Physics , 2009 (EEE) PHI Learning Pvt. Ltd.
3. CR: D. Chattopadhyay, P C Rakshit , Electricity and Magnetism 7th Ed. New Central Book agency.
4. Waves: Berkeley Physics Course, vol. 3, Francis Crawford, 2007, Tata McGraw-Hill.
5. The Physics of Vibrations and Waves, H. J. Pain, 2013, John Wiley and Sons.
6. The Physics of Waves and Oscillations, N.K. Bajaj, 1998, Tata McGraw Hill.

Additional References:

1. BrijLal**,N.** Subrahmanyam **,** JivanSeshan, Mechanics and Electrodynamics, , (S. Chand) (Revised & Enlarged ED. 2005)
2. A K Ghatak, Chua, Mathematical Physics, 1995, Macmillan India Ltd.
3. Ken Riley**, Michael** Hobson **and Stephen** Bence, Mathematical Methods for Physics and Engineering, Cambridge (Indian edition).
4. H. K. Dass, Mathematical Physics, S. Chand & Co.
5. Jon Mathews & R. L. Walker, Mathematical Methods of Physics: W A Benjamin Inc.

SEMESTER II

Nameofthe Programme	Duration	Semester	Subject
B.Sc.inPhysics	Sixsemesters	II	Physics
CourseCode	Title	Credits	
USPH202	**Electricity and Electronics**	2for USPH202	

Unit I : **15 lectures**

1. Alternating current theory:(Concept of L, R, and C: Review)

AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits. Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor.

2. AC bridges: AC-bridges: General AC bridge, Maxwell,de-Sauty, Wien Bridge , Hay Bridge.

Unit II: Electronics **15 lectures**

1.Circuit theorems: (Review: ohm's law, Kirchhoff's laws)
Superposition Theorem, Thevenin's Theorem, Ideal Current Sources, Norton's Theorem, Reciprocity Theorem, Maximum Power Transfer Theorem.
Numericals related to circuit analysis using the above theorems.
2.DC power supply:Half wave rectifier , Full wave rectifier, Bridge rectifier, PIV and Ripple factor of full wave rectifier, Clipper and Clampers(Basic circuits only), Capacitor Filter.
Zener diode as voltage stabilizer.
3.Digital electronics : Logic gates(Review), NAND and NOR as universal building blocks. EXOR gate: logic expression, logic symbol, truth table, Implementation using basic gates and its applications, Boolean algebra, Boolean theorems. De-Morgan theorems, Half adder and Full adder

Unit III : Electrostatics and Magnetostatics **15 lectures**

1.The Electric Field : Introduction, Coulomb's Law, The Electric Field, Continuous charge Distribution, Electric Potential, Introduction to Potential, Comments on Potential,
The Potential of a Localized Charge Distribution
2.Work and Energy in Electrostatics**:** The Work Done to Move a charge, The Energy of a Point Charge Distribution
3.Magnetostatics**:** Magnetic Fields
4.TheBiotSavart Law**:** Steady Currents,The Magnetic Field of a Steady Current

Helmholtz coil and solenoid.

Note: Agoodnumberofnumericalexamplesareexpectedtobecoveredduringthe prescribed lectures

References :

CR: D. Chattopadhyay, P C Rakshit , Electricity and Magnetism 7th Ed. New Central Book agency.

TT :B.L. Theraja and A.K. Theraja , A Textbook of Electrical Technology Vol. I , S. Chand Publication

BN :Boylestad and Nashelsky, Electronic devices and Circuit Theory: 7th edition, Prentice Hall of India.

VKM: V K Mehta and R Mehta Electronics Principals, MulticolouredRevised 11th Ed. reprint in 2012 ,S Chand.

David J. Griffiths : Introduction to Electrodynamics, Prentice Hall India (EEE) 3rd Ed.

A B Bhattacharya, Electronics Principlesand Applications, Central publisher.

A P Malvino, Digital Principles and Applications: Tata McGraw Hill

Tokhiem, Digital electronics, 4thed, McGraw Hill International Edition.

SEMESTER II

Name of the Programme	Duration	Semester	Subject
B.Sc.inPhysics	Sixsemesters	II	Physics
CourseCode	Title	Credits	
USPHP2	**Practical II**	2	

Leaning Outcome:

i) To understand and practice the skills while doing physics practical.
ii) To understand the use of apparatus and their use without fear.
iii) To correlate their physics theory concepts through practical.
iv) Understand the concepts of errors and their estimation.

A) Regular experiments:

1	Flywheel
2	To study Zener Diode as Regulator
3	To study load regulation of a Bridge Rectifier
4	LR Circuit: To determine the value of given inductance and phase angle
5	CR Circuit: To determine value of given capacitor and Phase angle
6	Frequency of AC Mains: To determine frequency of AC mains.
7	LCR series Resonance: To determine resonance frequency of LCR series circuit.
8	To study NAND and NOR gates as Universal Building Blocks
9	To study EX-OR Gate, half adder and full adder and verify their truth tables.
10	To verify De Morgan’s Theorems
11	Thevenin’s Theorem: To verify Thevenin's theorem for DC circuits
12	Norton’s Theorem: To verify Norton's Theorem for DC circuits
13	LDR Characteristics: To study the dependence of LDR resistance on intensity of light.

B) List of Demo-experiments: (Min. four)

1.	Angular Momentum conservation (Rotating Platform)
2.	Light dependent switch
3.	Laser beam divergence, Intensity
4.	Use of Oscilloscope
5	Charging and discharging of a capacitor

6	Use of PC for graph plotting
7	Clipper and Clamper circuits.

C) Any one out of following isequivalentto two experiments from section A and/ or B

1. Students should collect the information of at least fourPhysics events and their outcome. Report that in journal.
2. Students should carry out mini-project up to the satisfaction of professor In-charge of practical
3. Study tour. Students participated in study tour must submit a study tour report.

Minimum 8experimentsfrom the listshouldbecompletedinthe first semester. Any four skill experimentsaretobereportedinjournalCertifiedjournalis musttobeeligibletoappearforthe semester endpractical.

Theschemeofexaminationfortherevisedcoursein Physicsat theFirstYearB.Sc.Semester endexaminationwillbeasfollows.

SemesterEnd Practical Examination:
Schemeof examination:

There will be no internal assessment for practical

A candidate will be allowed to appear for the semester end practical examination only if the candidate submits a Certified journal at the time of practical examination of the semester or a certificate from the Head of the Department /Institute to the effect that the candidate has completed the practical course of that semester of F.Y.B.Sc. Physics as per the minimum requirement. The duration of the practical examination will be two hours per experiment. There will be two experiments through which the candidate will be examined in practical. The questions on slips for the same should be framed in such a way that candidate will be able to complete the task and should be evaluated for its skill and understanding of physics

AC 11-05-2017

Item No. 4.222

UNIVERSITY OF MUMBAI

Essential Elements of the Syllabus

Title : Syllabus for the B.Sc. Course in Physics (from academic year 2017-18) for Semester III & IV

Course Code:**USPH**

Preamble :

This is a revised part of the undergraduate programme (Six Semesters) in Physics, to be taught in Semester III & IV from the academic year 2017-18 onwards.

Developing Curriculum that is progressive and purposeful to create positive improvement in the education system is the logic behind this revision.

Out of the three courses in each Semester, **two** courses are devoted to core Physics, catering to Mechanics, Thermodynamics, Optics , Electrodynamics, Quantum Mechanics, Mathematical Physics and Digital and Analog Electronics. These have been tailored to fit in with the existing FYBSc syllabus (Sem I and Sem II) in terms of continuity and to ensure delivery of quality content to the learner.

The science of Physics has diversified immensely in recent times and numerous new fields in Physics, such as Biophysics, Geo-Physics, Radio-Physics, Physics of metals and materials, etc. have come into existence.The fundamentals and the generality of many principles of Physics are common to all these specialized diverse fields. Most problems in applied areas have been discussed

intensely in academic conferences and journals, but have not found their place in curricula or in text books.

The **third** course in each semester offers interdisciplinary application- oriented topics .It will be offered as a **choice** to all learnersacross various combinations. This course will seek to foster a spirit of multidisciplinary approach in learning.

The 'practical' component in the applied course will be seen as a combination of laboratory sessions , a visit to a Research Institute/Industry, mini project, an assignment on a relevant topic etc.

For the various units, experts will guide as '**Resource Persons**' and their laboratories/ departments could serve as **Resource Centers**. Faculty members/Teachers can avail of their expertise to train themselves in the delivery of these courses whenever required.

Objective :

Upon completion of the course, students should have acquired the following knowledge and skills:

1. a thorough quantitative and conceptual understanding of the core areas of physics, including mechanics, , thermodynamics, quantum mechanics, electronics at a level compatible with graduate programs in physics at peer institutions.
2. the ability to analyze and interpret quantitative results, both in the core areas of physics and interdisciplinary areas.
3. the ability to use contemporary experimental apparatus and analysis tools to acquire, analyze and interpret scientific data.
4. the ability to apply the principles of physics to solve new and unfamiliar problems.
5. the ability to communicate scientific results effectively in presentations or posters.

Eligibility :Passed semester 1 and Semester II **;** asper rules of passing

Question paper pattern : Paper of 100marks ; 3 hours duration.

(pattern as per guidelines)

Revised Syllabus in Physics (Theory and Practical)

as perChoice based Credit and Grading system

Second year B.Sc. 2017-2018

The revised syllabus in Physics as per credit based system (with choice) of the Second Year B.Sccourse will be implemented from the academic year 2017-2018.

Objectives:

- To develop analytical abilities towards real world problems
- To familiarize with current and recent scientific and technological developments
- To enrich knowledge through problem solving hands on activities, study visits, projects etc.

Semester	Paper	Title	Credits
III	USPH301	Mechanics and thermodynamics	2
III	USPH302	Vector calculus ,Analog Electronics	2
III	USPH303	Applied Physics -I	2
III	USPHP3	Practical course -3 (Group A,B,C and Skill)	3
		Total	**9**
IV	USPH401	Optics and Digital Electronics	2
IV	USPH402	Quantum Mechanics	2
IV	USPH403	Applied Physics-II	2
IV	USPHP4	Practical course -4 (Group A,B,C and Demo)	3
		Total	**9**

Proposed syllabus of SYBSc(2017-18)

USPH301 : Mechanics and thermodynamics

Learning Outcomes :

On successful completion of this course, students will be able to :

i) Understand the concepts of mechanics & properties of matter & to apply them to problems.

ii) Comprehend the basic concepts of thermodynamics & its applications in physical situation.

iii) Learn about situations in low temperature.

iv) Demonstrate tentative problem solving skills in all above areas.

UNIT –I15Lectures

I Compound pendulum :
Expression for period, maximum and minimum time period, centres of suspension and oscillations , reversible compound pendulum. Kater's reversible pendulum , compound pendulum and simple pendulum- a relative study.

Ii Center of Mass , .Motion of the Center of Mass , Linear momentum of a Particle Linear momentum of a System of Particles , Linear momentum wrt CM coordinate (i.e shift of origin from Lab to CM), Conservation of Linear Momentum , Some Applications of the Momentum Principle , System of Variable Mass
Torque Acting on a Particle ,Angular Momentum of a Particle , Angular Momentum of System of Particles , Total angular momentum wrt CM coordinate. Conservation of Angular Momentum

iiiOscillations **,** The Simple Harmonic Oscillator , Relation between Simple Harmonic Motion and Uniform Circular Motion , Two Body Oscillations, Damped Harmonic Motion ,Forced Oscillations and Resonance.

UNIT –II **15Lectures**

(Review of zeroth and first law of thermodynamics)

I Conversion of heat into work, heat engine, Carnot's cycle: its efficiency.

Ii Second law of thermodynamics, Statements, Equivalence of Kelvin and Plank statement, Carnot's theorem, Reversible and irreversible process, Absolute scale of temperature.

iii Clausius theorem, Entropy, Entropy of a cyclic process, Reversible process,Entropy change, Reversible heat transfer, Principle of increase in entropy, generalized form of first and second law, entropy change of an ideal gas, entropy of steam, entropy and unavailable energy, entropy and disorder, absolute entropy.

UNIT –III15Lectures

i Third law of thermodynamics, Nernst heat theorem, Consequences of the third law, Maxwell's thermodynamic relations, Clausius – Clapeyron equation, Thermal Expansion.

ii Steam engine, Rankine cycle, Otto engine, Efficiency of Otto cycle, Diesel cycle, Efficiency of Diesel cycle, Otto and diesel comparison

iii Low temp Physics: Different methods of liquefaction of gases, methods of freezing, Cooling by evaporation, cooling by adiabatic expansion
Joule - Thompson effect, JT effect of Vander Waal's gas, Liquefaction of helium, properties and uses of liquid Helium

References:

Resnick and Halliday : Physics – I

Mechanics – H. S. Hans and S. P. Puri, Tata McGraw Hill (2_{nd} ED.)

Thermal Physics, AB Gupta and H. Roy, Book and Allied (P) Ltd, Reprint 2008, 2009.

Heat thermodynamics and Statistical Physics, Brijlal, N.Subramanyam, P. S. Hemne, S. Chand, edition 2007.

Additional reference:

1. KRS: Mechanics by K.R Symon.
2. Classical Dynamics of particles and systems by Thornton and Marian, (CENGAGE Learning)
3. Basic Thermodynamics : Evelyn Guha (Narosa Publications)
4. Classical mechanics by Kleppener , Kollenkov
5. A treatise on heat :MeghanadSaha and BN Srivastava , 1969, India Press.
6. Mechanics and Electrodynamics Rev Edn. 2005 by Brijlal and Subramanyanand JeevanSeshan.

USPH302 : Vector calculus, Analog Electronics

Learning Outcomes:

On successful completion of this course students will be able to :

1) Understand the basic concepts of mathematical physics and their applications in physical situations.

2) Understand the basic laws of electrodynamics and be able to perform calculations using them.

3) Understand the basics of transistor biasing, operational amplifiers, their applications

4) Understand the basic concepts of oscillators and be able to perform calculations using them.

5) Demonstrate quantitative problem solving skill in all the topics covered.

Unit I: Vector Calculus: 15Lectures

1. Line, Surface and Volume Integrals, The Fundamental Theorem of Calculus, The Fundamental Theorem of Gradient, The Fundamental Theorem of Divergence , The Fundamental Theorem of Curl (Statement and Geometrical interpretation is included, Proof of these theorems are omitted). Problems based on these theorems are required to be done.

2. Curvilinear Coordinates: Cylindrical Coordinates, Spherical Coordinates

Unit II: Analog Electronics 15Lectures

1.Transistor Biasing, Inherent Variations of Transistor Parameters, Stabilisation, Essentials of a Transistor Biasing Circuit, Stability Factor, Methods of Transistor Biasing, Base Resistor Method, Emitter Bias Circuit, Circuit analysis of Emitter Bias, Biasing with Collector Feedback Resistor, Voltage Divider Bias Method, Stability factor for Potential Divider Bias.

2.General amplifier characteristics: Concept of amplification, amplifier notations, current gain, Voltage gain, power gain, input resistance, output resistance, general theory of feedback, reasons for negative feedback, loop gain.

3.Practical circuit of transistor amplifier, phase reversal, frequency response, Decibel gain and Band width.

Unit III: Analog Electronics 15Lectures

1. Oscillators: Introduction, effect of positive feedback. Requirements for oscillations, phase shift oscillator,Wien Bridge Oscillator, Colpitt's oscillator, Hartley oscillator

2. Operational Amplifiers: Introduction, Schematic symbol of OPAMP, Output voltage from OPAMP, AC analysis, Bandwidth of an OPAMP, Slew rate, Frequency Response of an OPAMP, OPAMP with Negative feedback, Inverting Amplifier, Non-Inverting Amplifier, Voltage Follower, Summing Amplifier, Applications of Summing amplifier, OPAMP Integrator and Differentiator, Critical frequency of Integrator, Comparator

References:

Introduction to Electrodynamics 3rd Ed by D.J. Griffith
Principles of Electronics – V. K. Mehta and Rohit Mehta. (S. Chand – Multicoloured illustrative edition)

Electronic devices and circuits – An introduction Allan Mottershead (PHI Pvt. Ltd.– EEE – Reprint – 2013)

USPH303 : Applied Physics - I

This paper consists of three modules (units) designed in a way so as to offer interdisciplinary & application oriented learning.

Learning Outcomes :

On completion of this, it is expected that

i) Students will be exposed to contextual real life situations.

ii) Students will appreciate the role of Physics in 'interdisciplinary areas related to materials, Bio Physics, Acoustics etc.

iii) The learner will understand the scope of the subject in Industry & Research.

iv) Experimental learning opportunities will faster creative thinking & a spirit of inquiry.

Unit 1 : Acoustics , Lasers and fibre optics 15Lectures

1)Acoustics of Buildings: Reverberation, Sabine's formula (without derivation) Absorption coefficient, Acoustics of Buildings, factors affecting Acoustics of Buildings, Sound distribution in an auditorium.

2)Laser : Introduction, transition between Atomic energy states (without derivation), Principle of Laser, Properties of Laser, Helium–Neon Laser, Application of Laser, Holography

3)FibreOptics : Light propagation through Fibres, Fibre Geometry, Internal reflection, Numerical Aperture, Step-Index and Graded-Index Fibres, Applications of Fibres.

References:

Modern Physics Concept and Applications – SanjeevPuri, Narosa Publication.

Properties of matter and Acoustics – R Murugeshan and K. Shivaprasath, S Chand &Co.Ltd. (2005-Ed)

Unit II : Biophysics 15Lectures

Introduction, definition, History & scope of biophysics, biological fluids, physico-chemical properties, viscosity, surface tension, pH, osmosis, osmotic pressure. Diffusion, Ficks' laws of diffusion, dialysis, Cell is unit of life, fundamental understanding prokaryotic and eukaryotic cell structure and function, eukaryotic cell membrane, Fundamentals of transport process through biological membrane, membrane channels. electrical properties of cell, Action potential, propagation of action potential, methods of measurement of action potential, Nernst equation, Golman equation, The Hodgkin-Huxely model of action potential, voltage clamp technique, Patch clamp technique, cell impedance and capacitance .

References:

1. Cellular and Molecular Biology: Concept and Experiment by Gerald Karp
2. The Cell: A Molecular Approach by Geoffery Cooper
3. Introductory Biophysics: Perspective on living state by James Claycomb
4. Medical Physiology by Guyton
5. Molecular Biology of Cell by Bruce Albert
6. Text Book of Biophysics by R N Roy

Unit III : Materials – properties and applications 15Lectures

Introduction to Materials

Classification of Materials based on structures (Crystalline and Amorphous, single crystal, polycrystalline and nanomaterials) and Functionality (Conducting, insulating, superconducting, reflecting, transmitting etc)
Types of Materials: Metals and alloys, Ceramics, Polymers and Composites, Thin Films, Nanomaterials; Some Physical and Chemical methods of materials synthesis (5L)

Properties of materials

Electrical Properties: Review of energy band diagram for materials - conductors, semiconductors and insulators, Electrical conductivity in metals, semiconductors and insulators (dielectrics), effect of temperature on conductivity
Optical Properties: Reflection, refraction, absorption and transmission of electromagnetic radiation in solids.
Magnetic Properties: Origin of magnetism in solids (basic idea), Types of magnetic order (paramagnetism, diamagnetism, antiferro magnetism, ferromagnetism, ferrimagnetism), magnetic hysteresis (6L)

Applications
Optical materials: LEDs, OLEDs, LCDs, Flat Panel Displays, optical fibers
Dielectric materials: Piezoelectric, ferroelectric and pyroelectric materials
Magnetic Materials: Soft magnets (Transformer steels), Hard magnets for permanent magnets, Magnetic Recording and Storage (4L)

References:

1. Electronic Properties of Materials, Rolf E Hummel
2. Materials Science and Engineering: A First Course by V. Raghavan

USPHP3: Practical course -3

Instructions:

i) All the measurements and readings should be written with proper units in SI system only.

ii) After completing all the required number of experiments in the semester and recording them in journal, student will have to get their journal certified and produce the certified journal at the time of practical examination.

iii) While evaluating practical, weight age should be given to circuit/ray diagram, observations, tabular representation, experimental skills and procedure, graph, calculation and result.

iv) Skill of doing the experiment and understanding physics concepts should be more important than the accuracy of final result.

Learning outcomes :

On successful completion of this course students will be able to :

i) Understand &practice the skills while performing experiments.
ii) Understand the use of apparatus and their use without fear& hesitation.
iii) Correlate the physics theory concepts to practical application.
iv) Understand the concept of errors and their estimation.

Note: Exemption of two experiments from section A and / or B and / or C may be given if student carries out any one of the following activity.

1) Collect the information of at least five Physicists with their work or any three events on physics, report that in journal.
2) Execute a mini project to the satisfaction of teacher in-charge of practical.
3) Participate in a study tour or visit & submit a study tour report.

For practical examinations, the learner will be examined in three experiments (one from each group) .
Each experiment will be of three hours'duration .
A Minimum 3 from each group and in all minimum 12 experiments must be reported in journal.
All the skill experiments are required to be completed compulsorily. Students are required to report all these experiments in the journal. Evaluation in viva voce will be based on regular experiments and skill experiments.

A learner will be allowed to appear for the semester and practical examination only if he submits a certified journal of Physics or a certificate that the learner has completed the practical course of Physics Semester III as per the minimum requirements.

Group A

1 Y by bending.
2 Kater’s pendulum
3 Searle’s experiment: determination of Y and □.
4 Flat spiral spring (Y)

5 Flat spiral spring (n)
6 Young's modulus by Koenig's method.
7 Determination of thermal conductivity of bad conductor by Lee's Method.
8 Helmholtz resonator- determination of unknown frequency.
9 Moment of Inertia of compound pendulum by method of coincidence.
8. Verification of Stefan's law (electrical method)
9. Temperature coefficient of resistance of conducting material,
10. e/m by Thomson's method
11. Charging and discharging of capacitor.
12. LCR parallel resonance.
13. Figure of merit of a mirror galvanometer.
14. Determination of absolute capacitance using BG
15. Measurement of resistance of galvanometer (G by shunting)

Group B

1. Passive low pass filter
2. Passive high pass filters.
3. Passive band pass filter.
4. Opamp: Inverting amplifier with different gains
5. Opamp: Non-inverting amplifier with different gains and voltage follower
6. Opamp: Integrator and Differentiator
7. CE amplifier: determination of bandwidth
8. CE amplifier: variation of gain with load
9. Lissajous figures using CRO.
10. Phase shift oscillator
11. Wien bridge oscillator
12. UJT characteristics
13. UJT relaxation oscillator
14. Colpitt's oscillator
15. Hartley oscillator

Group C

1. Laser experiments: straight edge, single slit, ruler grating
2. Optical fibre: transmission of signal
3. Concept of beats
4. Coupled oscillations and resonance
5. Standardization of pH meter & acid-base titration.
6. Determination of Isoelectric point of Amino Acids/protein.
7. Understanding uv visible spectra of protein/Nucleic Acids.
8. Surface tension of Biological fluid.

9. Microscopic examination of Red blood Cells & White blood Cells.
10. Synthesis of materials - mini project - thin film/nano materials/bulk powders using different routes etc.
11. Visit to research institutes (equivalent to three practical sessions).
12. Assignment & literature survey (equivalent to 2 practical sessions).

Skill experiments

1. Soldering technique
2. Wiring of a simple circuit using bread board
3. Use of DMM
4. Use of oscilloscope
5. Travelling microscope (radius of capillary)
6. Spectrometer: mean μ of yellow doublet of mercury source.
7. Spectrometer: optical leveling and Shuster's method
8. Component testing, colour code of resistors, capacitors etc.
9. Drawing of graph on semi logarithmic / logarithmic scale.
10. Radius of ball bearings (single pan balance)

References:

1) Advanced course in Practical Physics D. Chattopadhya, PC Rakshit& B Saha. (6th Edition) Book and Allied Pvt.Ltd.
2) B.Sc Practical Physics – Harnam Singh S.Chand& Co. Ld. 2001
3) A test book of advanced practical PHYSICS _ SAMIR Kumar Ghosh, New Central Book Agency (3rd edition)
4) B.Sc. Practical Physics – CL Arora (1st Edition) -2001 S.Chand and Co Ltd.
5) Practical Physics CL Squires (3rd Edition) Cambridge University
6) University Practical Physics – DC Tayal. Himalaya Publication
7) Advanced Practical Physics – Worsnop&Flint.

USPH401 :Optics and Digital Electronics

Learning Outcomes:

On successful completion of this course students will be able to :

1) Understand the diffraction and polarization processes and applications of them in physical situations.
2) Understand the applications of interference in design and working of interferometers.
3) Understand the resolving power of different optical instruments.\
4) Understand the working of digital circuits
5) Use IC 555 time for various timing applications.
6) Demonstrate quantitative problem solving skills in all the topics covered.

UNIT I: (15 Lectures)

Background knowledge (devote one lecture at commencement):

i. Introduction, Huygens's - Fresnel theory, Distinction between interference and diffraction, Fresnel and Fraunhoffer types of diffraction.
ii. Introduction of Polarization, Natural light is unpolarized, Unpolarized and Polarized light
iii. Brewster's law , Polaroid sheets
iv. Prism and grating spectra ,Cornu's spiral, Fresnel's integrals.

Diffraction:

Fresnel's Diffraction: Fresnel's assumptions, Rectilinear propagation (Half period zones) of light, Diffraction pattern due to straight edge, Positions of maxima and minima in intensity, Intensity at a point inside the geometrical shadow(straight edge), Diffraction due to a narrow slit, Diffraction due to a narrow wire

Fraunhoffer Diffraction : Introduction, Fraunhoffer diffraction at a single slit, Intensity distribution in diffraction pattern due to a single slit, Fraunhoffer diffraction at a double slit,Distinction between single slit and double slit diffraction pattern and missing orders, Plane diffraction Grating, Theory of plane transmission grating, Width of principal maxima .

Unit II (15Lectures)

Polarization: Types of polarization, Plane polarized light, Circularly polarized light, Elliptically polarized light, Partially polarized light, Production of Plane polarized light, Polarization by reflection from dielectric surface, Polarization by refraction –pile of plates, Polarization by scattering, Polarization by selective Absorption, Polarization by double refraction, Polarizer and Analyzer, Malus' Law, Anisotropic crystal, Calcite crystal, Optic Axis, Double refraction in calcite crystal, Huygens' explanation of double refraction, Ordinary and Extra ordinary rays, Positive and Negative crystals, Superposition of waves linearly polarized at right angles,Superposition of e-Ray and o-Ray, Retarders, Quarter wave plate, Half wave plate, Production of linearly polarized light,Production of elliptically polarized light, Production of circularly polarized light, Analysis of polarized light, Applications of polarized light.

Unit – III

Digital Electronics: (15Lectures)

Background knowledge (devote one lecture at commencement):

i. Binary number system , Arithmetic building blocks , Types of registers

Digital IC signal levels, Binary to Decimal ,Decimal to binary , Hexadecimal number, Hexadecimal to decimal Conversion, Decimal to hexadecimal conversion, Hexadecimal to binary conversion, Binary to hexadecimal conversion, Binary addition, Unsigned binary numbers, Sign magnitude numbers , 1's complement , 2's complement , Converting to and from 2's complement representation , 2's complement arithmetic, The adder-subtractor (ignore IC specific diagrams)

RS Flip-Flops (only NOR gate latch, NAND gate latch) , Gated Flip-Flops, Edge-Triggered RS Flip-Flop, Edge- Triggered D Flip-Flop, Edge-Triggered J-K Flip-Flop, JK Master- Slave Flip-Flops, Bounce elimination switch

Types of registers : SISO , SIPO, PISO , PIPO [in this chapter the teacher should make all IC specific diagrams into general diagrams ie. Ignore pin numbers and IC numbers]

Asynchronous counter -3 bit (ignore IC specific diagrams), Synchronous counter only mod 8, Decade Counters Mod5 and Mod10

A Text Book Of Optics By: Dr.N.Subrahmanyam, Brijlal, Dr M.N. Avadhaanulu (S.Chand, 25th Revised edition2012 Reprint 2013)

AJOY GHATAK: OPTICS (5thEdition)

LMS – Digital Principles and AplicationsBy Leach, Malvino, Saha 6thedn.

TF – Digital Fundamentals by Thomas L Floyd 10thedn. (Additional Reading)

RPJ – Modern Digital Electronics by R P Jain 4thedn. (Additional Reading)

USPH402: QUANTUM PHYSICS

Learning Outcomes :

On successful completion of this course students will be able to :

1) Understand the postulates of quantum mechanics and to understand its importance in explaining significant phenomena in Physics.

2) Demonstrate quantitative problem solving skills in all the topics covered.

Background Reading (Review):

Origin of Quantum Mechanics:
1) Review of Black body radiation, b) Review of photoelectric effects.
2) Matter waves-De Broglie hypothesis. Davisson and Germer experiment.
3. Wave particle duality
5. Concept of wave packet, phase velocity, group velocity and relation between them
6. Heisenberg's uncertainty principle with thought experiment, different forms of uncertainty.

Unit –I: The Schrodinger wave equation: 15Lectures

1. Concept of wave function, Born interpretation of wave function.
2. Concepts of operator in quantum mechanics examples – position, momentum and energy operators.
3. Eigenvalue equations, expectation values of operators.
4. Schrodinger equation.

5. Postulates of Quantum Mechanics.
6. Analogy between Wave equation and Schrodinger equation.
7. Time dependent and time independent (Steady State) Schrodinger equation, Stationary State
8. Superposition principle.
9. Probability current density, Equation of continuity and its physical significance.

Unit-II: Applications of Schrodinger steady state equation-15Lectures

1. Free particle.
2. Particle in infinitely deep potential well (one - dimension).
3. Particle in finitely deep potential well (one - dimension).
4. Step potential.
5. Particle in three dimension rigid box, degeneracy of energy state.

Unit-III: Applications of Schrodinger steady state equation –II 15Lectures

1. Potential barrier (Finite height and width) penetration and tunneling effect (derivation of approximate transmission probability)
2. Theory of alpha particle decay from radioactive nucleus.
3. Harmonic oscillator (one-dimension), correspondence principle.

[Note: A good number of numerical examples are expected to be covered during the prescribed lectures].

Reference Books:

1. Concepts of Modern Physics – A. Beiser (6th Ed.) Tata McGraw Hill.
2. Quantum Mechanics – S P Singh, M K Bagade, Kamal Singh, - S. Chand : 2004 Ed.
3. Quantum Mechanics of Atoms, Molecules, Solids, Nuclei and particles. - By R. Eisberg and R. Resnik Published by Wiley.
5. Introduction to Quantum Mechanics. - By D. Griffiths Published by Prentice Hall.
6. Quantum Mechanics. - By Ghatak and Lokanathan Published by Mc. Millan.
7. Quantum Mechanics. - By L. I. Schiff.
8. Quantum Mechanics. - By Powell and Crasemann, Addison-Wesley Pub. Co.

USPH403 : Applied Physics II

Learning Outcomes :

On successful completion of this course, students will be able to :

i) Understand the concepts of mechanics & properties of matter & to apply them to problems.

ii) Comprehend the basic concepts of thermodynamics & its applications in physical situation.

iii) Learn about situations in low temperature.

iv) Demonstrate tentative problem solving skills in all above areas.

Unit 1 :Introduction to Geophysics15Lectures

CHAPTER 1 : GEOLOGY AND GEOPHYSICS

1.1 Introduction to Geophysics its branches and relationship with other sciences.

1.2 Earth and solar system: Meteorites and other extra-terrestrial materials.

1.3 Age of Earth and various methods of determination. Planetary evolution of the Earth and its internal structure: Elastic waves and variation of physical and chemical properties in the interior of Earth.

1.4 Major tectonic features of the ocean oceanic and continental crust.

1.5 Continental drift – geological and geophysical evidence: mechanisms, objections and present status.

1.6 Gravity and magnetic anomalies at Mid-ocean ridges: deep sea trenches, continental shield areas and mountain chains.

1.7 Geomagnetism, elements of Earth's magnetism: Internal, external fields and their causes, Palaeomagnetism, Polar wandering paths and reversals, Seafloor spreading and Plate tectonics.

1.8 Seismic belts of the Earth: Seismicity and plate movements.

1.9Geodynamics of the Indian plate.

1.10 Utility of the different geophysical techniques (discussed above) in exploration for academic as well as for harnessing resources. Geophysical potential fields: Principles of Gravity and Magnetic methods.

1.11 Instrumentation, field procedures used in geophysical studies.

1.12 Case studies

1.13 Problems.

Suggested Textbooks and References

1. *Geomagnetism: Solid Earth and Upper Atmosphere Perspectives.*NathaniBasavaiah, Springer (2011).
2. *Introduction to Applied Geophysics: Exploring the Shallow Subsurface.*H.R. Burger, A.F. Sheehan and C.H. Jones. W.W. Norton, New York (2006).
3. *Earth Science.*E.J. Tarbuck, F.K. Lutgens and D. Tasa, Prentice & Hall (2005).
4. *Mantle Plumes and Their Record in Earth History.* K.C. Condie, Cambridge University Press, Cambridge, UK (2001)
5. *The Magnetic Field of the Earth: Paleomagnetism, the Core, and the Deep Mantle.* R.T. Merrill, M.W. McElhinny and P.L. McFadden, International Geophysical Series 63, Academic Press (1996).
6. *Applied Geophysics (Paperback).* W.M. Telford, L.P. Geldart and R.E. Sheriff, Cambridge University Press, Cambridge (1990).

CHAPTER 2 : GEO-ENVIRONMENTAL SCIENCES

2.1 Environmental Magnetic Analysis relating to magnetic minerals and environmental systems, soil magnetism, mineral magnetic studies of lake and marine sediments and magnetic monitoring of air-, land- and water-pollution.

2.2 Geo-Environmental Studies relating to mining, urban, industrial, coastal and desert management, palaeoclimate, palaeoenvironment, medical geology, climate change and studies related to their impact on ecosystem.

2.3 Natural Hazard Investigations including scientific studies related to natural hazards such as earthquakes, landslides, floods and tsunamis.

2.4 Impact Assessment of Anthropogenic Activities such as heavy metal pollution in Mumbai aquatic system with industries and thermal power plants, urbanization, disposal of industrial and radio-active waste, excessive withdrawal of ground water and use of fertilizers.

Problems.

Suggested Textbooks and References

1. *Energy and Environment, 3rd Edition.*Robert A. Ristinen and Jack P. Kraushaar, John Wiley and Sons, Inc. (2015).
2. *Geomagnetism: Solid Earth and Upper Atmosphere Perspectives.*NathaniBasavaiah, Springer (2011).
3. *Textbook of Environmental Chemistry.*BalaramPani, I.K. International Publishing House (2007).

4. *A Textbook of Environmental Studies, 1/e.* D.K. Asthana and MeeraAsthana, S. Chand and Co. Publishing (2006).
5. *Environment: Problems and Solutions, 2/e*. D.K. Asthana and MeeraAsthana, S. Chand and Co. Publishing (2006).
6. *Environmental magnetism.* R. Thompson and F. Oldfield F, Allen &Unwin (1986).

Unit II : Microprocessors(15 Lectures)

8085 Microprocessor and Basic Assembly Language Programming *(15 lectures)*

Introduction, Historical Perspective, Organization of a Microprocessor Based system, how does
the Microprocessor works, Machine Language, Assembly Language, High Level Languages,
Writing and executing an Assembly Language Program.

8085 Bus Organization, 8085 Programming Model, The 8085 Microprocessor, Pin connection
diagram and function of each pin, A detailed look at 8085 Microprocessor.

Basic definitions: Instruction, Opcode, operand. Instruction word Size, instruction Format, dataformat **,**Addressing Modes,The 8085 Instruction Set(Classification) Data transfer Operations,Arithmetic Operations, Logical Operations Branch Operations ,
Introduction to AdvancedInstructions Flowchart

Main References:

1. G: Microprocessor Architecture, programming and Applications with the 8085 by Ramesh Gaonkar, 5th Edition, Prentice Hall of India.
Additional references:
1) Microprocessor and Applications by Vibhute and Borole, Technova Publications, Pune.
2) Microprocessor, Principles & Applications by Gilmore (2nd Ed) TMH

Unit III : 15Lectures

A)Radiation Physics

1**: Basics of Radiation Science** 3L

Electromagnetic Spectrum, Introduction to radioactivity, Sources of radiation: Alpha, beta and gamma radiation, high energy electron radiation and X-rays, Radiation units, Sources of radiation: natural and man-made, Radiation protection

2: **Radiation Detectors and Beam Calibration** 4L

Types of radiation detectors, Ionization detectors, scintillation detectors, particle detectors, TLD, thin film detectors, Radiation field analyzer, Basic principles of beam profile measurement

Recommended Books:

1. Course in DRP by Dept of Atomic Energy

B) Radio communication :

1: Basics of Communication 3L

Block diagram of communication system, types of communication system: simplex, duplex, analog and digital communication,

Electromagnetic spectrum, base band and broad band communication. Noise

concept and types, signal to noise ratio, noise figure, noise temperature.

2: Amplitude Modulation 2 L

Need of modulation, concept of modulation, AM waveform, mathematical expression of AM, concept of sideband, demodulation principles. AM Receiver: TRF and super-heterodyne receiver,

3: Frequency Modulation 2 L

FM modulation: definition, mathematical representation, frequency spectrum, bandwidth and modulation index.

4.Concept of ASK, PSK, FSK, PAM, PWM, PPM, PCM. 1 L

Recommended Books:

1. Communication Electronics: Principles and applications by Louis E Frenzel 3rd edition TMH Publications.

2. Electronics Communication Systems by Kennedy

3. Telecommunication Switching Systems and Network by Vishwanathan and Thiagarajan, PHI publication.

4. Electronics Communication Systems by Denis Roddy and John Coolen, PHI publication.

USPHP4: Practical course -4

Instructions:

i. All the measurements and readings should be written with proper units in SI system only.
ii. After completing all the Required number of experiments in the semester and recording them in journal, student will have to get their journal certified and produce the certified journal at the time of practical examination.
iii. While evaluating practical, weight age should be given to circuit/ray diagram, observations, tabular representation, experimental skills and procedure, graph, calculation and result.
iv. Skill of doing the experiment and understanding physics concepts should be more important than the accuracy of final result.

Learning Outcomes :

On successful completion of this course students will be able to :

i) Understand &practise the skills while performing experiments.
ii) Understand the use of apparatus and their use without fear & hesitation.
iii) Correlate their physics theory concepts to practical application.
iv) Understand the concept of errors and their estimation.

For practical examination the learner will be examined in the experiments (one from each group) . Each experiment will be of three hour duration;
Minimum 3 from each group and in all minimum 12experiments and all the demonstration experiments are required to be completed compulsorily.
Students are required to report all these experiments in the journal. Evaluation in viva voce will be based on regular experiments and skill experiments.

A learner will be allowed to appear for the semester and practical examination only if he submits a certified journal of Physics or a certificate that the learner has completed the practical course of Physics Semester III as per the minimum requirements.

Group A

1. Optical lever: determination of μ
2. Cylindrical obstacle: determination of λ
3. Single slit diffraction
4. Fresnel's bi-prism: determination of λ
5. Determination of Couchy's constants.
6. R.P. of telescope.
7. R.P. of grating
8. R. P. of prism
9. Brewster's law: determination of μ
10. Double refraction
11. Polarimeter
12. Laser beam profile
13. Determination of wavelength of laser using grating
14. Determination of R.I. of liquid by laser
15. μ by total internal reflection

Group B

1. Square wave oscillator using gates.
2. Half adder and full adder (7486, 7408)
3. Study of MS-JK flip flop
4. Study of Latch (74LS373)
5. Study of 3:8 Decoder (74LS138)
6. Study of 8:3 Priority Encoder (74LS148)
7. Counters mod 2,5 and 10
8. Shift registers
9. Transistorized Astablemultivibrator
10. Transistorized Monostablemultivibrator
11. Transistorized Bistablemultivibrator
12. Op-Amp as Astablemultivibrator
13. IC 555 timer as Astablemultivibrator
14. IC 555 timer as Monostablemultivibrator
15. IC 555 timer as a Ramp generator

Group C

1. Study of 8085 microprocessor kit and commands.
2. 8 -bit addition, subtraction, multiplication
3. Two digit Decimal addition, subtraction.
4. Memory block transfer from one location to another.
5. Find largest/smallest number in given block.
6. Find number of positive/negative, odd/even elements in given block.
7. Arrange given number in ascending/descending order
   (**Note**: Use 8085 kit or any 8085 simulator to perform practicals)
8. Use of initial magnetization curve to find flux in core
9. Project on a topic (equivalent to three practical sessions)
10. Visit to research institutes (equivalent to three practical sessions)
11. Assignment& literature survey (equivalent to 2 practical sessions).
12. Visit to Hospital with medical diagnostic equipment.
13. Plotting and analysis of detector data (from University /research institutions)
14. Design, Build and test Amplitude Modulator and/or Frequency Modulator
15. Time Division Multiplexing circuit.
16. Frequency Shift Keying(FSK) using IC 555 or XR 2206
17. Demonstration of PAM, PPM and PWM.

Demonstration experiments

1. Error analysis of a given experiment
2. Wave form generator using Op-amp
3. PC simulations: graph, curve fitting etc.
4. Straight edge Fresnel diffraction
5. First order active filter.
6. DAD instruction.

References:

1. Advanced course in Practical Physics D. Chattopadhya, PC Rakshit& B Saha. (6th Edition) Book and Allied Pvt.Ltd.
2. B.Sc PRACTICAL Physics – Harnam Singh S.Chand& Co. Ld. 2001
3. A test book of advanced practical PHYSICS _ SAMIR Kumar Ghosh, New Central Book Agency (3rd edition)
4. B.Sc. Practical Physics – CL Arora (1st Edition) -2001 S.Chand and Co Ltd.
5. Practical Physics CL Squires (3rd Edition) Cambridge University
6. University Practical Physics – DC Tayal. Himalaya Publication
7. Advanced Practical Physics – Worsnop&Flint.

UNIVERSITY OF MUMBAI

No. UG/8 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular Nos. UG/264 of 2017-18, dated 23rd October, 2017, UG/287 of 2017-18, dated 30th October, 2017and UG/263 of 2017-18, dated 23rd October, 2017 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Board of Studies in Physics at its meeting held on 23rd April, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.26 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.Sc. in Physics including Applied Component - Electronic Instrumentation (EI) & Computer Course (CS) (Sem -V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
12th June, 2018

To

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.26/05/05/2018

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No. UG/ 8 -A of 2018 MUMBAI-400 032 12th June, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Physics,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

UNIVERSITY OF MUMBAI

No. UG/8 of 2018-19

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Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular Nos. UG/264 of 2017-18, dated 23rd October, 2017, UG/287 of 2017-18, dated 30th October, 2017and UG/263 of 2017-18, dated 23rd October, 2017 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

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(Dr. Dinesh Kamble)
I/c REGISTRAR

UNIVERSITY OF MUMBAI

Syllabus for Sem V & VI Program: B.Sc.

Course: Electronic Instrumentation

(Applied Component)

(Credit Based Semester and Grading System with effect from the academic year 2018 –2019)

SEMESTER V			
Theory			
USACEI501	**Analog Circuits, Instruments and Consumer Appliances.**	**No. of Credits**	**Lectures/Week**
Unit I	Transducers, Sensors and Optoelectronics Devices	02	04
Unit II	Signal conditioning, SMPS and Measuring Instruments		
Unit III	Data Acquisition and Conversion		
Unit IV	Modern Techniques and Consumer Appliances		
Practicals			
USACEI5P1	**Analog Circuits, Instruments and Consumer Appliances.**	02	04

SEMESTER VI			
Theory			
USACEI601	**Digital Electronics, Microprocessor, Microcontroller and OOP.**	**No. of Credits**	**Lectures/Week**
Unit I	Digital Electronics.	02	04
Unit II	Advanced 8085 Programming and 8255 (PPI) interfacing.		
Unit III	Introduction to Microcontrollers.		
Unit IV	Basic Concepts of Object Oriented Programming and C++.		
Practicals			
USACEI6P1	**Digital Electronics, Microprocessor, Microcontroller and OOP.**	02	04

The revised syllabus under the credit based grading system in the subject of **Electronic Instrumentation** (Applied Component) for Third Year B.Sc. Physics (Single/Twin major subject) will be implemented **from the academic Year 2018-19**

The scheme of examination in the subject of Electronic Instrumentation (Applied Component) will be as follows:

Semester V & VI: Theory

Course Code: USACEI501 & USAEI601

Theory Examination: 100 marks

- Duration of each Theory paper will be of **three** hours.
- Each theory paper shall consist of **five questions**, one from each unit and the fifth question will be from all the units. All questions are compulsory and will have internal choice.
- The theory examination will be conducted by the respective colleges and the marks will be forwarded to the University

Objectives

The objective of these papers is to introduce the students to sensors and transducers, Signal conditioning, data acquisition systems and measuring instruments used in the laboratory. Students are to be exposed to know, in principle, the modern techniques in the field of medical science. To learn PCB designing and working of consumer electronic devices. To develop logic circuit design and implementation. To know advanced programming skills and interfacing techniques. To understand basic building blocks of microcontrollers. To know the terminologies like embedded, CISK and RISK processors. To master Programming and interfacing skills of microprocessor and microcontrollers. To develop object oriented programming skills and programming in C++. To develop various experimental skills.

Expected learning outcomes

Learner will be able to:

- Understand the difference between a transducer and a sensor.
- Understand the construction, working and uses of different types of transducers.
- Understand the concept of signal conditioning, devices used and their operations.
- Get acquainted with the measuring instruments used in laboratory.
- Get the insight of the modern medical instruments in principle, which are used in day to day life.
- Analyze/design and implement combinational logic circuits.
- Develop assembly language programing skills and real time applications of microprocessor.
- Illustrate how to interface the I/O peripheral (PPI) with 8085 microprocessor
- Understand architecture, silent features, instruction set, programming and interfacing of 8051 microcontroller.
- Develop the programming skills in programming Language C++.
- Train their practical knowledge through lab experiments.
- Get practical training to interface different programmable peripherals and I/O devices to microprocessor and microcontroller.

Semester V & VI: Practical

Course Code: USACEI5P1 & USACEI6P1

The practical examination will be conducted as per the following scheme by the respective colleges and the marks will be forwarded to the University:

Sr. No	Particulars of External Practical Examination	Marks
1	Laboratory Work	80
2	Journal	10
3	Viva	10
	TOTAL	**100**

Total Marks in each semester: **100 Marks**

- Duration of each Practical paper will be of 3 Hours per semester.
- A certified Journal of Electronic Instrumentation must contain a minimum of **EIGHT** Experiments in each semester. At least TWO experiments from each sub groups, as mentioned in the syllabus, should be performed and reported in journal.
- Every candidate will be required to perform ONE experiment (from sub groups A or B or C or D) at the semester end practical examination.
- A candidate will be allowed to appear for the Practical Examination only if the candidate submits his/her certified Journal or a certificate from the Head of the Department of Physics stating that the candidate has completed the practical Course of Electronic Instrumentation of the respective semester as per requirements.

SEMESTER V

COURSE CODE: USACEI501

ANALOG CIRCUITS, INSTRUMENTS AND CONSUMER APPLIANCES.

Unit- I:	**Transducers, Sensors and Optoelectronic Devices**	(15 lect.)
1.	**Transducers:** Definition, Classification, Selection of transducer.	
2.	**Electrical transducers:** Thermistor, Thermocouple, Pressure Transducer: Strain gauges (wire, foil, & semiconductor), Displacement transducer: LVDT, Peizo-electric Transducer. [Ref. 2, 3, 6 & 9]	
3.	**Chemical sensors:** PH sensor, Gas sensor (Fundamental aspects), Humidity sensor (Resistive). [R6, R7].	
4.	**Electronic Weighing Systems:** Operating principle, Block diagram, features [Ref12 & 13].	
5.	**Optoelectronic Devices:** LDR, LED (Construction, Working & Applications), Multicolour LED, Seven Segment Display, Liquid Crystal Display (LCD), Photodiode (construction, Characteristics & applications), Phototransistor. [Ref. 1, 2 & 3]	
Unit-II:	**Signal Conditioning, SMPS and Measuring Instruments**	(15 lect.)
1.	Half wave precision rectifier, Active Peak detector, Active Positive Clamper [M & B].	
2.	Active Positive and Negative Clippers [G]	
3.	**Microphones:** characteristics, types (list only), carbon microphone and dynamic type microphone (principle, construction and working) [R4].	
4.	**Loud speakers:** Characteristics, Dynamic (Moving coil type) speaker, Multi-way speaker system (woofer and tweeter) [R4]	
5.	**Switching Regulators:** Basic and Monolithic Switching regulators (buck, boost and buck – boost) (Only basic Configurations) Ref M: 24.7	

6.	**Cathode Ray Oscilloscope:** Single trace CRO (Block diagram), Front Panel Controls (Intensity, Focus, Astigmatism, X & Y position, Level knob, Time base (Time/Division) and attenuation (Volts/Division) knobs, X-Y mode), Dual Trace CRO (Block diagram), Probes: 1:1&10:1. Digital Storage Oscilloscope [R3 &10].
7.	**DMM:** 3 ½ Digit, resolution and sensitivity, general specification. [R3]

Unit- III:	**Data Acquisition and Conversion**	(15 lect.)

1.	**Data acquisition system:** Objectives of DAS, Signal conditioning of inputs, Single channel Data Acquisition system, Multichannel Data Acquisition system. [Data Transmission systems IEEE-488 GPIB*] [Ref. 11]
2.	**D to A Converters:** Resistive divider network, Binary ladder network [Ref 7 & 8]
3.	**A to D Converters:** Successive approximation type, Voltage to Time (Single slope, Dual slope). [Ref. 7 & 8]

Unit-IV:	**Modern Techniques and Appliances**	(15 lect.)

1.	**Printed Circuit Board:** Idea of PCB, advantages, copper clad, Etching processes, Principle of Photolithography (For PCB). [Ref. 4, 14 & 15].
2.	**Microwave Oven:** Operating principle, block diagram, features. [Ref. 12 & 13]
3.	**Medical instruments:** Bio-Potential, Types of electrodes, ECG, EEG, EMG, CT Scan and MRI (principle, block diagram and features), Ultrasonography: working principle [R 16, 17 and18].

References:

1.	A Textbook of Applied Electronics – R S Sedha, S Chand & Company, New Delhi.
2.	Basic Electronics Solid state - B. L. Thereja, S Chand & Company, New Delhi.
3.	Electronic Instrumentation – H S Kalsi, Tata McGraw-Hill Publishing Company Limited, New Delhi.
4.	Electronic components and materials: Principles, Manufacture and Maintenance- S. M. Dhir, Tata McGraw-Hill Publishing Company Limited, New Delhi.

	https://books.google.co.in/books?id=sGbwj4J76tEC&pg=PA384&lpg=PA384&dq=4.+Electronic+components+and+materials:+Principles,+Manufacture+and+Maintenance-+S.+M.+Dhir,+Tata+McGraw-Hill+Publishing+Company+Limited,+New+Delhi.&source=bl&ots=U1ekaiN3pB&sig=viKj6soAvVom4Hx9W-53Q-koqFM&hl=en&sa=X&ved=0ahUKEwjCq97viYXaAhUEPo8KHfMNBaQQ6AEIMjAC#v=onepage&q=4.%20Electronic%20components%20and%20materials%3A%20Principles%2C%20Manufacture%20and%20Maintenance-%20S.%20M.%20Dhir%2C%20Tata%20McGraw-Hill%20Publishing%20Company%20Limited%2C%20New%20Delhi.&f=false. https://books.google.co.in/books?id=bftp5ZG8v5kC&pg=PP1&lpg=PP1&dq=digital+Electronics+-+by+A.P+Godse+%26+D.A+Godse+Technical+publications,+Pune,+Revised+third+edition,+2008&source=bl&ots=_ApVT8Km_H&sig=hfrgOdJHfzdZwEy1_JPogAeRhLE&hl=en&sa=X&ved=0ahUKEwif3ZbKssraAhVFPI8KHVaJBKIQ6AEINTAB#v=onepage&q=digital%20Electronics%20-%20by%20A.P%20Godse%20%26%20D.A%20Godse%20Technical%20publications%2C%20Pune%2C%20Revised%20third%20edition%2C%202008&f=false
5.	Measurement and Instrumentation Principles: Alan S. Morris., Butterworth-Heinemann.
6.	Transducers and display systems: B. S. Sonde, Tata McGraw-Hill Publishing Company Limited, New Delhi.
7.	Digital principles and applications: A.P. Malvino and D. P. Leach. Tata McGraw-Hill.
8.	Data Converters– B. S. Sonde, Tata McGraw-Hill Publishing Company Limited, New Delhi.
9.	Modern Electronic Instruments and Measurement techniques- Albert D. Helfrick, Willam D. Cooper, Prentice Hall India Pvt. Ltd, New Delhi.
10.	A course in electrical and electronic Measurements and Instrumentation: A. K. Sawhney, DhanpatRai and Sons. https://www.scribd.com/document/258017718/A-K-sawhney-A-Course-in-Electrical-and-Electronic-Measurements-and-Instrumentation
11.	Instrumentation Devices & Systems , 2nd Edition Tata McGrawHill- C.S. Rangan, G.R. Sarma,V.S. Mani
12.	Consumer Electronics R. P. Bali, Pearson Education (2008)

13.	S.P Bali, "Consumer Electronics", Pearson Education Asia Pvt., Ltd., 2008 Edition,
14.	Printed Circuits Handbook pdf, Clyde F. Coombs. Jr. , McGraw Hill Handbooks, 6th ed.
15.	PCB design basics, Mahmoud Wahby, EDN Networks, Nov 2013.
16.	Introduction to Bio-medical Electronics: Joseph-Du-bary, McGraw Hill Co. Ltd.
17.	Medical instrumentation Application and design- J. C. Wobster
18.	Biomedical instruments and measurements – L. Cromwell, F. J. Weibell, Printice hall of India of India Pvt. Ltd, New Delhi.

PRACTICALS (Semester V)

Course Code: USACEI5P1

1. Perform Minimum TWO Experiments from each group.
2. **Group C** experiments must be performed on Bread Boards.

GROUP - A	
Sr. No.	**Name of the Experiments**
1	Thermistor Characteristics –Thermal and electrical. (H & C)
2	Thermistor as sensor in temperature to voltage converter using OPAMP. (C&D Ch.8)
3	Study of LVDT characteristics. (K Ch. 13)
4	Study of Load Cell / Strain Guage. (K Ch. 13)
5	Study of seven segment display.
6	Characteristics of Photo diode and photo transistors.

GROUP - B	
Sr. No.	**Name of the Experiments**
1	Basic Instrumentation Amplifier using 3 Op-Amps coupled to resistance bridge. (C & D Ch. 8)
2	Temperature to frequency Conversion using 555 timer. (C & D Ch.13)
3	OPAMP D/A Converter: Binary weighted resistors.
4	OPAMP D/A Converter: Ladder network. (M & L Ch. 12)
5	Sample and hold circuit using op-amp 741. (G Ch. 8)
6	Peak detector using op-amp 741. (G Ch. 8)

GROUP – C (Must be performed on Bread Board)	
Sr. No.	**Name of the Experiments**
1	Half wave precision rectifier using precision op-amps (OPA177) (C & D Ch. 7)
2	Positive and Negative Clippers using op-amp.(G Ch. 8)
3	Positive and Negative Clampers using single power supply op-amp (124/324). (G Ch. 8)
4	Second Order active Low Pass filter (frequency response & phase relation)
5	Second Order active High Pass filter (frequency response & phase relation) (K.Ch15)
6	Active Notch Filter (frequency response & phase relation) (K.Ch.15)
7	Square and Triangular wave generator using OPAMPs with concept of duty cycle (M.Ch 23)

GROUP - D	
Sr. No.	**Name of the Experiments**
1.	Study of variable dual power supply using LM 317& LM 337 (± 3v to ± 15v). (C&D Ch.13)
2.	Constant Current source using OPAMP and PNP transistor (o/p current less than 50 mA) (C & D Ch 5)
3.	Simple microphone amplifier using a transistor.
4.	Low voltage audio amplifier using IC LM386
5.	Construction of Audio power amplifier using IC TBA 810.
6.	Making PCB for simple circuits (like rectifiers, regulators, oscillators, multivibrators, op-amp applications, single stage amplifier etc.), building and testing of the circuit.
7.	Visit to Hospital/Diagnostic Center/ Bio-medical Research Laboratory and submission of its report.

- Experiment No. 5 & 6 are Hands-on experiments. Learner have to prepare report, PPT and viva voice. Which is equivalent to 2 regular experiments.
- Visit to Hospital/Diagnostic Center/ Bio-medical Research Laboratory and submission of its report which is also equivalent to 2 regular experiments.
- Learner will be examined for Expt. No. 5, 6 and 7 on the basis of submitted report, PPT and viva, and need not perform regular experiment during the Practical Examination.

References:

1.	H & C: Modern Electronic Instrumentation & Measurement Techniques by Albert D. Helfrick & William D. Cooper PHI) Edition.
2.	C & D: OPAMPs and linear integrated circuits" by Coughlin & F. F. Driscoll (6th edition PHI)
3.	G: OPAMPs and linear integrated circuits by R.A. Gayakwad (4th edition, PHI).
4.	M: Electronic Principles by A. P. Malvino, (PHI), 6th edition.

5.	K: Electronic Instrumentation by H. S. Kalsi, (TMH) 2nd Edition
6.	M & L: Digital Principle and Applications" by Malvino and Leach, (TMH), 5th edition,
7.	RPJ: Modern Digital Electronics, R .P. Jain, (TMH), 3rd edition.

SEMESTER VI

COURSE CODE: USACEI602

DIGITAL ELECTRONICS, MICROPROCESSOR, MICROCONTROLLER AND OOP

Unit- I:	**Digital Electronics**	(15 lect.)
1.	**Combinational Logic Design:** Introduction, Boolean identities, K – map (2, 3 and 4 variable), **Ref: N G P 4.1 – 4.8.** (additional ref. RPJ)	
2.	**Design and implementations of:** Decoders, Encoders, Multiplexers, De-multiplexers, Use of MUX and DEMUX in Combinational Logic design. Code Converters (based on – binary, BCD, Gray and Excess – 3 codes). Tri-State logic, buffers, D latch.	
	Ref: N G P - 5.1 (only introduction), 5.3, 7.1 -7.6 (except 7.5) RPJ - 4.20. RG: 3.5.1, 3.5.2, 3.5.3, 3.5.4 & 3.5.5 NGP: Digital Electronics and Logic design by N G PALAN, https://archive.org/details/hellomr82k_gmail_DE RG: Microprocessor Architecture, Programming and Applications with the 8085, Ramesh Gaonkar, 5th Edition. RPJ: R. P. Jain, Modern Digital Electronics, Tata McGraw Hill, 4th Edition.	

Unit-II:	**Advanced 8085 Programming and 8255(PPI)**	(15 lect.)
1.	Introduction to advanced instructions and applications Ref. RG: 10.7, 10.8, 10.9	
2.	Stack and Subroutines**:** Stack, Subroutine Ref. RG: 9.1, 9.1.1, 9.2&9.2.1	
3.	The 8255 Programmable Peripheral Interface: Block Diagram of the 8255, Mode 0 – Simple Input / Output mode, BSR (Bit Set/Reset Mode) Ref. RG: 15.1.1, 15.1.2& 15.1.3	
	RG: Microprocessor Architecture, Programming and Applications with the 8085, Ramesh Gaonkar, 5th Edition.	
Unit- III:	**Introduction to Microcontrollers**	(15 lect.)
1.	Introduction, Microcontrollers and Microprocessors, History of Microcontrollers and Microprocessors, Block diagram of 8051 Microcontroller*, Embedded Versus External Memory Devices, 8-bit & 16-bit Microcontrollers, CISC and RISC Processors, Harvard and Von Neumann Architectures, Commercial Microcontrollers. Ref. AVD-Ch: 1 Ref. MMM - For * Refer 1.2 The 8051 Microcontroller & Embedded Systems by M.A. Mazidi, J.G. Mazidiand R. D. Mckinlay, Second Edition, Pearson.	
2.	**8051 Microcontrollers:** Introduction, MCS-Architecture, Registers in MCS-51, 8051 Pin Description, 8051 Connections, 8051 Parallel I/O Ports, Memory Organization. AVD-Ch: 2, 3.	
3.	**8051 Instruction Set and Programming:** *MCS-51 Addressing Modes and Instructions***:** 8051 Addressing modes, MCS-51 Instruction Set, 8051 Instructions and Simple Programs, Using Stack Pointer AVD-Ch: 4 Ref. AVD: Microcontrollers (Theory and Applications) by Ajay V Deshmukh, The Tata-McGraw-Hill Companies **Ref. Intel's 8031/8051 Data sheet**	

	https://archive.org/details/bitsavers_intel8051M4_15073500 https://www.8051projects.net/download-d215-intel-mcs-51-8051-user-manual.html https://archive.org/stream/212656146The8051MicrocontrollerByIScottMackenzie4th Edition/212656146-The-8051-Microcontroller-by-I-Scott-Mackenzie-4th-Edition#page/n47/mode/2up Additional Reference books: 1. The 8051 Microcontroller & Embedded Systems-Dr. Rajiv Kapadia (Jaico Pub. House) 2. 8051 Micro-controller by K.J.Ayala., Penram International. 3. Programming & customizing the 8051 microcontroller By Myke Predko, TMH. 4. The 8051 Microcontroller & Embedded Systems by M.A. Mazidi, J.G. Mazidiand R.D.Mckinlay, Second Edition, Pearson.

Unit-IV:	**Basic Concepts of Object Oriented Programming and C++**	(15 lect.)
1.	**Basics of Object-Oriented Programming & Beginning with C++:** Basic concepts of Object-Oriented Programming, Benefits of OOP, Object-Oriented Languages, Applications of OOP. What is C++?, Applications of C++, A simple C++ program, More C++ Statements, Example with Class, Structure of C++ Program, Creating the Source File, Compiling and Linking. Ref EB: 1.5, 1.6, 1.7 & 1.8 EB: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 & 2.8	
2.	**Tokens and Expressions in C++:** Introduction, Tokens, Keywords, Identifiers and Constants, Basic Data Types, User-Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator, Expressions and Their Types, Special Assignment Expressions, Implicit Conversions, Operator Overloading, Operator Precedence. Ref EB: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 3.19, 3.20, 3.21, 3.22 & 3.23	
3.	**Control Structures and Functions:** Control Structures, Functions: The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Arguments, Constant Arguments, Function Overloading, Math Library Functions.	

	Ref EB: 3.24, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9 & 4.11 **Reference:** EB: Object Oriented Programming with C++ by E Balagurusamy, Third /Fourth Edition, Tata McGraw-Hill Publishing Company Limited. **Additional references:** 1) Microprocessor and Applications by Vibhute and Borole, Techmax Publications, 2) Microprocessor, Principles & Applications by Gilmore (2nd Ed) TMH 3) Programming with C++ by D. Ravichandran, Tata McGraw-Hill Publishing Company Limited. 4) Starting out with C++ by Tony Gaddis, Third Edition, Addison Wesley Publishing Company. 5) Digital Electronics - by A.P Godse & D.A Godse Technical publications, Pune, Revised third edition, 2008. Pg.No:2.25-2.70 (for K-maps). https://www.scribd.com/document/103027386/Digital-Electronics-By-D-A-Godse-A-P-Godse https://books.google.co.in/books?id=JkMrIjNKI7IC&pg=PP1&lpg=PP1&dq=Digital+Electronics+-+by+A.P+Godse+%26+D.A+Godse+Technical+publications,+Pune,+Revised+third+edition,+2008&source=bl&ots=9VG8scIgqH&sig=d7cyhWaM7cCwabgqRMoWz6snI8s&hl=en&sa=X&ved=0ahUKEwiv55-j6cbaAhUBvY8KHUZJBmMQ6AEIPTAD#v=onepage&q=Digital%20Electronics%20-%20by%20A.P%20Godse%20%26%20D.A%20Godse%20Technical%20publications%2C%20Pune%2C%20Revised%20third%20edition%2C%202008&f=false

PRACTICALS (Semester VI)

Course Code: USACEI6P1

Note: Perform Minimum TWO Experiments from each group.

GROUP – A: Digital Electronics	
Sr. No.	**Name of the Experiments**
1	Study of 3:8 Decoder (74LS138), 8:3 Priority Encoder (74LS148) and their applications.
2	Study of Latch (74LS373) and its application.
3	Study of 8:1 Multiplexer (74LS151), 1: 4 De-multiplexer (74LS155) and their applications.
4	Study of unidirectional buffer (74LS244) and bidirectional buffer (74LS245).
5	Design using K –map and implement 4:1 MUX, 1:4 DEMUX, 2bit comparator, Full adder and Full subtractor. [Note: Use suitable circuit simulator for implementation]
6	Designing (using K –map) and implementation of code convertors. (any two – Binary to Gray, Gray to Binary, BCD to Excess – 3 and Excess-3 to BCD) [Note: Use suitable circuit simulator for implementation]
GROUP – B : 8085 Advanced Programming and 8255 interfacing **Note:** The students should be familiar with Keyboard and Display utilities such as READ KEYBOARD, TO DISPLAY ON ADDRESS FIELD, and TO DISPLAY ON DATA FIELD, mentioned in the 8085 µp kit's manual.	
Sr. No.	**Name of the Experiments**
8085 programming	
1	Write An ALP: a) To Evaluate simple arithmetic Expression (like Y= a x b + c x d where a, b, c and d are 8-bit HEX numbers) b) To Add parity bit to 7-bit ASCII characters.

2	Write An ALP for code conversion (any two)
3	16-bit Data manipulation (Addition, subtraction) Display result on Address field.
4	Write ALP for Addition/ Subtraction/Multiplication of two, 8-bit hex, numbers. [**Note:** Use Read Keyboard Utility for inputting the hex numbers and display the result on the Address field.]
8255 interfacing	
1.	Design a system (both Software and Hardware) that will cause 4 LEDs to flash when a push button switch is pressed. Assume persistence of vision to be 0.1 seconds.
2.	Design a system (both Software and Hardware) using 8 LED display to demonstrate: a) Binary - up, down and ring counters. b) Flashing display.
3.	Design a system (both Software and Hardware) to control ON/OFF operation of 4 electrical loads (appliances).
4.	Interfacing 8 switches and 8 LEDs to 8255: a) Write ALP to read the status of the switches and display on the LEDs. b) Write ALP so that when the first switch is made ON all the LEDs should glow and when the second switch is made OFF all the LEDs should become off.
GROUP – C: Experiments for 8031 / 8051 / 89C51	
Sr. No.	**Name of the Experiments**
1	**8031/51 assembly language programming:** a) Simple data manipulation programs. (8/16-bit addition, subtraction, multiplication, division. b) 8/16 bit data transfer, cubes of nos., to rotate a 32- bit number c) Finding greatest/smallest number from a block of data, decimal / hexadecimal counter.

2	**Study of IN and OUT port of 8031/51 by Interfacing switches, LEDs and Relays:** a) To display bit pattern on LED's b) To count the number of "ON" switches and display on LED's, c) To trip a relay depending on the logic condition of switches d) Event counter (using LDR and light source)
GROUP – D: C++ Programming	
Sr. No.	**Name of the Experiments**
1.	Program based on Input, Output Statements. (Programs to read any two numbers through keyboard and to perform simple arithmetic operations and to display the result).
2.	Program based on Control Statements a) Program based on if-else statement b) Program based on nested if statement
3.	Program based on for loop, while loop and do-while loop.
4.	Program using switch statements and if-else ladder.
5.	Program to study function declaration, function calling and function prototype.

UNIVERSITY OF MUMBAI

No. UG/8 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular Nos. UG/264 of 2017-18, dated 23rd October, 2017, UG/287 of 2017-18, dated 30th October, 2017and UG/263 of 2017-18, dated 23rd October, 2017 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Board of Studies in Physics at its meeting held on 23rd April, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.26 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.Sc. in Physics including Applied Component - Electronic Instrumentation (EI) & Computer Course (CS) (Sem -V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
12th June, 2018

To

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.26/05/05/2018

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No. UG/ 8 -A of 2018 MUMBAI-400 032 12th June, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Physics,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

UNIVERSITY OF MUMBAI

SYLLABUS FOR SEM - V & VI

Program: B.Sc.

Course: Physics

(Credit Based Semester and Grading System
w. e. f. the academic year 2018–2019)

T.Y.B.Sc. Physics Syllabus: Credit Based Semester and Grading System to be implemented from the Academic year 2018-2019.

SEMESTER V				
Theory				
Course	**UNIT**	**TOPICS**	**Credits**	**Lectures per Week**
USPH501	I	Mathematical Methods in Physics	**2.5**	**4**
	II	Mathematical Methods in Physics		
	III	Thermal and Statistical Physics		
	IV	Thermal and Statistical Physics		
USPH502	I	Solid State Physics	**2.5**	**4**
	II	Solid State Physics		
	III	Solid State Physics		
	IV	Solid State Physics		
USPH503	I	Atomic Physics	**2.5**	**4**
	II	Atomic Physics		
	III	Molecular Physics		
	IV	Molecular Physics		
USPH504	I	Electrodynamics	**2.5**	**4**
	II	Electrodynamics		
	III	Electrodynamics		
	IV	Electrodynamics		
Practicals				
USPHP05	Practicals of Course USPH501 + Course USPH502		**2.5**	**6**
USPHP06	Practicals of Course USPH503 + Course USPH504		**2.5**	**6**
Project				
USPHPR1	USPH501 + USPH502 + USPH503 + USPH504		**1**	**4**

SEMESTER VI				
Theory				
Course	**UNIT**	**TOPICS**	**Credits**	**Lectures per Week**
USPH601	I	Classical Mechanics	**2.5**	**4**
	II	Classical Mechanics		
	III	Classical Mechanics		
	IV	Classical Mechanics		
USPH602	I	Electronics	**2.5**	**4**
	II	Electronics		
	III	Electronics		
	IV	Electronics		
USPH603	I	Nuclear Physics	**2.5**	**4**
	II	Nuclear Physics		
	III	Nuclear Physics		
	IV	Nuclear Physics		
USPH604	I	Special Theory of Relativity	**2.5**	**4**
	II	Special Theory of Relativity		
	III	Special Theory of Relativity		
	IV	Special Theory of Relativity		
Practicals				
USPH605	Practicals of Course USPH601 + Course USPH602		**2.5**	**6**
USPH606	Practicals of Course USPH603 + Course USPH604		**2.5**	**6**
Project				
USPHPR2	USPH601 + USPH602 + USPH603 + USPH604		**1**	**4**

SCHEME OF THEORY, PRACTICALS AND PROJECT EXAMINATION
(SEM- V & VI)

I.	**Theory: External Examination: 100 marks**	
	Each theory paper shall be of **THREE** hours duration.	
	Each paper shall consist of FIVE questions. All questions are compulsory and will have internal options. Choice in papers has to be 1.5 times.	
	Q – I :	From Unit – I
	Q – II :	From Unit – II
	Q – III :	From Unit - III
	Q – IV :	From Unit - IV
	Q – V :	Will consist of questions from all the FOUR Units with equal weightage of marks allotted to each Unit.

II.	**Practicals and Project:** The External Practical Examination will be conducted as per the following scheme.			
Sr. No.	**Particulars of External Practical and Project Examination**			**Total Marks**
1	Laboratory Work	Experiment-1= 60 M	Experiment-2 = 60 M	120
2	Journal	10	10	20
3	Viva	10	10	20
			Sub Total =	**160**
III.	**Project**	Internal Examiner (20 M)	External Examiner (20 M)	**40**
			Grand Total	**200**

<u>Passing Criteria:</u>

1. A student should be considered as passed in the practical examination provided he/she fulfills the following passing criteria
    a. Minimum of 20 marks in each practical component - i.e. **USPHP07** and **USPHP08.**
    b. Minimum of 10 marks in Project Component
    c. And cumulatively scoring 80 marks (i.e. 40 % of 200 marks)

Component	**Maximum Marks**	**Minimum Passing Marks**
USPHP07	80	20
USPHP08	80	20
Project 2	40	10
Total	**200**	**80**

Scheme of Examination:

1. The University (external) examination for Theory and Practical shall be conducted at the end of each Semester and the evaluation of Project work at the end of the each Semester.
2. The candidate should appear for **THREE** Practical sessions of **three hours each** as part of his/her Practical course examination.
3. The candidates shall appear for external examination of 2 practical courses each carrying 80 marks and presentation of project work carrying 20 marks at the end of each semester.
4. The candidates shall also appear for internal presentation of project work carrying 20 marks at the end of each semester.
5. The candidate shall prepare and submit for practical examination a certified Journal based on the practical course with **6** experiments from each group.
6. The certified journal must contain a minimum of **12** regular experiments (**6** from each group), **with** minimum **5** demonstration experiments in semester VI. A separate index and certificate in journal is must for each semester course.
7. At the time of practical examination, the candidate must also submit the certified Project Report prepared as per the guidelines given in the Syllabus.

A candidate will be allowed to appear for the practical examination only if the candidate submits a certified journal of TYBSc Physics or a certificate from the Head of the Department to the effect that the candidate has completed the

practical course of TYBSc Physics as per the minimum requirements and a project completion report duly certified by the project in-charge and Head of the Department.

III. Visits: Visits to industry, national research laboratories, and scientific exhibitions should be encouraged.

SEMESTER V

Theory Course - USPH501: Mathematical, Thermal and Statistical Physics

Learning outcomes: From this course, the students are expected to learn some mathematical techniques required to understand the physical phenomena at the undergraduate level and get exposure to important ideas of statistical mechanics.

The students are expected to be able to solve simple problems in probability, understand the concept of independent events and work with standard continuous distributions. The students will have idea of the functions of complex variables; solve nonhomogeneous differential equations and partial differential equations using simple methods. The units on statistical mechanics would introduce the students to the concept of microstates, Boltzmann distribution and statistical origins of entropy. It is also expected that the student will understand the difference between different statistics, classical as well as quantum.

Unit - I	**Probability**	(15 lect.)
Review of basic concepts, introduction, sample space, events, independent events, conditional probability, probability theorems, methods of counting (derivation of formulae not expected), random variables, continuous distributions (omit joint distributions), binomial distribution, the normal distribution, the Poisson distribution. Ref: MB – 15.1-15.9 Expected to cover solved problems from each section and solve at least the following problems:		

section 2: 1-5, 11-15, **section 3:** 1, 3, 4, 5, **section 4:** 1, 3, 5,13, 21, **section 5:** 1, 10, 13, **section 6:** 1 to 9, **section 8:** 1 and 3, **section 9:** 2, 3, 4, 9.		
Unit -II	**Complex functions and differential equations**	(15 lect.)
1. Functions of complex variables: The exponential and trigonometric functions, hyperbolic functions, logarithms, complex roots and powers, inverse trigonometric and hyperbolic functions, some applications. Ref.: MB: 2.11 to 2.16 Expected to cover all solved problems. In addition, solve the following problems: **section 2:** 16 – 2, 3, 8, 9, 10.		
2. Second-order nonhomogeneous equations with constant coefficients, partial differential equations, some important partial differential equations in physics, method of separation of variables. Ref : CH :5.2.4, 5.3.1 to 5.3.4 Expected to cover all solved problems. In addition, solve the following problems: 5.17 a to e, 5.23, 5.26, 5.29 to 5.35.		
Unit -III	**Statistical Thermodynamics**	(15 lect.)
Microstates and configurations, derivation of Boltzmann distribution, dominance of Boltzmann distribution, physical meaning of the Boltzmann distribution law, definition of , the canonical ensemble, relating Q to q for an ideal gas, translational partition function, equipartition theorem, energy, entropy ER: 13.1 to 13.5, 14.1, 14.2, 14.4, 14.8, 15.1, 15.4		
Unit -IV	**Classical and Quantum Statistics**	(15 lect.)
The probability of a distribution, The most probable distribution, Maxwell-Boltzmann statistics, Molecular speeds. Bose-Einstein statistics, Black-body radiation, The Rayleigh-Jeans formula,		

The Planck radiation formula, Fermi-Dirac statistics, Comparison of results. AB : 15.2 to 15.5, 16.1 to 16.6

References:

1.	MB: Mathematical Methods in the Physical sciences: Mary L. Boas Wiley India, 3rd ed.
2.	ER: Thermodynamics, Statistical Thermodynamics and Kinetics: T. Engel and P. Reid (Pearson).
3.	AB: Perspectives of Modern Physics: Arthur Beiser, (Mc Graw Hill International).
4.	CH: Introduction to Mathematical Methods: Charlie Harper (PHI Learning).
Additional References:	
1.	Mathematical Physics: A K Ghatak, Chua – 1995 Macmillian India Ltd.
2.	Mathematical Method of Physics: Riley, Hobson and Bence, Cambridge (Indian edition).
3.	Mathematical Physics: H. K. Das, S. Chand & Co.
4.	Mathematical Methods of Physics: Jon Mathews & R. L. Walker, W A Benjamin inc.
5.	A Treatise on heat: Saha and Srivastava (Indian press, Allahabad)
6.	Statistical Physics: F. Reif (Berkeley Physics Course, McGraw Hill)
7.	Introductory Statistical Mechanics: R. Bowley and M. Sanchez (Oxford Science Publications).
8.	An Introduction to Thermal Physics: D. V. Schroeder (Pearson).
9.	PROBABILITY: Schaum's Outlines Series by S. Lipschutz and M. L. Lipson (Mc Graw Hill International).

Theory Course - USPH502: Solid State Physics

Learning Outcomes: On successful completion of this course students will be able to:

1. Understand the basics of crystallography, Electrical properties of metals, Band Theory of solids, demarcation among the types of materials, Semiconductor Physics and Superconductivity.
2. Understand the basic concepts of Fermi probability distribution function, Density of states, conduction in semiconductors and BCS theory of superconductivity.
3. Demonstrate quantitative problem solving skills in all the topics covered.

Unit - I	**Crystal Physics**	(15 lect.)
The crystalline state, Basic definitions of crystal lattice, basis vectors, unit cell, primitive and non-primitive cells, The fourteen Bravais lattices and the seven crystal systems, elements of symmetry, nomenclature of crystal directions and crystal planes, Miller Indices, spacing between the planes of the same Miller indices, examples of simple crystal structures, The reciprocal lattice and X-ray diffraction. Ref: Elementary Solid State Physics-Principles and Applications: M. Ali Omar, Pearson Education, 2012 : (1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.6)		
Unit -II	**Electrical properties of metals**	(15 lect.)
1. Classical free electron theory of metals, Drawbacks of classical theory, Relaxation time, Collision time and mean free path 2. Quantum theory of free electrons, Fermi Dirac statistics and electronic distribution in solids, Density of energy states and Fermi energy, The Fermi distribution function, Heat capacity of the Electron gas, Mean energy of electron gas at 0 K, Electrical conductivity from quantum mechanical considerations, Failure of Sommerfeld's free electron Theory 3. Thermionic Emission		

Ref.: Solid State Physics: S. O. Pillai, New Age International. 6th Ed.

Chapter 6: II, III, IV, V, XIV, XV, XVI, XVII, XVIII, XX, XXXV, XXXI.

Unit -III	**Band Theory of Solids and Conduction in Semiconductors**	(15 lect.)

1. Band theory of solids, The Kronig- Penney model (Omit eq. 6.184 to 6.188), Brillouin zones, Number of wave functions in a band, Motion of electrons in a one-dimensional periodic potential, Distinction between metals, insulators and intrinsic semiconductors.

   Ref.: Solid State Physics: S. O. Pillai, New Age International, 6th Ed.

   Chapter 6: XXXVI, XXXVII, XXXVIII, XXXIX, XXXX, XXXXI

2. Electrons and Holes in an Intrinsic Semiconductor, Conductivity of a Semiconductor, Carrier concentrations in an intrinsic semiconductor, Donor and Acceptor impurities, Charge densities in a semiconductor, Fermi level in extrinsic semiconductors, Diffusion, Carrier lifetime, The continuity equation, Hall Effect.

   Ref.: Electronic Devices and Circuits: Millman, Halkias & Satyabrata Jit. (3rd Ed.) Tata McGraw Hill.: 4.1 to 4.10.

Unit -IV	**Diode Theory and superconductivity**	(15 lect.)

1. Semiconductor-diode Characteristics: Qualitative theory of the p-n junction, The p-n junction as a diode, Band structure of an open-circuit p-n junction, The current components in a p-n junction diode, Quantitative theory of p-n diode currents, The Volt-Ampere characteristics, The temperature dependence of p-n characteristics, Diode resistance.

   Ref.: Electronic Devices and Circuits: Millman, Halkias & Satyabrata Jit. (3rd Ed.) Tata McGraw Hill.: 5.1 to 5.8

2. Superconductivity: Experimental Survey, Occurrence of Superconductivity, destruction of superconductivity by magnetic field, The Meissner effect, London equation, BCS theory of superconductivity, Type I and Type II Superconductors, Vortex state.

   Ref.: Introduction to Solid State Physics-Charles Kittel, 7th Ed. John Wiley &

Sons: Topics from Chapter 12.

Main References:

1.	Elementary Solid State Physics-Principles and Applications: M.Ali Omar, Pearson Education, 2012.
2.	Solid State Physics: S. O. Pillai, New Age International, 6th Ed.
3.	Electronic Devices and Circuits: Millman, Halkias & Satyabrata Jit. (3rd Ed.) Tata McGraw Hill.
4.	Introduction to Solid State Physics - Charles Kittel, 7th Ed. John Wiley & Sons.
5.	Modern Physics and Solid State Physics: Problems and solutions New Age International.
Additional References:	
1.	Solid State Physics: A. J. Dekker, Prentice Hall.
2.	Electronic Properties of Materials: Rolf Hummel, 3rd Ed. Springer.
3.	Semiconductor Devices: Physics and Technology, 2nd Ed. John Wiley & Sons.
4.	Solid State Physics: Ashcroft & Mermin, Harcourt College Publisher.

Theory Course - USPH503: Atomic and Molecular Physics

Learning Outcome: Upon successful completion of this course, the student will understand

- the application of quantum mechanics in atomic physics
- the importance of electron spin, symmetric and antisymmetric wave functions and vector atom model
- Effect of magnetic field on atoms and its application
- Learn Molecular physics and its applications.

- This course will be useful to get an insight into spectroscopy.

Unit - I		(15 lect.)
1. Hydrogen atom: Schrödinger's equation for Hydrogen atom, Separation of variables, Quantum Numbers: Total quantum number, Orbital quantum number, Magnetic quantum number. Angular momentum, Electron probability density (Radial part). 2. Electron spin: The Stern-Gerlach experiment, Pauli's Exclusion Principle Symmetric and Anti-symmetric wave functions. Ref – Unit – I - B: 9.1 to 9.9, B: 10.1, 10.3. 2		
Unit -II		(15 lect.)
1. Spin orbit coupling, Total angular momentum, Vector atom model, L-S and j-j coupling. Origin of spectral lines, Selection rules. 2. Effect of Magnetic field on atoms, the normal Zeeman effect and its explanation (Classical and Quantum), The Lande g - factor, Anomalous Zeeman effect. Ref – Unit – II - B: 10.2, 10.6, 10.7, 10.8, 10.9. B : 11.1 and 11.2		
Unit -III		(15 lect.)
1. Molecular spectra (Diatomic Molecules): Rotational energy levels, Rotational spectra, Vibrational energy levels, Vibrational-Rotational spectra. Electronic Spectra of Diatomic molecules: The Born-Oppenheimer approximation, Intensity of vibrational-electronic spectra: The Franck-Condon principle. 2. Infrared spectrometer & Microwave spectrometer . Ref – Unit – III - B: 14.1, 14.3, 14.5, 14.7		
Unit -IV		(15 lect.)
1. Raman effect: Quantum Theory of Raman effect, Pure Rotational Raman spectra: Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra: Raman activity of vibrations, Experimental set up of Raman Effect. 2. Electron spin resonance: Introduction, Principle of ESR, ESR spectrometer		

3. Nuclear magnetic resonance: Introduction, principle and NMR instrumentation. **Ref – Unit – IV -** 1. BM: 6.11, 6.1.3. 2. BM: 4.1.1, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.3.1. GA: 8.6.1 2. GA: 11.1,11.2and 11.3 3. GA: 10.1,10.2,10.3

References:

1.	B: Perspectives of Modern Physics : Arthur Beiser Page 8 of 18 McGraw Hill.
2.	BM: Fundamentals of Molecular Spectroscopy : C. N. Banwell & E. M. McCash (TMH).(4th Ed.)
3.	GA: Molecular structure and spectroscopy : G Aruldhas (2nd Ed) PHI learning Pvt Ltd.
4.	Atomic Physics (Modern Physics): S.N.Ghoshal. S.Chand Publication (for problems on atomic Physics).

Theory Course - USPH504: Electrodynamics

Learning outcomes:

On successful completion of this course students will be able to:

1) Understand the laws of electrodynamics and be able to perform calculations using them.
2) Understand Maxwell's electrodynamics and its relation to relativity
3) Understand how optical laws can be derived from electromagnetic principles.
4) Develop quantitative problem solving skills.

Unit - I	**Electrostatics**	(15 lect.)
1. Review of Coulomb & Gauss law, The divergence of **E**, Applications of Gauss'		

law, The curl of **E**. Introduction to potential, Comments on potential, The potential of a localized charge distribution. Poisson's equation and Laplace's equation. Solution and properties of 1D Laplace equation. Properties of 2D and 3D Laplace equation (without proof).

2. Boundary conditions and Uniqueness theorems, Conductors and Second Uniqueness theorem, The classic image problem- point charge and grounded infinite conducting plane and conducting sphere.

DG: 2.1.1 to 2.1.3, 2.2.2 to 2.2.4, 2.3.1 to 2.3.4
DG: 3.1.1 to 3.1.4, 3.1.5, 3.1.6, 3.2.1 to 3.2.4

Unit -II	**Electrostatics in Matter and Magnetostatics**	(15 lect.)

1. Dielectrics, Induced Dipoles, Alignment of polar molecules, Polarization, Bound charges and their physical interpretation, Gauss' law in presence of dielectrics, A deceptive parallel, Susceptibility, Permittivity, Dielectric constant and relation between them, Energy in dielectric systems.

2. Review of Biot-Savart's law and Ampere's law, Straight-line currents, The Divergence and Curl of **B**, Applications of Ampere's Law in the case of a long straight wire and a long solenoid, Comparison of Magnetostatics and Electrostatics, Magnetic Vector Potential.

DG: 4.1.1 to 4.1.4, 4.2.1, 4.2.2, 4.3.1, 4.3.2, 4.4.1, 4.4.3
DG: 5.2.1, 5.3.1 to 5.3.4, 5.4.1

Unit -III	**Magnetostatics in Matter and Electrodynamics**	(15 lect.)

1. Magnetization, Bound currents and their physical interpretation, Ampere's law in magnetized materials, A deceptive parallel, Magnetic susceptibility and permeability.

2. Energy in magnetic fields, Electrodynamics before Maxwell, Maxwell's correction to Ampere's law, Maxwell's equations, Magnetic charge, Maxwell's equations in matter, Boundary conditions.

DG: 6.1.1, 6.1.4, 6.2.1, 6.2.2, 6.2.3, 6.3.1, 6.3.2, 6.4.1
DG: 7.2.4, 7.3.1 to 7.3.6

Unit -IV	**Electromagnetic Waves**	(15 lect.)

1. The continuity equation, Poynting's theorem

2. The wave equation for **E** and **B**, Monochromatic Plane waves, Energy and momentum in electromagnetic waves, Propagation in linear media, Reflection and transmission of EM waves at normal incidence, Reflection and transmission of EM

waves at oblique incidence. DG : 8.1.1, 8.1.2 DG : 9.2.1 to 9.2.3, 9.3.1 to 9.3.3

References	
1.	DG: Introduction to Electrodynamics, David J. Griffiths (3rd Ed) Prentice Hall of India.
Additional References	
1.	Introduction to Electrodynamics: A. Z. Capria and P. V. Panat, Narosa Publishing House.
2.	Engineering Electrodynamics: William Hayt Jr. & John H. Buck (TMH).
3.	Foundations of Electromagnetic Theory: Reitz, Milford and Christy.
4.	Solutions to Introduction to Electrodynamics: David J. Griffiths (3rd Ed) Prentice Hall of India.

PRACTICALS - SEMESTER V

The T. Y. B. Sc. Syllabus integrates the regular practical work with a series of skill experiments and the project. There will be separate passing head for project work. During the teaching and examination of Physics laboratory work, simple modifications of experimental parameters may be attempted. Attention should be given to basic skills of experimentation which include:

i)	Understanding relevant concepts.
ii)	Planning of the experiments
iii)	Layout and adjustments of the equipments
iv)	Understanding designing of the experiments
v)	Attempts to make the experiments open ended
vi)	Recording of observations and plotting of graphs
vii)	Calculation of results and estimation of possible errors in the observation of results

i) Regular Physics Experiments: A minimum of **06** experiments from each of the course are to be performed and reported in the journal.

ii) Skill Experiments: All the skill experiments are compulsory and must be reported in the journal. Skills will be tested during the examination through viva or practical.

The certified journal must contain a minimum of **12** regular experiments (**06** from each group), **with ALL** Skill experiments in semester V. A separate index and certificate in journal is must for each semester course.

iii) Project Includes:

a)	Review articles/ PC Simulation on any concept in Physics/ Comparative & differentiative study/Improvement in the existing experiment (Design and fabrication concept) /Extension of any regular experiment/Attempt to make experiment open-ended/Thorough survey of existing active components (devices, ICs, methods, means, technologies, generations, applications etc. / any innovative projects having the concept of physics.
b)	Two students (maximum) per project.
c)	For evaluation of project, the following points shall be considered … • Working model (Experimental or Concept based simulation) • Understanding of the project • Data collection • Data Analysis • Innovation/Difficulty • Report

There will be **THREE** turns of **3Hrs each** for the examination of practical courses.

SEMESTER V	
PRACTICAL COURSE: USPHP05	
Sr. No.	**Name of the Experiment**
1	Determination of ‘g’ by Kater’s pendulum

2	Surface tension of soap solution
3	Elastic constants of a rubber tube
4	Determination of dielectric constant
5	Logarithmic decrement
6	Searle's Goniometer
7	Determination of Rydberg's constant
8	Edser's 'A' pattern
9	Determination of wavelength by Step slit
10	Determination of e/m by Thomson's method
11	R. I. by total internal reflection
12	Velocity of sound in air using CRO
PRACTICAL COURSE: USPHP06	
Sr. No.	**Name of the Experiment**
1	Mutual inductance by BG.
2	Capacitance by parallel bridge
3	Hysteresis loop by CRO
4	L/C by Maxwell's bridge
5	Band gap energy of Ge diode
6	Design and study of transistorized astable multivibrator (BB)
7	Design and study of Wien bridge oscillator
8	Design and study of first order active low pass filter circuit (BB)
9	Design and study of first order active high pass filter circuit (BB)
10	Application of IC 555 timer as a ramp generator (BB)
11	LM 317 as constant current source
12	Counters Mod 2, 5, 10 (2 x 5, 5 x 2)
SKILL EXPERIMENTS	
Sr. No.	**Name of the Experiment**
1	Estimation of errors from actual experimental data

2	Soldering and testing of an astable multivibrator (Tr./IC555) circuit on PCB
3	Optical Leveling of Spectrometer
4	Schuster's method
5	Laser beam profile
6	Use of electronic balance: Find the density of a solid cylinder
7	Dual trace CRO: Phase shift measurement
8	C1/C2 by B G
9	Internal resistance of voltage and current source
10	Use of DMM to test diode, transistor and β factor

References:	
1.	Advanced course in Practical Physics: D. Chattopadhya, PC. Rakshit & B. Saha (8th Edition) Book & Allied Pvt. Ltd.
2.	BSc Practical Physics: Harnam Singh. S. Chand & Co. Ltd. – 2001.
3.	A Text book of Practical Physics: Samir Kumar Ghosh New Central Book Agency (4th edition).
4.	B Sc. Practical Physics: C. L. Arora (1st Edition) – 2001 S. Chand & Co. Ltd.
5.	Practical Physics: C. L. Squires – (3rd Edition) Cambridge University Press.
6.	University Practical Physics: D C Tayal. Himalaya Publication.
7.	Advanced Practical Physics: Worsnop & Flint.

SEMESTER VI

Theory Course – USPH601: Classical Mechanics

Learning outcomes:
This course will introduce the students to different aspects of classical mechanics. They would understand the kinds of motions that can occur under a central potential and their applications to planetary orbits. The students should also appreciate the effect of moving coordinate system, rectilinear as well as rotating. The students are expected to learn the concepts needed for the important formalism of Lagrange's equations and derive the equations using D'Alembert's principle. They should also be able to solve simple examples using this formalism. The introduction to simple concepts from fluid mechanics and understanding of the dynamics of rigid bodies is also expected. Finally, they should appreciate the drastic effect of adding nonlinear corrections to usual problems of mechanics and nonlinear mechanics can help understand the irregularity we observe around us in nature.

Unit - I	**Central Force**	(15 lect.)
1. Motion under a central force, the central force inversely proportional to the square of the distance, Elliptic orbits, The Kepler problem. 2. Moving origin of coordinates, Rotating coordinate systems, Laws of motion on the rotating earth, The Foucault pendulum, Larmor's theorem. KRS: 3.13 - 3.15, 7.1 - 7.5.		
Unit -II	**Lagrange's equations**	(15 lect.)
1. D'Alembert's principle, Constraints, Examples of holonomic constraints, examples of nonholonomic constraints, degrees of freedom and generalized coordinates, virtual displacement, virtual work, D'Alembert's principle, illustrative problems. 2. Lagrange's equations (using D'Alembert's principle), properties of Lagrange's equations, illustrative problems, canonical momentum, cyclic or ignorable coordinates. PVP: 4.2 to 4.9, 5.2 to 5.4, 7.2, 7.3.		

Unit -III	**Fluid Motion and Rigid body rotation**	(15 lect.)
1. Kinematics of moving fluids, Equation of motion for an ideal fluid, Conservation laws for fluid motion, Steady flow. 2. Rigid dynamics: introduction, degrees of freedom, rotation about an axis: orthogonal matrix, Euler's theorem, Eulerian angles, inertia tensor, angular momentum of rigid body, Euler's equation of motion of rigid body, free motion of rigid body, motion of symmetric top (without notation). KRS : 8.6 to 8.9 PVP: 16.1 to 16.10		
Unit -IV	**Non Linear Mechanics**	(15 lect.)
1. Nonlinear mechanics: Qualitative approach to chaos, The anharmonic oscillator, Numerical solution of Duffing's equation. 2. Transition to chaos: Bifurcations and strange attractors, Aspects of chaotic behavior (Logistic map). BO: 11.1, 11.3 to 11.5		

References	
1.	PVP: Classical Mechanics, P. V. Panat (Narosa).
2.	KRS: Mechanics : Keith R. Symon, (Addision Wesely) 3rd Ed.
3.	BO: Classical Mechanics- a Modern Perspective: V. D. Barger and M. G. Olsson. (Mc Graw Hill International 1995 Ed.)
Additional References	
1.	Classical Mechanics: Herbert Goldstein (Narosa 2nd Ed.).
2.	An Introduction to Mechanics: Daniel Kleppner & Robert Kolenkow Tata Mc Graw Hill (Indian Ed. 2007).
3.	Chaotic Dynamics- an introduction: Baker and Gollub (Cambridge Univ. Press).
4.	Classical Mechanics: J. C. Upadhyaya (Himalaya Publishing House).

Theory Course – USPH602: Electronics

Learning Outcome:

On successful completion of this course students will be able to:

1. Understand the basics of semiconductor devices and their applications.
2. Understand the basic concepts of operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation.
3. Understand the basic concepts of timing pulse generation and regulated power supplies
4. Understand the basic electronic circuits for universal logic building blocks and basic concepts of digital communication.
5. Develop quantitative problem solving skills in all the topics covered.

Unit - I		(15 lect.)
1. Field effect transistors: JFET: Basic ideas, Drain curve, The transconductance curve, Biasing in the ohmic region and the active region, Transconductance, JFET common source amplifier, JFET analog switch, multiplexer, voltage controlled resistor, Current sourcing. 2. MOSFET: Depletion and enhancement mode, MOSFET operation and characteristics, digital switching. 3. SCR – construction, static characteristics, Analysis of the operation of SCR, Gate Triggering Characteristics, Variable half wave rectifier and Variable full wave rectifier, Current ratings of SCR. 4. UJT: Construction, Operation, characteristics and application as a relaxation oscillator. 1. MB: 13.1 to 13.9 2. MB: 14.1, 14.2, 14.4, 14.6. 3. AM: 28.1, 28.5		
Unit -II		(15 lect.)
1. Differential Amplifier using transistor: The Differential Amplifier, DC and AC analysis of a differential amplifier, Input characteristic-effect of input bias, offset current and input offset voltage on output, common mode gain, CMRR.		

2. Op Amp Applications: Log amplifier, Instrumentation amplifiers, Voltage controlled current sources (grounded load), First order Active filters, Astable using OP AMP, square wave and triangular wave generator using OP AMP, Wein-bridge oscillator using OP AMP, Comparators with Hysteresis, Window Comparator.

1. MB: 17.1 to 17.5
2. MB: 20.5, 20.8, 21.4, 22.2, 22.3, 22.7, 22.8, 23.

Unit -III		(15 lect.)

1. Transistor Multivibrators: Astable, Monostable and Bistable Multivibrators, Schmitt trigger.

2. 555 Timer: Review Block diagram, Monostable and Astable operation Voltage Controlled Oscillator, Pulse Width modulator, Pulse Position Modulator, Triggered linear ramp generator.

3. Regulated DC power supply: Supply characteristics, series voltage regulator, Short circuit protection (current limit and fold back) Monolithic linear IC voltage Regulators. (LM 78XX, LM 79XX, LM 317, LM337).

1. AM: 18.11
2. KVR: 14.5.2.1, 14.5.2.5, 14.5.2.6, 14.5.4.1
3. MB: 23.8, 23.9
4. MB: 24.1, 24.3, 24.4

Unit -IV		(15 lect.)

1. Logic families: Standard TTL NAND, TTL NOR, Open collector gates, Three state TTL devices, MOS inverters, CMOS NAND and NOR gates, CMOS characteristics.

2. Digital Communication Techniques: Digital Transmission of Data, Benefits of Digital Communication, Disadvantages of Digital Communication, Parallel and Serial Transmission, Pulse Modulation, Comparing Pulse-Modulation Methods (PAM, PWM, PPM), Pulse-Code Modulation.

1. ML: 6.2, 6.4, 6.6, 6.7, 7.2 to 7.4.
2. LF: 7.1, 7.2, 7.4

References	
1.	MB: Electronic Principles, Malvino & Bates -7th Ed TMH Publication.
2.	AM: Electronic Devices and Circuits, Allen Mottershead -PHI Publication.
3.	KVR: Functional Electronics, K.V. Ramanan-TMH Publication.
4.	ML: Digital Principles and Applications, Malvino and Leach (4th Ed)(TMH).
5.	LF: Communication Electronics: Principles and applications, Louis E Frenzel 4th edition TMH Publications.

Theory Course – USPH603: Nuclear Physics

Objectives:

The course is built on exploring the fundamentals of nuclear matter as well as considering some of the important applications of nuclear physics. Topics include decay modes – (alpha, beta & gamma decay), nuclear models (liquid drop model, introduction to shell model), Applications of Nuclear Physics in the field of particle accelerators and energy generation, nuclear forces and elementary particles. The lecture course will be integrated with problem solving.

Learning Outcomes:

- Upon successful completion of this course, the student will be able to understand
  the fundamental principles and concepts governing classical nuclear and particle physics and have a knowledge of their applications interactions of ionizing radiation with matter the key techniques for particle accelerators the physical processes involved in nuclear power generation.
- Knowledge on elementary particles will help students to understand the fundamental constituents of matter and lay foundation for the understanding of unsolved questions about dark matter, antimatter and other research oriented topics.

Unit - I	**Alpha & Beta Decay**	(15 lect.)

1. Alpha decay: Velocity, energy, and Absorption of alpha particles: Range, Ionization and stopping power, Nuclear energy levels. Range of alpha particles, alpha particle spectrum, Fine structure, long range alpha particles, Alpha decay paradox: Barrier penetration (Gamow's theory of alpha decay and Geiger-Nuttal law).

2. Beta decay: Introduction, Velocity and energy of beta particles, Energy levels and decay schemes, Continuous beta ray spectrum-Difficulties encountered to understand it, Pauli's neutrino hypothesis, Detection of neutrino, Energetics of beta decay.

1. IK: 13. 1, 13.2, 13.5, SBP: 4. II. 1, 4. II. 2, 4. II. 3, 1.II.3
2. IK: 14.1, 14.7, SBP: 4. III. 1, 4. III. 2, 4. III. 3, 4. III. 5, SNG : 5.5.

Unit -II	**Gamma Decay & Nuclear Models**	(15 lect.)

1. Gamma decay: Introduction, selection rules, Internal conversion, nuclear isomerism, Mossbauer effect.

2. Nuclear Models: Liquid drop model, Weizsacker's semi-empirical mass formula, Mass parabolas - Prediction of stability against beta decay for members of an isobaric family, Stability limits against spontaneous fission. Shell model (Qualitative), Magic numbers in the nucleus.

1. SBP: 4. IV. 1, 4. IV.2, 4. IV. 3, 4. IV. 4, 9.4
2. SBP: 5.1, 5.3, 5.4, 5.5. AB: 11.6-pages (460,461).

Unit -III	**Nuclear Energy & Particle Accelerators**	(15 lect.)

1. Nuclear energy: Introduction, Asymmetric fission - Mass yield, Emission of delayed neutrons, Nuclear release in fission, Nature of fission fragments, Energy released in the fission of U235, Fission of lighter nuclei, Fission chain reaction, Neutron cycle in a thermal nuclear reactor (Four Factor Formula), Nuclear power and breeder reactors, Natural fusion Possibility of controlled fusion.

2. Particle Accelerators: Van de Graaff Generator, Cyclotron, Synchrotron, Betatron and Idea of Large Hadron Collider.

1. SBP: 6.1, 6.3 to 6.9, 9.6, 9.7, 8.1,8.2,8.3
2. SBP: 1.I.4 (i), 1.I.4 (ii), 1.I.4 (iii), 1.I.4 (iv), 6.9, AB: 13.3

Unit -IV	**Nuclear force & Elementary particles**	(15 lect.)

1. Nuclear force: Introduction, Deuteron problem, Meson theory of Nuclear Force- A qualitative discussion.

2. Elementary particles: Introduction, Classification of elementary particles, Particle interactions, Conservation laws (linear &angular momentum, energy, charge, baryon number & lepton number), particles and antiparticles (Electrons and positrons, Protons and anti-protons, Neutrons and anti-neutrons, Neutrinos and anti-neutrinos), Photons, Mesons, Quark model (Qualitative).

1. SBP: 8.6
2. DCT: 18.1, 18.2,18.3, 18.4 , 18.5 to 18.9 AB: 13.5

References	
1.	AB: Concepts of Modern Physics: Arthur Beiser, Shobhit Mahajan, S Rai Choudhury (6th Ed.) (TMH).
2.	SBP: Nuclear Physics, S.B. Patel (Wiley Eastern Ltd.).
3.	IK: Nuclear Physics, Irving Kaplan (2nd Ed.) (Addison Wesley).
4.	SNG: Nuclear Physics, S. N. Ghoshal (S. Chand & Co.)
5.	DCT: Nuclear Physics, D. C. Tayal (Himalayan Publishing House) 5th ed.
Additional References	
1.	Modern Physics: Kenneth Krane (2nd Ed.), John Wiley & Sons.
2.	Atomic & Nuclear Physics: N Subrahmanyam, Brij Lal. (Revised by Jivan Seshan.) S. Chand.
3.	Atomic & Nuclear Physics: A B Gupta & Dipak Ghosh Books & Allied (P) Ltd.
4	Introduction to Elementary Particles: David Griffith, Second Revised Edition, Wiley-VCH.

Theory Course – USPH604: Special Theory of Relativity

Learning outcomes:

This course introduces students to the essence of special relativity which revolutionized the concept of physics in the last century by unifying space and time, mass and energy, electricity and magnetism. This course also gives a very brief introduction of general relativity. After the completion of the course the student should be able to

1. Understand the significance of Michelson Morley experiment and failure of the existing theories to explain the null result
2. Understand the importance of postulates of special relativity, Lorentz transformation equations and how it changed the way we look at space and time, Absolutism and relativity, Common sense versus Einstein concept of Space and time.
3. Understand the transformation equations for: Space and time, velocity, frequency, mass, momentum, force, Energy, Charge and current density, electric and magnetic fields.
4. Solve problems based on length contraction, time dilation, velocity addition, Doppler effect, mass energy relation and resolve paradoxes in relativity like twin paradox etc.

Unit - I		(15 lect.)
Introduction to Special theory of relativity: Inertial and Non-inertial frames of reference, Galilean transformations, Newtonian relativity, Electromagnetism and Newtonian relativity. Attempts to locate absolute frame: Michelson- Morley experiment (omit derivation part), Attempts to preserve the concept of a preferred ether frame: Lorentz Fitzgerald contraction and Ether drag hypothesis (conceptual), Stellar aberration, Attempt to modify electrodynamics. **Relativistic Kinematics - I**: Postulates of the special theory of relativity, Simultaneity, Derivation of Lorentz transformation equations. Some consequences of the Lorentz transformation equations: length contraction, time dilation and meson experiment, The observer in relativity. RR: 1.1 to 1.9, 2.1 to 2.5		

Unit -II		(15 lect.)
Relativistic Kinematics - II: The relativistic addition of velocities, acceleration transformation equations, Aberration and Doppler effect in relativity, The common sense of special relativity. **The Geometric Representation of Space-Time:** Space-Time Diagrams, Simultaneity, Length contraction and Time dilation, The time order and space separation of events, The twin paradox. RR: 2.6 to 2.8, Supplementary topics A1, A2, A3, B1, B2, B3.		
Unit -III		(15 lect.)
Relativistic Dynamics: Mechanics and Relativity, The need to redefine momentum, Relativistic momentum, Alternative views of mass in relativity, The relativistic force law and the dynamics of a single particle, The equivalence of mass and energy, The transformation properties of momentum, energy and mass. RR: 3.1 to 3.7		
Unit -IV		(15 lect.)
Relativity and Electromagnetism: Introduction, The interdependence of Electric and Magnetic fields, The Transformation for E and B, The field of a uniformly moving point charge, Force and fields near a current-carrying wire, Force between moving charges, The invariance of Maxwell's equations. The principle of equivalence and general relativity, Gravitational red shift. RR: 4.1 to 4.7. Supplementary topic C1, C2, C3, C4. **Note: (A good number of problems to be solved from Resnick).**		

References	
1.	RR: Introduction to Special Relativity: Robert Resnick (Wiley Student Edition).
2.	Special theory of Relativity: A. P. French.
3.	Very Special Relativity – An illustrated guide: by Sander Bais - Amsterdam University Press.
4.	Chapter 1: Concepts of Modern Physics by Arthur Beiser.
5.	Chapter 2: Modern Physics by Kenneth Krane.

SEMESTER VI

The T. Y. B. Sc. Syllabus integrates the regular practical work with a series of demonstration experiments and the project. There will be separate passing head for project work. During the teaching and examination of Physics laboratory work, simple modifications of experimental parameters may be attempted. Attention should be given to basic skills of experimentation which include:

i)	Understanding relevant concepts.
ii)	Planning of the experiments.
iii)	Layout and adjustments of the equipments
iv)	Understanding designing of the experiments
v)	Attempts to make the experiments open ended
vi)	Recording of observations and plotting of graphs
vii)	Calculation of results and estimation of possible errors in the observation of results.

i) Regular Physics Experiments: A minimum of **06** experiments from each of the practical course are to be performed and reported in the journal.

ii) Demonstration Experiments: The demonstration experiments are to be performed by the teacher in the laboratory and students should be encouraged to participate and take observation wherever possible.

Demonstration experiments are designed to bring about interest and excitement in Physics. Students are required to enter details of these 'demonstration' experiments in their journal.

The certified journal must contain a minimum of **12** regular experiments (**06** from each practical course), **MINIMUM 06** demonstration experiments in semester VI. A separate index and certificate in journal is must for each course in each semester.

iii) Project Details:

a)	**Project Includes:** Review articles/Simulation on PC on any concept in Physics/ Comparative & differentiative study/Improvement in the existing experiment (Design and fabrication concept) /Extension of any regular experiment/Attempt to make experiment open-ended/Thorough survey of existing active components (devices, ICs, methods, means, technologies, generations, applications etc. / any innovative projects using the concept of physics.
b)	Students/project : 02 (maximum)
c)	Evaluation of the project: The following points shall be considered. • Working model (Experimental or Concept based simulation) • Understanding of the project • Data collection • Data Analysis • Innovation/difficulty • Report

There will be **THREE** turns of **three hours each** for the examination of practical courses.

SEMESTER VI	
PRACTICAL COURSE: USPHP07	
Sr. No.	**Name of the Experiment**
1	Surface tension of mercury by Quincke's method
2	Thermal conductivity by Lee's method
3	Study of JFET characteristics
4	JFET as a common source amplifier
5	JFET as switch (series and shunt)
6	UJT characteristics and relaxation oscillator
7	Study of Pulse width modulation (BB)

8	Study of Pulse position modulation (BB)
9	Determination of h/e by photocell
10	R. P. of Prism
11	Double refraction
12	Lloyd's single mirror: determination of wavelength
PRACTICAL COURSE: USPHP08	
Sr. No.	**Name of the Experiment**
1	Determination of M/C by using BG
2	Self-inductance by Anderson's bridge
3	Hall effect
4	Solar cell characteristics and determination of V_{oc}, I_{sc} and P_{max}
5	Design and study of transistorized monostable multivibrator (BB)
6	Design and study of transistorized bistable multivibrator (BB)
7	Application of Op-Amp as a window comparator
8	Application of Op-Amp as a Log amplifier
9	Application of IC 555 as a voltage to frequency converter (BB)
10	Application of IC 555 as a voltage to time converter (BB)
11	LM-317 as variable voltage source
12	Shift register
DEMONSTRATION EXPERIMENTS	
Sr. No.	**Name of the Experiment**
1	Open CRO, Power Supply, and Signal Generator: block diagrams
2	Data sheets: Diodes, Transistor, Op-amp & Optoelectronic devices
3	Zeeman Effect
4	Michelson's interferometer
5	Constant deviation spectrometer (CDS)
6	Digital storage oscilloscope (DSO)
7	Determination of Op-Amp parameters (offset voltage, slew rate,

	input impedance, output impedance, A_{CM})
8	Transformer (theory, construction and working), types of transformers and energy losses associated with them.
9	Use of LCR meter
10	Lux meter / Flux meter

References:

1.	Advanced course in Practical Physics: D. Chattopadhya, PC. Rakshit & B. Saha (8th Edition) Book & Allied (P) Ltd.
2.	BSc Practical Physics: Harnam Singh. S. Chand & Co. Ltd. – 2001.
3.	A Text book of Practical Physics: Samir Kumar Ghosh New Central Book Agency (4th edition).
4.	B Sc. Practical Physics: C. L. Arora (1st Edition) – 2001 S. Chand & Co.
5.	Practical Physics: C. L. Squires – (3rd Edition) Cambridge Univ. Press.
6.	University Practical Physics: D C Tayal, Himalaya Publication.
7.	Advanced Practical Physics: Worsnop & Flint.

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Semester I USBO101		**L**	**Cr**
Paper I -- Plant Diversity 1		**45**	**2**
UNIT I		**15**	
ALGAE			
1	Structure, life cycle and systematic position of *Nostoc* and *Spirogyra*.		
2	Economic importance of Algae.		
UNIT II		**15**	
FUNGI			
1	Structure, life cycle and systematic position of *Rhizopus* and *Aspergillus*		
2	Economic importance of Fungi.		
3	Modes of nutrition in Fungi (Saprophytism and Parasitism).		
UNIT III		**15**	
BRYOPHYTA			
1	General characters of Hepaticae		
2	Structure, life cycle and systematic position of *Riccia*.		

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	Semester I USBO102	**L**	**Cr**
	Paper II – Form and Function 1	**45**	**2**
UNIT I		**15**	
CELL BIOLOGY			
1	General structure of plant cell: cell wall Plasma membrane (bilayer lipid structure, fluid mosaic model)		
2	Ultra structure and functions of the following cell organelles: Endoplasmic reticulum and Chloroplast		
UNIT II		**15**	
ECOLOGY			
1	Energy pyramids, energy flow in an ecosystem.		
2	Types of ecosystems: aquatic and terrestrial.		
UNIT III		**15**	
GENETICS			
1	Phenotype/Genotype, Mendelian Genetics- monohybrid, dihybrid; test cross; back cross ratios.		
2	Epistatic and non epistatic interactions; multiple alleles.		

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	Semester I USBOP1	**L**	**Cr**
	PRACTICAL Paper I – Plant Diversity 1	30	1
1	Study of stages in the life cycle of *Nostoc* from fresh/ preserved material and permanent slides.		
2	Study of stages in the life cycle of *Spirogyra* from fresh/ preserved material and permanent slides.		
3	Economic importance of algae: *Ulva* (Biofuel), *Spirulina* (Neutraceutical), *Gelidium* (Agar)		
4	Study of stages in the life cycle of *Rhizopus* from fresh/ preserved material and permanent slides.		
5	Study of stages in the life cycle of *Aspergillus* from fresh/ preserved material and permanent slides.		
6	Economic importance of Fungi: Mushroom , Yeast, wood rotting fungi (any bracket fungus).		
7	Study of stages in the life cycle of *Riccia* from fresh/ preserved material.		
8	Study of stages in the life cycle of *Riccia* with the help of permanent slides.		
	PRACTICAL PAPER II- FORM AND FUNCTION 1	30	1
1	Examining various stages of mitosis in root tip cells (*Allium)*		
2	**Cell inclusions:** Starch grains (Potato and Rice); Aleurone Layer (Maize)		
3	Cystolith (*Ficus*); Raphides (*Pistia*); Sphaeraphides (*Opuntia*).		
4	Identification of cell organelles with the help of photomicrograph: Plastids: Chloroplast, Amyloplast, Endoplasmic Reticulum and Nucleus		
4	**Identification of plants adapted to different environmental conditions:** Hydrophytes: Floating: Free floating (*Pistia*/*Eichornia*); Rooted floating (*Nymphaea*); Submerged (*Hydrilla*)		
5	Mesophytes (any common plant); Hygrophytes (*Typha*/*Cyperus*)		

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6	Xerophytes : Succulent (*Opuntia*); Woody Xerophyte (*Nerium*); Halophyte (*Avicennia* pneumatophore) No sections in ecology, only identification and description of specimens. Morphological adaptations only.		
7	Calculation of mean, median and mode.		
8	Calculation of standard deviation.		
9	Frequency distribution, graphical representation of data- frequency polygon, histogram, pie chart.		
10	Study of Karyoptypes: Human: Normal male and female, *Allium cepa* .		

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Semester II USBO201		**Hrs**	**Cr**
Paper I -- Plant Diversity 1		**45**	**2**
UNIT I		**15**	
PTERIDOPHYTES			
1	Structure life cycle, systematic position and alternation of generations in *Nephrolepis*		
2	Stelar evolution		
UNIT II		**15**	
GYMNOSPERMS			
2	Structure life cycle systematic position and alternation of generations in *Cycas*		
3	Economic importance of Gymnosperms		
Unit III			
ANGIOSPERMS		**15**	
1.	Leaf: simple leaf, types of compound leaves, Incisions of leaf, venation, phyllotaxy, types of stipules, leaf apex, leaf margin, leaf base, leaf shapes. Modifications of leaf: spine, tendril, hooks, phyllode, pitcher, *Drosera* or insectivorous plants.		
2	Inflorescence: Racemose: simple raceme, spike, catkin, spadix, panicle. Cymose: monochasial, dichasial, polychasial. Compound: corymb, umbel, cyathium, capitulum, verticellaster, hypanthodium.		
3	Study of following families: Malvaceae, Amaryllidaceae.		

Semester II USBO202		**Hrs**	**Cr**
Paper II – Form and Function 1		**45**	**2**
UNIT I		**15**	
ANATOMY			
1	Simple tissues, complex tissues.		
2	Primary structure of dicot and monocot root, stem and leaf.		
3	Epidermal tissue system: types of hair, monocot and dicot stomata.		

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UNIT II		**15**	
PHYSIOLOGY			
1	Photosynthesis: Light reactions, photolysis of water, photophosphorylation (cyclic and non cyclic), carbon fixation phase (C_3, C_4 and CAM pathways).		
UNIT III		**15**	
MEDICINAL BOTANY			
1	Concept of primary and secondary metabolites, difference between primary and secondary metabolites.		
2	Grandma's pouch: Following plants have to be studies with respect to botanical source, part of the plant used, active constituents present and medicinal uses: *Oscimum sanctum, Adathoda vasica, Zinziber officinale, Curcuma longa, Santalum album, Aloe vera*.		

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	Semester II USBOP2	**Cr**
	PRACTICAL Paper I – Plant Diversity 1	**1**
1	Study of stages in the life cycle of *Nephrolepis* : Mounting of ramentum, hydathode, T.S. of rachis.	
2	T.S. of pinna of *Nephrolepis* passing through sorus.	
3	Stelar evolution with the help of permanent slides: Protostele: haplostele, actinostele, plectostele, mixed protostele, siphonostele: ectophloic, amphiphloic, dictyostele, eustele and atactostele.	
4	*Cycas:* T.S of leaflet (*Cycas* pinna)	
5	Megasporophyll, microsporophyll, coralloid root, microspore, L.S. of ovule of *Cycas* – all specimens to be shown.	
6	Economic importance of Gymnosperms: *Pinus* (turpentine, wood, seeds)	
7	Leaf morphology : as per theory	
8	Types of inflorescence: as per theory	
9	Malvaceae	
10	Amaryllidaceae	
	PRACTICALPaper II – Form and Function 1	**1**
1	Primary structure of dicot and monocot root.	
2	Primary structure of dicot and monocot stem.	
3	Study of dicot and monocot stomata.	
4	Epidermal outgrowths: with the help of mountings Unicellular: *Gossypium*/Radish Multicellular: *Lantana*/Sunflower Glandular: *Drosera* and Stinging: *Urtica* – only identification with the help of permanent slides. Peltate: *Thespesia* Stellate: *Erythrina*/*Sida acuta*/*Solanum*/*Helecteris*	

	T-shaped: *Avicennia*	
5	Separation of chlorophyll pigments by strip paper chromatography.	
6	Separation of amino acids by paper chromatography.	
7	Change in colour because of change in pH: Anthocyanin: black grapes/Purple cabbage	
8	Test for tannins: tea powder/catechu.	
9	Identification of plants or plant parts for grandma's pouch as per theory.	

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DISTRIBUTION OF TOPICS AND CREDITS
F Y B Sc. BOTANY SEMESTER I

Course	Nomenclature	Credits	Topics
USBO1O1	PLANT DIVERSITY 1	02	1. Algae
			2. Fungi
			3. Bryophyta
USBO1O2	FORM AND FUNCTION I	02	1. Cell Biology
			2. Ecology
			3. Genetics
USBOP1	Plant Diversity I, form and Function I (Practical I & II)	02	

F Y B Sc BOTANY SEMESTER II

Course	Nomenclature	Credits	Topics
USBO2O1	PLANT DIVERSITY I	02	1. Pteridophytes
			2. Gymnosperms
			3. Angiosperms
USBO2O2	FORM AND FUNCTION I	02	1. Anatomy
			2. Physiology
			3. Medicinal Botany
USBOP2	Plant Diversity I, Form and Function I (Practical I & II)	02	

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Item No. 4.23

References

1. College Botany Volume I and II Gangulee, Das and Dutta latest edition. Central Education enterprises
2. Cryptogamic Botany Volume I and II by G M Smith McGraw Hill.
3. Genetics by Russel. Wesley Longman inc publishers. (5th edition)
4. Plant Physiology by Taiz and Zeiger Sinauer Associates inc. publishers
5. Fundamentals of Ecology by E P Odum and G W Barrett. Thompson Asia Pvt Ltd. Singapore.
6. Cell Biology by De Robertis

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Item No. 4.23

Scheme of Examinations

Internal and External Assessment as per CBSS of University of Mumbai

Note:

- Two short field excursions for habitat studies are compulsory.
  Field work of not less than eight hours duration is equivalent to one period per week for a batch of 15 students.
- A candidate will be allowed to appear for the practical examinations only if he/she submits a certified journal of F.Y.B.Sc. Botany or a certificate from the Head of the department / Institute to the effect that the candidate has completed the practical course of F.Y.B.Sc. Botany as per the minimum requirements. In case of loss of journal a candidate must produce a certificate from the Head of the department /Institute that the practicals for the academic year were completed by the student. However such a candidate will be allowed to appear for the practical examination but the marks allotted for the journal will not be granted.

UNIVERSITY OF MUMBAI
No. UG/110 of 2017-18

CIRCULAR:-

The Principals of the affiliated Colleges in Science and the Directors of recognized Science Institutions concerned are hereby informed that in continuation syllabi relating to Bachelor of Science degree Course (S.Y.B.Sc) passed by the Academic Council at its meeting held on 26/2/2015, **vide** item No. 4.33 and proposal received from Chairperson, Board of Studies in Botany has been accepted by the Academic Council at its meeting held on 11th May , 2017 **vide** item no. 4.214 and that in accordance therewith, the revised syllabus as per the (CBCS) for S.Y.B.Sc. Paper – II (Sem - III) Programme in the Course of Botany, which is available on the University's website (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2017-18.

MUMBAI – 400 032 REGISTRAR
27th July, 2017

To,

The Principals of the affiliated Colleges in Science and the Directors of Recognized Institutions concerned.

A.C/4.214/11.05.2017

No. UG/110 -A of 2017 MUMBAI-400 032 27th July, 2017

Copy forwarded with compliments for information to :-

1) The Co-ordinator, Faculty of Science,
2) The Offg. Director, Board of Examinations and Evaluation,
3) The Chairperson, Board of Studies in Botany,
4) The Director of Board of Studies Development,
5) The Professor-cum-Director, Institute of Distance and Open Learning.
6) The Co-Ordinator, University Computerization Centre.

REGISTRAR

....PTO

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	SEM III- Title	Credits
USBO302	**<u>FORM AND FUNCTION II</u>**	**2 Credits (45 lectures)**
<u>Unit II : Cell Biology</u> • Ultra Structure and functions of the following cell organelles: o Mitochondrion(membranes, cristae, F1 particles and matrix) o Peroxisomes and Glyoxysomes o Ribosomes (prokaryotic, eukaryotic and subunits) • Cell Division and its significance o Cell Cycle, structure of Interphase Nucleus(nuclear envelop, chromatin network, nucleolus and nucleoplasm) o Mitosis & Meiosis o Differences between Mitosis and Meiosis • Nucleic Acids: Types, structure and functions of DNA and RNA		**15 Lectures**
<u>Unit III : Cytogenetics</u> • **Variation in Chromosome structure (Chromosomal Aberrations)** Definition, Origin, Cytological and Genetic Effects of the following: Deletions, Duplications, Inversions and Translocations. • **Sex determination, Sex linked, sex influenced and sex limited traits :** **Sex determination-** Chromosomal Methods: heterogametic males and heterogametic females. Sex determination in monoecious and dioecious plants. Genic Balance Theory of sex determination in Drosophila, Lyon's Hypothesis of X chromosome inactivation. **Sex linked-** eye colour in *Drosophila*, Haemophilia, colour blindness **Sex influenced-** baldness in man • **Extranuclear Genetics** Organelle heredity- o Chloroplast determines heredity - Plastid transmission in plants, Streptomycin resistance in *Chlamydomonas*. o Male sterility in maize		**15 Lectures**
<u>Unit III : Molecular Biology</u> • **DNA replication** : Modes of Replication, Messelson and Stahl Experment, **DNA replication in prokaryotes and eukaryotes**- enzymes involved and molecular mechanism of replication. • **Protein Synthesis**: o Central dogma of Protein synthesis o Transcription in prokaryotes and eukaryotes: promoter sites, initiation, elongation and termination. o RNA processing: Adenylation & Capping.		**15 Lectures**

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	SEM IV-Title	Credits

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

USBO402	FORM AND FUNCTION II	2 Credits (45 lectures)
Unit I : Anatomy • Normal Secondary Growth in Dicotyledonous stem and root. • Growth rings, periderm, lenticels, tyloses, heart wood and sap wood. • Mechanical Tissue system o Tissues providing mechanical strength and support and their disposition o I-girders in aerial and underground organs • Types of Vascular Bundles.		**15 Lectures**
Unit II : Plant Physiology and Plant Biochemistry • **Respiration: Aerobic:** Glycolysis, TCA Cycle, ETS & Energetic of respiration; Anaerobic respiration. • **Photorespiration** • **Photoperiodism:** Phytochrome Response and Vernalization with reference to flowering in higher plants, Physico-chemical properties of phytochrome, Pr-Pfr interconversion, role of phytochrome in flowering of SDPs and LDPs; • **Vernalization** mechanisms and applications.		**15 Lectures**
Unit III : Ecology and Environmental Botany • Biogeochemical Cycles- Carbon, Nitrogen and Water. • Ecological factors: Concept of environmental factors. Soil as an edaphic factor, Soil composition, types of soil, soil formation, soil profile. • Community ecology- Characters of community - Quantitative characters and qualitative characters		**15 Lectures**

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Semester III USBOP3 PRACTICAL Paper II – FORM AND FUNCTION- II	Cr 1
Cell Biology	
1 Study of the ultra-structure of cell organelles prescribed for theory from Photomicrographs	
2 Estimation of DNA from plant material (one Std & one Unknown, No Std Graph)	
3 Estimation of RNA from plant material (one Std & one Unknown, No Std Graph)	
Cytogenetics	
4 Study of inheritance pattern with reference to Plastid Inheritance	
5 Study of cytological consequences of chromosomal aberrations (Laggards, Chromosomal Bridge, Ring chromosome, Chromosomal ring) from permanent slides or photomicrographs.	
6 Study of mitosis and meiosis from suitable plant material	
Molecular Biology	
7 DNA sequencing- Sanger's method	
8 Determining the sequence of amino acids in the protein molecule synthesised from the given m-RNA strand (prokaryotic and eukaryotic)	

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER IV USBOT P4 PRACTICALS Paper II – FORM AND FUNCTION- II	Cr 1

Anatomy

1 Study of normal secondary growth in the stem and root of a Dicotyledonous plant

2 Types of mechanical tissues, mechanical tissue system in aerial, underground organs.

3 Study of conducting tissues- Xylem and phloem elements in Gymnosperms and Angiosperms as seen in LS and through maceration technique.

4 Study of different types of vascular bundles.

5 Growth rings, periderm, lenticels, tyloses, heart wood and sap wood

Plant Physiology and Plant Biochemistry

6 Q_{10} – germinating seeds using Phenol red indicator

7 NR activity – *in-vivo*

8 Estimation of proteins by Lowry's method (Prepare standard graph).

Ecology and Environmental Botany

9 Study of the working of the following Ecological Instruments- Soil thermometer, Soil testing kit, Soil pH, Wind anemometer.

10 Mechanical analysis of soil by the sieve method & pH of soil.

11 Quantitative estimation of organic matter of the soil by Walkley and Blacks Rapid titration method.

12 Study of vegetation by the list quadrat method

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER SEMESTER - III
TIME - 3 hours PAPER – II Total Marks – 50

Q.1. Make a squash/ smear preparation of specimen 'A'. Draw and comment on your observations and show the slides to examiners. (10)

Q.2. To estimate DNA/ RNA from the given sample 'B'. (10)

Q.3. Determine the sequence of bases in a DNA strand by Sanger's method from the given data **'C'**

OR

Determine the sequence of amino acids in the polypeptide synthesized from the given m-RNAstrand **'C'** (10)

Q.4. Identify and describe the specimen/ photograph - D, E and F (15)

Q.5. Journal/Field Report. (05)

KEY :

A. – Mitosis/ Meiosis
B. Germinating seeds/Onion
C. DNA seq/AA seq.
D. Cell organelles
E. Plastid inheritance
F. Chromosomal aberrations

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

UNIVERSITY OF MUMBAI

S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER SEMESTER - IV
TIME - 2 hours 15 min PAPER – II Total Marks – 50

Q.1. a). Make a temporary stained preparation of T.S. of specimen **'A'** and comment on the secondary growth/ mechanical tissue system/ Macerate the given material 'A' and describe the conducting tissue seen. (10)

Q.2. Perform the Physiological experiment **'B'** allotted to you. (13)

Q.3. Perform the Ecological experiment **'C'** allotted to you. (13)

Q.4. Identify and describe the specimen/ slide/ photograph - **'D' 'E' and 'F' .** (06)

Q.5. Viva - Voce. (05)

KEY :

A. – Dicot stem/ dicot root / Mechanical Tissue (*Coleus stem, Typha leaf, Maize stem and* Maize root /*Annona / Magnolia* for maceration).

B. – Q10 – germinating seeds using Phenol red indicator
NR activity – *in-vivo*
Estimation of proteins by Lowry's method

C- Mechanical analysis of soil by the sieve method & pH of soil
Estimation of organic matter of the soil
Study of vegetation by the list quadrat method

D - Vascular bundles
E. – Growth rings, periderm, lenticels, tyloses, heart wood and sap wood
F. – Ecological Instrument

Syllabus for the S.Y.B.Sc. Program: B.Sc. Course:BOTANY

SEMESTER III
THEORY

Course Code	Title	Credits
USBO301	**PLANT DIVERSITY**	**2 Credits (45 lectures)**

<u>Unit I : Thallophyta (Algae) & Bryophyta</u>
• General Characters of Division Phaeophyta: Distribution, Cell structure, range of thallus, Economic Importance.
• Structure, life cycle and systematic position of ***Sargassum***
• General Account of Class Anthocerotae and Musci
• Structure, life cycle and systematic position of
  o ***Anthoceros***
  o ***Funaria***
		15 Lectures

<u>Unit II: Angiosperms</u>
Systematics: Objectives and Goals of Plant systematic
• Plant Nomenclature
• Taxonomy in relation to
  Anatomy
  Palynology
  Chemical constituents
  Embryology
  Cytology
  Ecology
  o With the help of Bentham and Hooker's system **of Classification for flowering plants** study the vegetative, floral characters and economic importance of the following families:
  o Leguminosae
  o Asterace
  o Amaranthaceae
  o Palmae
		15 Lectures

<u>Unit III :Modern Techniques to Study Plant Diversity</u> Preservation methods :Dry and Wet method • Microscopy – Principle and working of Light, and electron microscope. • Chromatography- Principles and techniques in paper and thin layer chromatography. • Principles and techniques of Horizontal and Vertical electrophoresis.		**15 Lectures**

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER III
PRACTICAL

Semester III USBOP3 **PRACTICAL Paper I – Plant Diversity II**	**Cr** **1**
Algae & Bryophyta 1. Study of stages in the life cycle of *Sargassum* from fresh/ preserved material and permanent slides. 2. Economic importance and range of thallus in Phaeophyta 3 Study of stages in the life cycle of *Anthoceros* from fresh/ preserved material and permanent slides. 4 Study of stages in the life cycle of *Funaria* from fresh/ preserved material and permanent slides. **Angiosperms** 5. Study of plants for anatomy in relation to taxonomy 6. Study of plants for Phenols and Flavanoids (chemotaxonomy) 7. Study of one plant from each family prescribed for theory: morphological peculiarities and economic importance of the members of these families. **Techniques to study Plant Diversity** 8. Preparation of herbarium and wet preservation technique 9. Chromatography: Separation of amino by circular paper chromatography 10. Separation of Carotenoids by thin layer chromatography 11. Horizontal and Vertical Gel Electrophoresis – Demonstration	

Syllabus for the S.Y.B.Sc. Program: B.Sc. Course:BOTANY

SEMESTER IV
THEORY

Course Code	Title	Credits
USBO401	**PLANT DIVERSITY**	**2 Credits (45 lectures)**
<u>Unit I : Thallophyta: Fungi, Plant Pathology and Lichens Fungi</u> • General characters of Ascomycetae • Structure, life cycle and systematic position of *Erysiphe* and *Xylaria* • Plant Pathology- Symptoms, causative organism, disease cycle and control measures of o Powdery mildew and Late blight of potato • Lichens- Classification, Structure, Method of Reproduction, Economic Importance and Ecological Significance of Lichens.		**15 Lectures**
<u>Unit II: Pteridophyta and Paleobotany Pteridophyta-</u> • Salient features and classification upto orders (with examples of each) of Psilophyta and Lepidophyta (G M Smith's system of classification to be followed) • Structure, life cycle and systematic position of *Selaginella* • Paleobotany- The geological time scale; Formation and types of fossils; Structure and systematic position of form genus *Rhynia*		**15 Lectures**
<u>Unit III : Gymnosperms</u> • Salient features, classification up to orders (with examples of each) and economic importance of Coniferophyta (Chamberlain's system of classification to be followed) • Structure life cycle and systematic position of *Pinus* • Structure and systematic position of the form genus *Cordaites*		**15 Lectures**

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER IV
PRACTICAL

Semester III USBOP4 PRACTICAL Paper I – Plant Diversity II	Cr 1
Fungi and Plant Pathology 1 Study of stages in the life cycle of *Erysiphe* from fresh/ preserved material and permanent slides. 2 Study of stages in the life cycle of *Xylaria* from fresh/ preserved material and permanent slides. 3 Study of fungal diseases as prescribed for theory. 4 Study of Lichens (crustose, foliose, & fruiticose). **Pteridophyta and Palaeobotany** 5-6 Study of stages in the life cycle of *Selaginella* from fresh/ preserved material and permanent slides. 7 Study of form genera *Rhynia* with the help of permanent slides/ photomicrographs. **Gymnosperms** 8- Study of stages in the life cycle of *Pinus* from fresh/ preserved material and permanent slides. 9- Study of the form genus *Cordaites* with the help of permanent slide/ photomicrographs.	

UNIVERSITY OF MUMBAI
No. UG/111of 2017-18

CIRCULAR:-

The Principals of the affiliated Colleges in Science and the Directors of recognized Science Institutions concerned are hereby informed that in continuation syllabi relating to Bachelor of Science degree Course (S.Y.B.Sc) passed by the Academic Council at its meeting held on 26/2/2015, **vide** item No. 4.33 and proposal received from Chairperson, Board of Studies in Botany has been accepted by the Academic Council at its meeting held on 11th May , 2017 **vide** item no. 4.215 and that in accordance therewith, the revised syllabus as per the (CBCS) for S.Y.B.Sc Paper – III (Sem - III) Programme in the Course of Botany, which is available on the University's website (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2017-18.

MUMBAI – 400 032 REGISTRAR
25th July, 2017

To,

The Principals of the affiliated Colleges in Science and the Directors of Recognized Institutions concerned.

A.C/4.215/11.05.2017

No. UG/ 111 -A of 2017 MUMBAI-400 032 25th July, 2017

Copy forwarded with compliments for information to :-

1) The Co-ordinator, Faculty of Science,
2) The Offg. Director, Board of Examinations and Evaluation,
3) The Chairperson, Board of Studies in Botany,
4) The Director of Board of Students Development,
5) The Professor-cum-Director, Institute of Distance and Open Learning.
6) The Co-Ordinator, University Computerization Centre.

REGISTRAR

....PTO

PROPOSED SYBSC SYLLABUS FOR ACADEMIC YEAR 2017-18

Course Code	Title	Credits
USBO303	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
Unit1: Pharmacognosy and phytochemistry • Introduction to pharmacopoeia • Indian pharmacopoeia, Indian Herbal Pharmacopoeia and Ayurvedic Pharmacopoeia • Study of Monograph from pharmacopoeia • Secondary Metabolites: Sources, properties, uses and adulterants, regional and seasonal variations • Adulterants: *Saraca asoca, Polyalthia longifolia* *Terminalia arjuna, Terminalia tomentosa* *Bacopa monnieri, Centella asiatica* *Abrus, Glycyrrhiza* *Phyllanthus amarus (Bhuiamla)*		**15 Lectures**
Unit 2: Forestry and Economic Botany • Forestry: Outline of types of forest in India • Forestry: Agro-forestry, Urban forestry, organic farming, Silviculture • Economic Botany: • Types of fibers: Jute and cotton, • Current trends in Fiber industries • Spices and condiments: Saffron and cardamom • Commercial market of spices		**15 Lectures**
Unit 3: Industry based on plant products • Aromatherapy- Introduction, Uses with few examples. Jojoba, lemon, jasmin • Botanical and nutraceuticals -*Spirulina, Vanillin, Garcinia indica/ Garcinia cambogia, Chlorella,* and *Kale.* • Enzymes industry: Cellulases, Papain, Bromelain • Biofuels.		**15 Lectures**

	Semester III USBOP3 Cr 1 **PRACTICAL - Paper III CURRENT TRENDS IN PLANT SCIENCES I**
1	Study of *Phyllanthus amarus* *Saraca asoka* *Bacopa monieri*
2	Study of biodiversity (Visit to National Park/ Botanical Garden) Sources of : Fibres & Paper Spices & condiments Preparation of herbal cosmetics (Face pack/ De-tanning cream)
3	Estimation of crude fibre in cereals & their products
4	Preparation & evaluation of probiotic foods
5	Evaluation of nutraceutical value of mushroom/ wheat germ

Course Code	Title	Credits
USBO403	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
<u>Unit I : Horticulture and Gardening</u> Introduction to Horticulture: Branches of Horticulture **Gardening:** • Locations in the garden- edges, hedges, lawn, flower beds, avenue, water garden (with names of two plants for each category). Focal point. • **Types of garden** o Formal and informal gardens o National Park: Sanjay Gandhi National Park. o Botanical Garden: Veer Mata JijabaiUdyan (Victoria Garden).		**15 Lectures**
<u>Unit II : Biotechnology</u> • **Introduction to plant tissue culture** o Laboratory organization and techniques in plant tissue culture o Totipotency o Organogenesis o Organ culture – root cultures, meristem cultures, anther and pollen culture, embryo culture. • **R-DNA technology-** o Gene cloning o Enzymes involved in Gene cloning o Vectors used for Gene cloning.		**15 Lectures**
<u>Unit III : Biostatistics and Bioinformatics</u> • **Biostatistics:** o The chi square test. o Correlation – Calculation of coefficient of correlation. • **Bioinformatics** o Information technology: History and tools of IT, Internet and its uses**.**		**15 Lectures**

○ Introduction to Bioinformatics- goal, need, scope and limitation ○ Aims of Bioinformatics: Data organization, Tools of Bioinformatics- tools for web search, Data retrieval tools- Entrez, ○ BLAST ○ Bioinformatics programme in India.	

Semester III USBOP3 **Cr 1** **PRACTICAL - Paper III CURRENT TRENDS IN PLANT SCIENCES I**
Horticulture 1 Study of five examples of plants for each of the garden locations as prescribed for theory 2 Preparation of garden plans – formal and informal gardens 3 Bottle and dish garden preparation.
Biotechnology 4 Various sterilization techniques 5 Preparation of Stock solutions, Preparation of MS medium. 6 Seed sterilization, callus induction 7 Regeneration of plantlet from callus. 8 Identification of the cloning vectors – pBR322, pUC 18, Ti plasmid.
Biostatistics and Bioinformatics 9 Chi square test 10 Calculation of coefficient of correlation 11 Web Search – Google, Entrez. 12 BLAST

University of Mumbai

No. UG/ 36 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular No. UG/95 of 2015-16, dated 5th October, 2015 relating to the revised syllabus as per (CBSGS) for the T.Y.B..Sc. Botany (Sem. V & VI).

They are hereby informed that the recommendations made by the Board of Studies in Botany at its meeting held on 18th March, 2019 have been accepted by the Academic Council at its meeting held on 10th May, 2019 **vide** item No. 4.26 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T. Y .B.Sc. Botany in (Sem. V & VI) has been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
03rd July, 2019

(Dr. Ajay Deshmukh)
REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.26/10/05/2019

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No. UG/ 36 -A of 2019 MUMBAI-400 032 3rd July, 2019

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Botany,
3) The Director, Board of Examinations and Evaluation,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Director, Board of Students Development,
6) The Co-ordinator, University Computerization Centre,s

(Dr. Ajay Deshmukh)
REGISTRAR

UNIVERSITY OF MUMBAI

Syllabus for the T.Y.B.Sc.
Program: B.Sc. Course: BOTANY

(Credit Based Semester and Grading System with effect from the academic year 2019–2020)

T.Y.B.Sc. Botany Syllabus
Restructured for Credit Based and Grading System
To be implemented from the Academic year 2019-2020

SEMESTER V

Course Code	UNIT	TOPICS	Credit	L / Weeks
USBO501	PLANT DIVERSITY III			
	I	Microbiology	2.5	1
	II	Algae		1
	III	Fungi		1
	IV	Plant Pathology		1
USBO502	PLANT DIVERSITY IV			
	I	Paleobotany	2.5	1
	II	Angiosperms I		1
	III	Anatomy I		1
	IV	Palynology		1
USBO503	FORM AND FUNCTION III			
	I	Cytology and Molecular Biology	2.5	1
	II	Plant Physiology I		1
	III	Environmental Botany		1
	IV	Plant Tissue Culture		1
USBO504	CURRENT TRENDS IN PLANT SCIENCES II			
	I	Ethnobotany and Mushroom Industry	2.5	1
	II	Plant Biotechnology I		1
	III	Instrumentation		1
	IV	Pharmacognosy and medicinal botany		1
USBOP5	Practicals based on Two Courses in Theory (501 & 502) – For 6 Units		3	8
USBOP6	Practicals based on Two Courses in Theory (503 &504) – For 6 Units		3	8
USBOP7	Practicals based on Two Courses in Theory (502 & 503) – For 3 Units		3	8
			16	32 + 8 (3 Units)

SEMESTER VI

Course Code	UNIT	TOPICS	Credit	L / Weeks
USBO601	PLANT DIVERSITY III			
	I	Bryophyta	2.5	1
	II	Pteridophyta		1
	III	Bryophyta and Pteridophyta: Applied Aspects		1
	IV	Gymnosperms		1
USBO602	PLANT DIVERSITY IV			
	I	Angiosperms II	2.5	1
	II	Anatomy II		1
	III	Embryology		1
	IV	Plant Geography		1
USBO603	FORM AND FUNCTION III			
	I	Plant Biochemistry	2.5	1
	II	Plant Physiology II		1
	III	Genetics		1
	IV	Biostatistics		1
USBO604	CURRENT TRENDS IN PLANT SCIENCES II			
	I	Plant Biotechnology II	2.5	1
	II	Bioinformatics		1
	III	Economic Botany		1
	IV	Post Harvest Technology		1
USBOP8	Practicals based on Two Courses in theory (601 & 602) – For 6 Units		3	8
USBOP9	Practicals based on Two Courses in theory (603 & 604) – For 6 Units		3	8
USBOP10	Practicals based on Two Courses in theory (602 & 603) – For 3 Units		3	8
			16	32 + 8 (3 Units)

BSc BOTANY: PROGRAM OUTCOMES

Specific core discipline knowledge

- Students can recall details and information about the evolution, anatomy, morphology, systematics, genetics, physiology, ecology, and conservation of plants and all other forms of life.
- Students can recall details of the unique ecological and evolutionary features of the local and Indian flora.

Communication skills

- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

BSc BOTANY: PROGRAM SPECIFIC OUTCOMES

- To recognize and identify major groups of non-vascular and vascular plants and their phylogenetic relationships.
- To understand the phylogeny of plants and study various systems of classification.
- To explore the morphological, anatomical, embryological details as well as economic importance of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
- To understand physiological processes and adaptations of plants.
- To provide knowledge about environmental factors and natural resources and their importance in sustainable development.
- To be able to carry out phytochemical analysis of plant extracts and application of the isolated compounds for treatment of diseases.
- To be able to deal with all microbes and the technologies for their effective uses in industry and mitigation of environmental concerns.
- To explain how current medicinal practices are often based on indigenous plant knowledge and to get introduced to different perspectives on treating ailments according to ethnomedicinal principles.
- To understand patterns of heredity and variation among individuals, species and populations and apply principles for improvement of quality and yield.
- To be able to apply statistical tools to gain insights into significantly different data from different sources.
- To acquire recently published knowledge in molecular biology, such as rDNA technology; PTC and bioinformatics and their applications.

SEMESTER V
THEORY

Course Code	Title	Credits
USBO501	**PLANT DIVERSITY – III**	**2.5 Credits** **(60 Lectures)**

Course outcomes:

The students would be able :

- To gain knowledge about microbial diversity and techniques for culturing and visualization.
- To understand the salient features of three major groups of algae, their life cycle patterns with a suitable example; to be able to identify them.
- To learn the general characteristics and classification of two major groups of fungi along with life cycles of each group; to be able to identify them.
- To understand the scope and importance of Plant Pathology and apply the concepts of various control measures of commonly widespread plant diseases.

Unit I: Microbiology • **Types of Microbes:** Viruses, Bacteria, Algae, Fungi, Protozoa, Mycoplasma and Actinomycetes. • **Culturing:** Sterilization, media, staining, colony characters. • Pure cultures	**(15 lectures)**
Unit –II: Algae (G.M. Smith Classification System to be followed) • Division Rhodophyta: Classification and General Characters: Distribution, Cell structure, pigments, reserve food, range of thallus, reproduction: asexual and sexual, Alternation of Generations, Economic Importance. • Structure, life cycle and systematic position of *Polysiphonia, Batrachospermum.* • Classification and General Characters of Xanthophyta: Distribution, Cell structure, pigments, reserve food, range of thallus, Reproduction: asexual and sexual, Alternation of Generations, Economic Importance. • Structure, life cycle and systematic position of *Vaucheria.* • Classification and General Characters of Bacillariophyta: Distribution, Cell structure, pigments, reserve food, range of thallus, Reproduction: asexual and sexual, Alternation of Generations, Economic Importance. • Structure, life cycle and systematic position of *Pinnularia.*	**(15 lectures)**
Unit III: Fungi (G.M. Smith Classification System to be followed) • Basidiomycetes: Classification and General characters ➢ Life cycle of *Agaricus* ➢ Life cycle of *Puccinia* • Deuteromycetae: Classification and General Characters • Life cycle of *Alternaria*	**(15 lectures)**

Unit IV: Plant Pathology • **Study of plant diseases:** Causative organism, symptoms, predisposing factors, disease cycle and control measures of the following. ➢ White Rust –*Albugo candida* ➢ Tikka disease of ground nut: *Cercospora* ➢ Damping off disease: *Pythium* ➢ Citrus canker –*Xanthomonas axonopodis* pv. citri ➢ Leaf curl – leaf curl virus in *Papaya.* • Study of Physical, chemical and biological control methods of plant diseases.	**(15 lectures)**

Course Code	Title	Credits
USBO502	**PLANT DIVERSITY – IV**	**2.5 Credits (60 lectures)**

Course outcomes:

The students would be able :

- To acquire knowledge of different fossil forms and understand their role in evolution.
- To provide plant description, describe the morphological and reproductive structures of seven families and also identify and classify according to Bentham and Hooker's system.
- To gain proficiency in the use of keys and identification manuals for identifying any unknown plants to species level.
- To relate anomalies in internal stem structure with function and appreciate the salient features of the root stem transition zone.
- To get exposure to pollen study and learn to apply it in various fields.

Unit I: Paleobotany • *Lepidodendron*– All form genera root, stem, bark, leaf, male and female fructification. • *Lyginopteris*– All form genera root, stem, leaf, male and female fructification. • *Pentoxylon*– All form genera. • Contribution of Birbal Sahni, Birbal Sahni Institute of Paleobotany, Lucknow	**(15 lectures)**
Unit II: Angiosperms I • Morphology of flower – All Parts of Flower. • Complete classification of Bentham and Hooker (only for prescribed families), Merits and demerits • Bentham and Hooker's system of classification for flowering plants up to family with respect to the following prescribed families and economic and medicinal importance for members of the families. (Special stress on fruit morphology to be given) ➢ Capparidaceae ➢ Umbelliferae ➢ Cucurbitaceae ➢ Rubiaceae ➢ Solanaceae ➢ Commelinaceae ➢ Graminae	**(15 lectures)**
Unit III: Anatomy I • **Anomalous secondary growth** in the Stems of *Bignonia*, *Salvadora*, *Achyranthes*, *Dracaena*. Storage roots of Beet, Radish • **Root stem transition** • **Types of Stomata**– Anomocytic, Anisocytic, Diacytic, Paracytic, and Graminaceous	**(15 lectures)**

Unit IV: Palynology ● **Pollen Morphology** ● **Pollen viability**–storage ● Germination and growth of pollen ● Application of Palynology in honey industry, coal and oil exploration, Aerobiology and pollen allergies, forensic science	**(15 lectures)**

Course Code	Title	Credits
USBO503	**FORM AND FUNCTIONS- II**	**2.5 Credits (60 Lectures)**

Course outcomes:

The students would be able :

- To acquire knowledge about two important organelles and molecular mechanisms of translation
- To understand water relations of plants, inorganic and organic solute transport, and apply the knowledge to manage mineral nutrition and survival in challenging abiotic stresses.
- To understand succession in plant communities and study remediation technologies in order to apply knowledge acquired for cleanup of polluted sites.
- To get exposure to principles and techniques of plant tissue culture and apply these studies for improving agriculture and horticulture and to become an entrepreneur.

Unit I: Cytology and Molecular Biology • Structure and function of nucleus • Structure and function of vacuole • Structure and function of giant chromosomes • The genetic code: Characteristics of the genetic code • Translation in Prokaryotes and Eukaryotes.	**(15 lectures)**
Unit II: Plant Physiology I • **Water relations:** Potential, osmosis, transpiration, imbibition, • **Solute transport:** Transport of ions across cell membranes, active and passive transport, carriers, channels and pumps. • **Translocation of solutes:** Composition of phloem sap, girdling experiment. • **Pressure flow model (Munch's hypothesis):**Phloem loading and unloading, anatomy of sieve tube elements and mechanisms of sieve tube translocation. • **Mineral Nutrition:** Role of Macro and Micro nutrients, physiological functions and deficiency symptoms.	**(15 lectures)**
Unit III: Environmental Botany • **Bioremediation:** Principles, factors responsible and microbial population in bioremediation. • **Phytoremediation**: Metals, Organic pollutants • **Plant succession**: Hydrosere and Xerosere – Formation of Barren Space, Succession on the Land Citing Different Seres leading up to the Climax, Succession in Water, Ecesis, Poly and Mono-climax theories.	**(15 lectures)**
Unit IV: Plant Tissue Culture • **Aspects of Micro-propagation with reference to Floriculture:** Detailed study of Orchid Cultivation • **Plant cell suspension cultures for the production of secondary metabolites:** With special reference to Shikonin production. • Somatic Embryogenesis and Artificial Seeds. • **Protoplast Fusion and Somatic Hybridization:** i) Concept, Definition, and various methods of Protoplast Fusion ii) Applications of Somatic Hybridization in Agriculture	**(15 lectures)**

Course Code	Title	Credits
USBO504	**CURRENT TRENDS IN PLANT SCIENCES – II**	**2.5 Credits (60 Lectures)**

Course outcomes:

The students would be able :

- To get exposure to the technique of mushroom cultivation and explore the possibility of entrepreneurship in the same.
- To learn ethnobotanical principles, applications and utilize indigenous plant knowledge for the cure of common human diseases and improvement of agriculture.
- To gain knowledge about the latest molecular biology techniques for isolation and characterization of genes.
- To learn principles and application of commonly used techniques in instrumentation.
- To gain proficiency in the monograph study and pharmacognostic analysis of six medicinal plants.

Unit I: Ethnobotany and Mushroom Industry • **Ethnobotany**- Definition, history, sources of data and methods of study. • **Applications of ethnobotany:** ➢ Ethno-medicines. ➢ Agriculture. ➢ Edible plants. • **Traditional medicines** used by tribals in Maharashtra towards ➢ Skin ailments: *Rubia cordfolia, Sandalwood* ➢ Liver ailments: *Phyllanthus, Andrographis* ➢ Wound healing and ageing: *Centella, Typha, Terminalia, Tridax.* ➢ Fever: *Vitex negundo, Tinospora cordifolia* leaves ➢ Diabetes: *Momordica charantia, Syzygium cuminii* • **Mushroom industry:** ➢ Detail general account of production of mushrooms with respect to methods of Composting, spawning, casing, harvesting of mushroom. Cultivation of *Pleurotus, Agaricus, Volvariella* mushroom. ➢ General account of mushrooms: Nutritional value, picking and packaging, economic importance.	**(15 lectures)**
Unit II: Plant Biotechnology I • Construction of genomic DNA libraries, Chromosome libraries and c- DNA libraries. • Identification of specific cloned sequences in c-DNA libraries and Genomic libraries • **Analysis of genes and gene transcripts –**Restriction enzyme, analysis of cloned DNA sequences. Hybridization(Southern Hybridization)	**(15 lectures)**
Unit III: Instrumentation • **Colorimetry and Spectrophotometry** (Visible, UV and IR) – Instrumentation, working, principle and applications. • **Chromatography:** General account of Column chromatography. Principle and bedding material involved in adsorption and partition chromatography, ion exchange chromatography, molecular sieve chromatography.	**(15 lectures)**

Unit IV: Pharmacognosy and Medicinal Botany • Monographs of drugs with reference to biological sources, geographical distribution, common varieties, macro and microscopic characters, chemical constituents, therapeutic uses, adulterants- *Strychnos* seeds, *Senna* leaves, Clove buds, *Allium sativum*, *Acorus calamus* and *Curcuma longa*	**(15 lectures)**

SEMESTER V
PRACTICAL

Minimum marks for passing: 20

Semester V USBOP5 – For 6 Units	**Cr**
PRACTICAL PAPER I–PLANT DIVERSITY III – USBOP 501 (For 6 Units)	**1.5**
Microbiology • Study of aeromicrobiota by petriplate exposed method: Fungal culture, Bacterial culture. • Determination of Minimum Inhibitory Concentration (MIC) of sucrose against selected microorganism. • Study of antimicrobial activity by the disc diffusion method.	
Algae (G.M. Smith Classification System to be followed) • Study of stages in the life cycle of the following Algae from fresh / preserved material and permanent slides. ➢ *Polysiphonia* ➢ *Batrachospermum* ➢ *Vaucheria* ➢ *Pinnularia*	
Fungi (G.M. Smith Classification System to be followed) • Study of stages in the life cycle of the following Fungi from fresh / preserved material and permanent slides ➢ *Agaricus* ➢ *Puccinia* ➢ *Alternaria*	
Plant Pathology • Study of the following fungal diseases: ➢ White rust in Cruciferae (Brassicaceae) ➢ Tikka disease in Groundnut ➢ Damping off disease ➢ Citrus canker ➢ Leaf curl in *Papaya Leaf*	
Semester V USBOP7 – For 3 Units	
PRACTICAL PAPER II–PLANT DIVERSITY IV USBOP 502 (For 3 & 6 Units)	**Cr**
Paleobotany • Study of the following form genera with the help of permanent slides/ photomicrographs. ➢ *Lepidodendron* ➢ *Lyginopteris* ➢ *Pentoxylon*	**1.5**
Angiosperms I • Morphology of Flower – All Parts of Flower • Study of one plant from each of the following Angiosperm families as per Bentham and Hooker's system of classification. ➢ Capparidaceae ➢ Umbelliferae ➢ Cucurbitaceae	

➢ Rubiaceae ➢ Solanaceae ➢ Commelinaceae ➢ Graminae • Morphological peculiarities and economic importance of the members of the above-mentioned Angiosperm families • Identifying the genus and species of a plant with the help of Flora	
Anatomy I • Study of anomalous secondary growth in the stems of the following plants using double staining technique. *1) Bignonia* *2) Salvadora* *3) Achyranthes* *4) Dracaena* • Study of anomalous secondary growth in the roots of 1) Beet 2) Radish • Types of Stomata 1) Anomocytic 2) Anisocytic 3) Diacytic 4) Paracytic 5) Graminaceous	
Palynology I • Study of pollen morphology (NPC Analysis) of the following by Chitale's Method ➢ *Hibiscus* ➢ *Datura* ➢ *Ocimum* ➢ *Crinum* ➢ *Pancratium* ➢ *Canna* • Determination of pollen viability • Pollen analysis from honey sample – unifloral and multifloral honey • Effect of varying concentration of sucrose on *In vitro* Pollen germination	
Total Credit	**3**

Semester V USBOP6 – For 6Units **Semester V USBOP7 – For 3Units**	**Cr**
PRACTICAL –PAPER III FORM AND FUNCTION II USBOP 503 (For 3 & 6 Units)	**1.5**
Cytology and Molecular Biology • Mounting of Giant chromosomes from *Chironomous* larva • Smear preparation from *Tradescantia* buds • Predicting the sequence of amino acids in the polypeptide chain that will be formed following translation(Eukaryotic)	
Plant Physiology I • Estimation of Phosphate phosphorus (Plant acid extract) • Estimation of Iron (Plant acid extract) Note: Preparation of a standard graph and determination of the multiplication factor for Phosphate / Iron estimation using a given standard phosphate / Standard Iron solution should be done in regular practical as this will also be put as a question in practical exam	
Environmental Botany • Estimation of the following in given water sample ➢ Dissolved oxygen demand ➢ Biological oxygen demand ➢ Hardness ➢ Salinity and Chlorinity	
Micropropogation • Plant Tissue culture: • Identification – Multiple shoot culture, hairy root culture, somatic embryogenesis • Preparation of stock solutions for preparation of MS medium (Note: Concept of preparation of specified molar solutions should be taught and problems based on preparation of stock solutions for tissue culture media will be given).	
Semester V USBOP6 – For 6 Units	
PRACTICAL – PAPER IV CURRENT TRENDS IN PLANT SCIENCES II USBOP 504 (For 6 Units)	**Cr**
Ethnobotany and mushroom industry • Study of plants mentioned in theory for Ethnobotany • Mushroom cultivation (To be demonstrated) • Identification of various stages involved in mushroom cultivation – spawn, pin head stage, mature/ harvest stage of *Agaricus, Pleurotus, Volvariella*	**1.5**
Biotechnology I • Growth curve of E. coli • Plasmid DNA isolation and Separation of DNA using AGE • Restriction mapping (problems), Southern blotting	
Instrumentation • Demonstration of Beer Lambert's Law • Experiment based on ion exchange chromatography for demonstration • Experiment based on separation of dyes/ plant pigments using silica gel column.	

Pharmacognosy • Macroscopic/ Microscopic characters and Chemical tests for active constituents of the following plants. ➢ *Allium sativum* ➢ *Acorus calamus* ➢ *Curcuma longa* ➢ *Senna angustifolia* ➢ *Strychnos nux-vomica* ➢ *Eugenia caryophyllata*	
Total Credit	**3**

Course Code	Title	Credits
USBO601	**PLANT DIVERSITY – III**	**2.5 Credits (60 Lectures)**

Course outcomes:

The students would be able :

- To identify, describe and study in detail the life cycles of three Bryophytes.
- To and study in detail classification and general characters of three classes of Pteridophytes and identify as well as describe the life cycles of one example from each class.
- To study evolutionary aspects and economic utilization of Bryophytes and Pteridophytes.
- To identify, describe and study in detail the life cycles of three Gymnosperms.

Unit I: Bryophyta (G. M. Smith Classification system to be followed) • Life cycle of *Marchantia* • Life cycle of *Pelia* • Life cycle of *Sphagnum*	**(15 lectures)**
Unit II: Pteridophyta (G. M. Smith Classification System to be followed) • Lepidophyta – Classification, general characters; Life cycle of • *Lycopodium* • Calamophyta – Classification, general characters; Life cycle of • *Equisetum* • Pterophyta - Classification, general characters; Life cycle of *Adiantum* and *Marselia*	**(15 lectures)**
Unit III: Bryophytes and Pteridophytes: Applied aspects • Ecology of Bryophytes. • Economic importance of Bryophytes. • Bryophytes as Indicators. • Evolution of Sporophyte and Gametophyte in Bryophytes. • Economic importance of Pteridophytes • Diversity and distribution of Indian Pteridophytes • Types of Sori and Evolution of Sori in Pteridophytes.	**(15 lectures)**
Unit IV: Gymnosperms (Chamberlain's Classification System to be followed) • Life cycle of *Thuja*, • Life cycle of *Gnetum* • Life cycle of *Ephedra*. • Economic importance of Gymnosperms	**(15 lectures)**

Course Code	Title	Credits
USBO602	**PLANT DIVERSITY – IV**	**2.5 Credits (60 Lectures)**

Course outcomes:

The students would be able :

- To study contribution of Botanical gardens, BSI to Angiosperm study and provide plant description, describe the morphological and reproductive structures of seven families.
- To gain exposure to a phylognetic system of classification.
- To gain insight into the anatomical adaptations of different ecological plant groups.
- To understand development plant of male and female gametophytes, embryonic structure and development.
- To understand the different aspects and importance of Biodiversity and utilize them for conservation of species so as to prevent further loss or extinction of Biodiversity and preserve the existing for future generations.

Unit I: Angiosperms II • **Major Botanic gardens of India**– Indian Botanic Garden, Howrah; National Botanic Garden (NBRI) Lucknow; Lloyd Botanic Garden, Darjeeling; Lalbaugh Botanic Garden, Bangaluru. • Botanical survey of India and regional branches of India • Bentham and Hooker's system of classification for flowering plants up to family with respect to the following prescribed families and economic importance, medicinal importance and fruit morphology for members of the families ➢ Rhamnaceae ➢ Combretaceae ➢ Asclepiadaceae ➢ Labiatae ➢ Euphorbiaceae ➢ Cannaceae • Hutchinson's classification system of Angiosperms Brief Introduction, Merits and Demerits of Hutchinson's Classification System	**(15 lectures)**
Unit II: Anatomy II • **Ecological anatomy** ➢ Hydrophytes – submerged, floating, rooted ➢ Hygrophytes -*Typha* ➢ Mesophytes ➢ Sciophytes ➢ Halophytes ➢ Epiphytes ➢ Xerophytes	**(15 lectures)**
Unit III: Embryology • **Microsporogenesis** • **Megasporogenesis**- Development of monosporic type, examples of all embryo sacs • Types of ovules • Double fertilization • Development of embryo–*Capsella*	**(15 lectures)**

Unit IV: Plant Geography (Shifted from Paper – IV) • **Phytogeographical regions of India**. • **Biodiversity**: ➢ Definition, diversity of flora found in various forest types of India ➢ Levels of biodiversity ➢ Importance and status of biodiversity ➢ Loss of biodiversity ➢ Conservation of biodiversity ➢ Genetic diversity- Molecular characteristics	**(15 lectures)**

Course Code	Title	Credits
USBO603	**FORMS AND FUNCTION – III**	**2.5 Credits 60 Lectures)**

Course outcomes:

The students would be able :

- To study various plant biomolecular structures and appreciate the structures, role, functions and applications of enzymes.
- To gain insight into the Nitrogen and plant hormone metabolism with applications of the same in agriculture and horticulture.
- To understand principles of genetic mapping , mutations and solve problems based on them, gain knowledge of various metabolic disorders and their implications.
- To generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context, using suitable statistical techniques.

Unit I: Plant Biochemistry • **Structure of biomolecules:** Carbohydrates (sugars, starch, cellulose, pectin, lipids (fatty acids and glycerol), proteins (amino acids) • **Enzymes:** Nomenclature, classification, mode of action, Enzyme kinetics, Michaelis-Menten equation, competitive, non-competitive and un-competitive inhibitors.	**(15 lectures)**
Unit II: Plant Physiology II • **Nitrogen Metabolism:** Nitrogen cycle, root nodule formation, and leghaemoglobin, nitrogenase activity, assimilation of nitrates, (NR, NiR activity), assimilation of ammonia, (amination and transamination reactions), nitrogen assimilation and carbohydrate utilization. • Physiological effects and commercial applications of Auxins, Gibberillins, Cytokinins and Abscisic acid	**(15 lectures)**
Unit III: Genetics • **Genetic mapping in eukaryotes:** discovery of genetic linkage, gene recombination, construction of genetic maps, three- point crosses and mapping chromosomes, problems based on the same • **Gene mutations:** definition, types of mutations, causes of mutations, induced mutations, the Ame's test • **Metabolic disorders**– enzymatic and non-enzymatic: Gene control of enzyme structure Garrod's hypothesis of inborn errors of metabolism, Phenyl ketone urea.	**(15 lectures)**
Unit IV: Biostatistics (Shifted from Paper – II) • Test of significance student's *t*-test – Paired and Unpaired. • Regression. • ANOVA (one way).	**(15 lectures)**

Course Code	Title	Credits
USBO604	**Current Trends in Plant Science – II**	**2.5 Credits (60 Lectures)**

Course outcomes:

The students would be able :

- To gain insight into recent molecular biology techniques for DNA analysis and amplification and Barcoding techniques and applications therein.
- To understand and apply tools of Bioinformatics for data retrieval and phylogenetic analysis.
- To learn about the sources of economically important plants in the field of fats and oils and apply it for extraction, dealing with entrepreneurship in the field.
- To gain knowledge and proficiency in preservation of post harvest produce and explore the possibility of entrepreneurship in the field.

Unit I: Plant Biotechnology II • **DNA sequence analysis**– Maxam – Gilbert Method and Sanger's method, Pyro Sequencing. • Polymerase Chain Reaction (PCR). • **DNA barcoding:** Basic features, nuclear genome sequence, chloroplast genome sequence, *rbc*L gene sequence, *mat* K gene sequence, present status of barcoding in plants.	**(15 lectures)**
Unit IV: Bioinformatics (Shifted from Paper – III) • Organization of biological data, databases • Exploration of data bases, retrieval of desired data, BLAST. • Protein structure analysis and application • Multiple sequence analysis and phylogenetic analysis	**(15 lectures)**
Unit III: Economic Botany • **Essential Oils:** Extraction, perfumes, perfume oils, oil of Rose, Sandalwood, *Patchouli*, *Champaca*, grass oils: *Citronella*, Vetiver. • **Fatty oils:** Drying oil (Linseed and Soyabean oil), semidrying oils (Cotton seed, Sesame oil) and non-drying oils (Olive oil and Peanut oil), • **Vegetable Fats**: Coconut and Palm oil	**(15 lectures)**
Unit IV : Post Harvest Technology • **Storage of Plant Produce –**Preservation of Fruits and Vegetables ➢ Drying (Dehydration) – Natural conditions – Sun drying, Artificial Drying – Hot Air Drying, Vacuum Drying, Osmotically Dried Fruits, Crystallized or Candied Fruits, Fruit Leather, Freeze Drying) ➢ Freezing (Cold Air Blast System, Liquid Immersion method, Plate Freezers, Cryogenic Freezing, Dehydro-Freezing, Freeze Drying), ➢ Canning ➢ Pickling (in Brine, in Vinegar, Indian Pickles) ➢ Sugar Concentrates (Jams, Jellies, Fruit juices) ➢ Food Preservatives ➢ Use of Antioxidants in Preservation	**(15 lectures)**

SEMEST ER VI
PRACTICAL

Minimum marks for passing: 20

SEMESTER VI USBOP8 – FOR 6 UNITS	**Cr**
PRACTICAL PAPER I–PLANT DIVERSITY III – USBOP 601(For 6 Units)	**1.5**
Bryophyta (G.M. Smith Classification System to be followed) • Study of stages in the life cycle of the following Bryophyta from fresh / preserved material and permanent slides ➢ *Marchantia* ➢ *Pelia* ➢ *Sphagnum*	
Pteridophyta (G.M. Smith Classification System to be followed) • Study of stages in the life cycles of the following Pteridophytes from fresh / preserved material and permanent slides ➢ *Lycopodium* ➢ *Equisetum* ➢ *Adiantum* ➢ *Marselia*	
Bryophytes and Pteridophytes: Applied aspects • Economic importance of Bryophyta • Economic importance of Pteridophyta • Types of Sporophytes in Bryophyta (from Permanent slides) • Types of Sori and Soral Arrangement in Pteridophytes	
Gymnosperms (Chamberlain's Classification System to be followed) • Study of stages in the life cycles of the following Gymnosperms from fresh / preserved material and permanent slides ➢ *Thuja* ➢ *Gnetum* ➢ *Ephedra* • Economic importance of Gymnosperms	
USBOP10 – FOR 3 UNITS	
PRACTICAL PAPER II–PLANT DIVERSITY IV USBOP602 (For 3 & 6 Units)	**1.5**
Angiosperms II • Study of one plant from each of the following Angiosperm families as per Bentham and Hooker's system of classification. ➢ Rhamnaceae ➢ Combretaceae ➢ Asclepiadaceae ➢ Labiatae ➢ Euphorbiaceae ➢ Cannaceae • Morphological peculiarities and economic importance of the members of the above-mentioned Angiosperm families • Identify the genus and species with the help of flora	

Anatomy II • Study of Ecological Anatomy of ➢ Hydrophytes: *Hydrilla* stem, *Nymphaea* petiole, *Eichhornia* offset ➢ Epiphytes: Orchid ➢ Sciophytes: *Peperomia* leaf ➢ Xerophytes: *Nerium* leaf, *Opuntia phylloclade* ➢ Halophytes: *Avicennia* leaf and pneumatophore, *Sesuvium* / *Sueda* leaf ➢ Mesophytes: *Vinca* leaf	
Embryology • Study of various stages of Microsporogenesis, Megasporogenesis and Embryo Development with the help of permanent slides / photomicrographs • Mounting of Monocot (Maize) and Dicot (Castor and Gram)embryo • *In vivo* growth of pollen tube in *Portulaca /Vinca*	
Plant Geography • Study of phytogeographic regions of India • Preparation of vegetation map using Garmin's GPS Instrument • Problems based on Simpson's diversity Index	
Total Credit	**3**
SEMESTER VI USBOP9 – FOR 6 UNITS	**Cr**
SEMESTER VI USBOP10 – FOR 3 UNITS	
PRACTICAL PAPER III–FORM AND FUNCTION III USBOP603 (For 3 & 6 Units)	**1.5**
Plant Biochemistry • Estimation of proteins by Biuret method • Effect of temperature on the activity of amylase • Effect of pH on the activity of amylase • Effect of substrate variation on the activity of amylase	
Plant Physiology II • Determination of alpha-amino nitrogen • Effect of GA on seed germination • Estimation of reducing sugars by DNSA method	
Genetics • Problems based on three-point crosses, construction of chromosome maps • Identification of types of mutations from given DNA sequences • Study of mitosis using pre-treated root tips of *Allium*	
Biostatistics • *t*-test (paired and unpaired) • Problems based on regression analysis • ANOVA (One Way)	
PRACTICAL PAPER IV CURRENT TRENDS IN PLANT SCIENCES USBOP 604 (For 6 Units)	
Plant Biotechnology II • DNA sequencing by Sanger's Method and Pyro Sequencing Method • DNA barcoding of plant material by using suitable data	

Bioinformatics • BLAST: nBLAST, pBLAST • Multiple sequence alignment • Phylogenetic analysis • RASMOL/SPDBV	
Economic Botany • Demonstration: Extraction of essential oil using Clevenger • Thin layer chromatography of essential oil of *Patchouli* and *Citronella* • Saponification value of Palm oil	
Post-Harvest Technology • Preparation of ➢ Squash ➢ Jam ➢ Jelly ➢ Pickle	
Total Credit	**3**

Scheme of Examinations:

Theory Course: Semester End Assessment	**100 Marks Each Theory Paper**
Practical Course	**50 Marks Each Practical Paper**

- **Students offering Double major (3 Units) will study Paper II and III**

Semester End Theory Examination Question Paper Pattern:

Q.1 – Four (4) Long Answer Questions on Unit – I out of which Two (2) to be solved.	**10 Marks Each**
Q.2 – Four (4) Long Answer Questions on Unit – II out of which Two (2) to be solved.	**10 Marks Each**
Q.3 – Four (4) Long Answer Questions on Unit – III out of which Two (2) to be solved.	**10 Marks Each**
Q.4 – Four (4) Long Answer Questions on Unit – IV out of which Two (2) to be solved.	**10 Marks Each**
Q.5 – Six (6) Short Answer Questions on all four (4) Units out of which Four (4) to be solved.	**05 Marks Each**

Note:

1. Minimum Marks of 20 are required in Every Practical Paper Examination in each semester.
2. A minimum of four field excursions (with at least one beyond the limits of Mumbai / Local area) for habitat studies are compulsory. Field work of not less than eight hours duration is equivalent to one period per week for a batch of fifteen students.
3. A candidate will be allowed to appear for the practical examinations only if he/she submits a certified journal of T.Y.B.Sc. Botany and the Field Report or a certificate from the Head of the Department/Institute to the effect that the candidate has completed the practical course of T.Y.B.Sc. Botany as per the minimum requirements. In case of loss of journal, a candidate must produce a certificate from the Head of the Department/ Institute that the practical for the academic year were completed by the student. However, such a candidate will be allowed to appear for the practical examination but the marks allotted for the journal will not be granted.

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER V (USBOP5)

Plant Diversity III (USBOP501)

Practical Paper – I

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q.1	Perform the given Microbiological Experiment **'A'**	12
Q.2	Identify, Classify and Describe Specimens **B, C** and **D**. Sketch neat and labeled diagrams of Morphological / Microscopical structures seen in the specimens.	24
Q.3	Identify and describe slides / specimens **E, F** and **G**.	09
Q.4	Journal	05

KEY:

A– Any one experiment out of four as prescribed in syllabus.

B & **C**– Algae.

D– Fungi.

E, F & **G**– Plant Pathology, Algae or Fungi not asked above in random order.

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER V (USBOP5)

Plant Diversity IV (USBOP502)

Practical Paper – II

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q. 1A.Classify specimen **'A'** up to their families giving reasons. Give floral formula. Sketch neat and labeled L. S. of flower and T.S. ovary. 10

Q. 1B.Identify genus and species of specimen **'B'** using flora. 05

Q.2 Make a temporary double stained preparation of T.S. specimen **'C'** and comment on the type of secondary growth. 06

Q.3 Perform the Palynology experiment **'D'** allotted to you. 07

Q.4 Identify and describe slide/ specimen **'E', 'F', 'G'** & **'H'**. 12

Q.5 Field report 05

Q.6 Viva voce (based on Paper I and Paper II). 05

KEY

A– Families of T.Y.B.Sc only

B– Plants from F.Y & S.Y. B. Sc Families to be included

C– Anatomy Anomalous Secondary Growth

D– As per slip

E, F, G & **H**– Fossils, Types of Stomata, Morphology of flower & Morphology of Fruits Studied in Theory – in random order

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER V (USBOP6)

FORMS AND FUNCTION III (USBOP503)

Practical Paper – III

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q.1	Make a smear preparation of material **'A'** and show the slide to the Examiner. Comment on your observation / Expose the giant chromosomes from the salivary glands of *Chironomous* larva.	08
Q. 2	Perform the experiment **'B'** allotted to you (Physiology).	12
Q. 3	Perform the experiment **'C'** allotted to you (Ecology).	12
Q. 4.	Calculate the_____of the given solution **'D'** to prepare the required solution.	07
Q. 5.	Identify and describe slide/specimen **'E'** & **'F'**.	06
Q.6.	Journal.	05

KEY

B– Physiology experiment.

C– Ecology experiment.

D– Plant Tissue Culture.

E & **F**– Multiple shoot culture, Hairy root culture, Somatic embryogenesis, Amino acid sequencing.

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER V (USBOP6)

CURRENT TRENDS IN PLANT SCIENCE II (USBOP504)

Practical Paper – IV

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q.1.	Perform the experiment **A**– growth curve of *E.coli* / Isolate plasmid DNA and separate using AGE.	12
Q.2.	Perform the experiment **'B'** allotted to you.	10
Q.3.	Describe macroscopical /microscopical character with the help of neat and labelled sketches of specimens **'C'** and **'D'**. Perform the chemical test / TLC to identify the active constituents.	14
Q. 4	Identify and explain the specimens/ photographs **'E', 'F'** and **'G'**.	09
Q. 5.	Journal.	05

KEY

B– Experiment based on Beer- Lambert's Law Experiment on separation of dyes/pigments using silica gel column chromatography

C & **D**–*Allium sativum, Acorus calamus, Curcuma longa, Senna angustifolia, Strychnos nux-vomica Eugenia caryophyllata*

E, F & **G**– any stage of mushroom cultivation, any Plant from ethnobotany, problems on restriction mapping

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER V (USBOP7)

Plant Diversity IV (USBOP502) (For 3 Units)

Practical Paper – II

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q. 1A.	Classify specimen **'A'** up to their families giving reasons. Give floral formula. Sketch neat and labelled L.S. of flower and T.S. of ovary.	10
Q. 1B.	Identify genus and species of specimen **'B'** using flora.	05
Q.2	Make a temporary double stained preparation of T.S. specimen **'C'** and comment on the type of secondary growth.	06
Q.3	Perform the Palynology experiment **'D'** allotted to you.	07
Q.4	Identify and describe slide/ specimen **'E', 'F', 'G' & 'H'**.	12
Q.5	Field report	05
Q.6	Journal.	05

KEY

A– Families of T.Y.B.Sc only

B– Plants from F.Y & S.Y. B. Sc Families to be included

C– Anatomy Anomalous Secondary Growth

D– As per slip

E, F, G & **H**– Fossils, Types of Stomata, Morphology of flower & Morphology of Fruits Studied in Theory – in random order

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER V (USBOP7)

FORMS AND FUNCTION III (USBOP503) (For 3 Units)

Practical Paper – III

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q.1	Make a smear preparation of material **'A'** and show the slide to the Examiner. Comment on your observation / Expose the giant Chromosomes from the salivary glands of *Chironomous* larva.	08
Q. 2	Perform the experiment **'B'** allotted to you (Physiology).	12
Q. 3	Perform the experiment **'C'** allotted to you (Ecology).	12
Q. 4	Calculate the_____of the given solution **'D'** to prepare the required solution.	07
Q. 5	Identify and describe slide/specimen **'E'**& **'F'**.	06
Q.6.	Viva voce (based on Paper II and Paper III).	05

KEY

B– Physiology experiment.

C– Ecology experiment.

D– Plant Tissue Culture.

E & **F**– Multiple shoot culture, Hairy root culture, Somatic embryogenesis, Amino acid sequencing.

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER VI

(USBOP8)

Plant Diversity III (USBOP601)

Practical Paper – I

Duration: 9:00 am to 01:00 pm Max. Marks:50

1	Identify, classify and describe specimen **'A'** and **'B'**. Sketch neat and labelled diagrams of Morphological/Microscopical structures seen in the specimens.	12
2	Identify, classify and describe specimen **'C'** and **'D'**. Sketch neat and labeled diagrams of Morphological/Microscopical structures seen in the specimens.	12
Q.3	Identify, classify and describe specimen **'E'**. Sketch neat and labeled diagrams of Morphological/Microscopical structures seen in the specimens.	06
Q.4	Identify and describe slides/specimen **'F', 'G' 'H', 'I'** & **'J'**.	15
Q.5	Journal.	05

KEY

A & **B**– Bryophytes: *Marchantia, Pellia & Sphagnum*

C & **D**– Pteridophytes: *Lycopodium, Equisetum, Adiantum* & *Marsilea*

E– Gymnosperm: *Thuja, Gnetum & Ephedra*

F, G, H, I & **J**– Economic importance of Bryophytes, Economic importance of Pteridophytes Types of Sporophytes in Bryophyta, Types of Sori in Pteridophytes, Soral arrangement in Pteridophytes, Economic importance of Gymnosperms. (In random order)

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER VI

(USBOP8)

Plant Diversity IV (USBOP602)

Practical Paper – II

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q. 1 A.	Classify specimen **'A'** up to its family giving reasons. Give floral formula. Sketch neat and labeled L.S. of flower and T.S. ovary.	08
Q. 1.B.	Identify genus and species of specimen **'B'** using flora.	04
Q. 2	Make a stained preparation of specimen **'C'** and comment on its ecological anatomy.	06
Q.3.A	Calculate Simpson's Diversity Index from the given data **'D'**.	08
Q.3.B	Mark the Phytogeographic region **'E'** in the map of India and Comment on the same.	05
Q.4	Identify and describe slide/specimen **'F', 'G' & 'H'**.	09
Q.5	Field Report.	05
Q.6	Viva voce (based on Paper I and Paper II)	05

KEY

A– Families of T.Y.B.Sc Sem – VI only

B– Plants from F.Y., S.Y. & T.Y. B. Sc.(Sem – V Families to be included).

C– Ecological anatomy.

F, G & **H**– Economic importance of specimen from prescribe families (Sem VI only), Morphological Peculiarities of prescribed families (Sem – VI only), Embryology. (In random order)

UNIVERSITY OF MUMBAI

T.Y.B.Sc. BOTANY SEMESTER VI (USBOP9)

FORM AND FUNCTION III (USBOP603)

PRACTICAL III

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q.1	Perform the experiment **'A'** allotted to you.	10
Q.2	Perform the experiment **'B'** allotted to you.	10
Q.3	Make a squash preparation to show the stage of mitosis from the pre-treated root tips **'C'**.	05
Q.4	Construct a chromosome map from the given data **'D'** / Identify the type of mutation and comment on them (any two types of mutations)	10
Q.5	From the given data/ material **'E'** determine test of significance using students t-test/ Regression Analysis /ANOVA	10
Q.6	Journal.	05

KEY

A– Plant Biochemistry Experiment.

B– Plant Physiology Experiment.

UNIVERSITY OF MUMBAI

T.Y.B.Sc. BOTANY SEMESTER VI (USBOP9)

CURRENT TRENDS IN PLANT SCIENCE II (USBOP604)

PRACTICAL IV

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q.1	Perform the DNA barcoding of plant material using given data **'A'**.	12
	OR	
	Perform DNA sequencing by Sanger's method of the given sequence **'A'**.	12
Q.3	Perform the experiment **'B'** allotted to you.	12
Q.4	Perform the given analysis of data **'C'** using computer(Bioinformatics).	08
Q.5	Prepare the squash/Jam/jelly/pickle from the given material **'D'**.	12
Q.6	Viva voce. (Based on Paper III and Paper IV)	06

KEY

B– TLC of *Patchouli* or *Citronella* / Saponification value

C– BLAST / Multiple Sequence Alignment (MSA) / Phylogenetic Analysis / RASMOL / SPDBV

UNIVERSITY OF MUMBAI

T.Y.B.SC. BOTANY SEMESTER V (USBOP10)

Plant Diversity IV (USBOP602) (For 3 Units)

Practical Paper – II

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q. 1A.	Classify specimen **'A'** up to its family giving reasons. Give floral formula. Sketch neat and labeled L.S. of flower and T.S. ovary.	08
Q. 1.B.	Identify genus and species of specimen **'B'** using flora.	04
Q. 2	Make a stained preparation of specimen **'C'** and comment on its ecological anatomy.	06
Q.3.A	Calculate Simpson's Diversity Index from the given data **'D'**.	08
Q.3.B	Mark the Phytogeographic region **'E'** in the map of India and Comment on the same.	05
Q.4	Identify and describe slide/specimen **'F', 'G'** & **'H'.**	09
Q.5	Field Report.	05
Q.6	Journal	05

KEY

A– Families of T.Y.B.Sc Sem – VI only

B– Plants from F.Y., S.Y. & T.Y. B. Sc.(Sem – V Families to be included).

C– Ecological anatomy.

F, G & **H**– Economic importance of specimen from prescribe families (Sem VI only), Morphological Peculiarities of prescribed families (Sem – VI only), Embryology. (In random order)

UNIVERSITY OF MUMBAI

T.Y.B.Sc. BOTANY SEMESTER VI(USBOP10)

FORM AND FUNCTION III (USBOP603) (For 3 units)

PRACTICAL III

Duration: 9:00 am to 01:00 pm Max. Marks:50

Q.1	Perform the experiment **'A'** allotted to you.	10
Q.2	Perform the experiment **'B'** allotted to you.	10
Q.3	Make a squash preparation to show the stage of mitosis from the pre-treated root tips **'C'**.	06
Q.4	Construct a chromosome map from the given data **'D'**/ Identify the type of mutation and comment on them (any two types of mutations)	10
Q.5	From the given data/ material **'E'** determine test of significance using students t-test/ Regression Analysis /ANOVA	09
Q.6	Viva-voce. (based on Paper II and Paper III)	05

KEY

A– Plant Biochemistry Experiment.

B– Plant Physiology Experiment.

ReferenceBooks

1. A handbook of Ethnobotany by S.K. Jain, V. Mudgal
2. Plants in folk religion and mythology (Contribution to Ethnobotany by S.K.Jain3rdRev.Ed).
3. Introduction to Plant Physiology by Noggle and Fritz, Prentice Hall Publishers(2002)
4. Plant Physiology by Salisbury and Ross CBS Publishers
5. Plant Physiology by Taiz and Zeiger Sinauer Associates Inc. Publishers,2002
6. Genetics by Russel Peter Adison Wesley Longman Inc. (5thedition)
7. An introduction to Genetic analysis Griffith Freeman and Company(2000)
8. Fundamentals of Biostatics by Rastogi, Ane Books Pvt. Ltd.(2009).
9. College Botany Vol I and II by Gangulee Das and Dutta Central Education enterprises.
10. Cryptogamic Botany Vol I and II by G M Smith, Mcg raw Hill
11. Industrial Microbiology by Cassida, New Age International, New Delhi
12. Industrial Microbiology Mac Millan Publications, New Delhi
13. Physiological Plant Anatomy by Haberlandt, Mac Millan and Company
14. Ayurveda Ahar by P H Kulkarni
15. Pharmacognosy by Kokate, Purohit and Gokhale, Nirali Publications
16. Bioinformatics by Sunder Rajan
17. Instant Notes on Bioinformatics by Westhead (2002), Taylor Francis Publications.
18. Bioinformatics by Ignasimuthu
19. DNA barcoding plants: taxonomy in a new perspective 2010. K Vijayan and C H Tsou, Current Science, 1530 –1541.
20. Introduction to Biostatistics by P K Banerjee, Chand Publication.
21. Plant Biotechnology by K. Ramawat
22. Practical Biochemistry by David Plummer, McGraw Hill Publ.
23. Economic Botany by A F Hill, TATA McGRAW-HILL Publishing Co. Ltd.
24. Post-Harvest Technology by Verma and Joshi, Indus Publication
25. Embryology of Plants by Bhojwani and Bhatnagar
26. Pollen Morphology and Plant Taxonomy by G. Erdtman, Hafner Publ. Co., N.Y.
27. A text Book of Palynology by K Bhattacharya, New Central Book Agency Pvt. Ltd., London
28. An introduction to Embryology of Angiosperms by P Maheshwari, McGraw Hill Book Co.
29. Plant Systematics by Gurcharan Singh, Oxford and IBH Publ.
30. Taxonomy of Vascular Plants by Lawrence George, H M, Oxford and IBH Publ.

University of Mumbai

No. UG/12 of 2020-21

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, the Head of the University Departments and Directors of the recognized Institutions in Science & Technology Faculty is invited to the syllabus uploaded Academic Authority Unit which was accepted by the Academic Council at its meeting held on 10th February, 2012 **vide** item No.4.18 relating to the syllabus as per the (CBSGS) for the M.Sc. (Sem. I & II) in Botany.

They are hereby informed that the recommendations made by the Board of Studies in Botany at its meeting held on 24th February, 2020 vide item No.2 and subsequently made by the Board of Deans at its meeting held on 26th June, 2020 vide item No.7 have been accepted by the Academic Council at its meeting held on 23rd July, 2020 vide item No.4.65 and that in accordance therewith, the revised syllabus as per the (CBCS) of M.Sc. (Sem. I & II) in Botany has been brought into force with effect from the academic year 2020-21, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
11th November, 2020

(Dr. Vinod Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges, the Head of the University Departments and Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.65/23/07/2020

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No. UG/12 -A of 2020-21 MUMBAI-400 032 11th November, 2020

Copy forwarded with Compliments for information to:-

1) The Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Botany,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-ordinator, University Computerization Centre,

(Dr. Vinod Patil)
I/c REGISTRAR

Copy to :-

1. **The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
2. **The Deputy Registrar, College Affiliations & Development Department (CAD),**
3. **The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
4. **The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
5. **The Deputy Registrar, Executive Authorities Section (EA),**
6. **The Deputy Registrar, PRO, Fort, (Publication Section),**
7. **The Deputy Registrar, (Special Cell),**
8. **The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
9. **The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. **P.A to Hon'ble Vice-Chancellor,**
2. **P.A Pro-Vice-Chancellor,**
3. **P.A to Registrar,**
4. **All Deans of all Faculties,**
5. **P.A to Finance & Account Officers, (F.& A.O),**
6. **P.A to Director, Board of Examinations and Evaluation,**
7. **P.A to Director, Innovation, Incubation and Linkages,**
8. **P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
9. **The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
10. **The Director of Board of Student Development,**
11. **The Director, Department of Students Walfare (DSD),**
12. **All Deputy Registrar, Examination House,**
13. **The Deputy Registrars, Finance & Accounts Section,**
14. **The Assistant Registrar, Administrative sub-Campus Thane,**
15. **The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
16. **The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
17. **The Assistant Registrar, Constituent Colleges Unit,**
18. **BUCTU,**
19. **The Receptionist,**
20. **The Telephone Operator,**
21. **The Secretary MUASA**

for information.

AC_____
Item No. _____

UNIVERSITY OF MUMBAI

Program : M.Sc.

Course : Botany

Syllabus for Semester I and II

(Choice Based Credit System with effect from the Academic year 2020-21)

Cover Page

AC_____
Item No. _____

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	M.Sc. Botany
2	Eligibility for Admission	B.Sc. Botany
3	Passing Marks	
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	Semester I & Semester II
6	Level	P.G. **(Strike out which is not applicable)**
7	Pattern	Semester **(Strike out which is not applicable)**
8	Status	New **(Strike out which is not applicable)**
9	To be implemented from Academic Year	From Academic Year 2020-2021

Date:

Signature :

Name of BOS Chairman / : Dr Rajendra D. Shinde

Chairman, BOS, Botany

PROGRAMME SPECIFIC OUTCOMES FOR MSc BOTANY

AT THE END OF **SEMESTER I AND II** THE STUDENTS WOULD HAVE ACQUIRED THE FOLLOWING SKILLS:

1. Students will be able to identify the major groups of organisms amongst plants and be able to classify them within a phylogenetic framework. Students will be able to compare and contrast the characteristics of Cryptogams and Phanerogams that differentiate them from each other and from other forms of life.
2. Students will be able to explain how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system. Drawing upon this knowledge, they will be able to give specific examples of the physiological adaptations, development, reproduction and behaviour of different forms of life.
3. Students will be able to explicate the ecological interconnectedness of life on earth by studying ecological principles and nutrient flow through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities, and ecosystems.
4. Students will be able to use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth. They will be able to use specific examples to explicate how descent with modification has shaped plant morphology, physiology, and life history.
5. Students will be able to carry out a thorough study of the active constituents of medicinal plants with an emphasis on the use of plant based food as medicine.
6. Students will be able to demonstrate proficiency in the experimental techniques and methods of analysis appropriate for understanding the above.

COURSE OUTCOMES

COURSE CODE	TITLE AND LEARNING OUTCOMES
PSBO101	**Plant Diversity-Cryptogams I (Algae and Fungi)** The students will be able to: • Classify algae into various groups, understand the importance in various fields and will be able to collect and identify them • Classify fungi into various groups, understand the role of fungi in various fields and will be able to collect and identify fungi, fungal pathogens and culture them.
PSBO102	**Plant Diversity – Spermatophyta I (Gymnosperms and Angiosperms)** Learning outcomes: The students will be able to differentiate between gymnosperms and angiosperms , study their origin and nomenclature, understand evolutionary theories for origin of Angiosperms, understand characteristics of selected Angiosperm families and learn the rules governing the code of botanical nomenclature, also learn the recent developments as in molecular systematics.
PSBO103	**Plant Physiology** Students should be able to understand how to apply the basic concepts of Plant Physiology in other fields and also to know and

	discuss the concept of physiological processes of plants.
PSBO104	**Cytogenetics, Molecular Biology and Biotechnology** Students will be able to understand the control points in a cell cycle, Study and apply principles of microbial genetics, understand recombinant DNA technology and study applications of the same for the improvement of crops.
PSBO201	**Plant Diversity- Cryptogams II (Bryophyta and Pteridophyta)** The student will be able to: Classify Bryophytes into various groups, study their importance Classify Pteridophytes into various groups, study their importance and multiplication of important ferns
PSBO202	**Plant Diversity: Spermatophyta II** **(Anatomy, Developmental Botany and Palynology)** Students will be able to understand the development of pollen, spore, fertilization and to apply palynological information to plant systematics
PSBO203	**Plant Physiology and Environmental Botany** The students should be able to: • Distinguish key physiological processes underlying the seed germination • Identify the physiological factors that regulate growth and developmental processes of plants • Demonstrate clear understanding of crop-environment interaction and its implication on crop growth and yield • Integrate and apply their knowledge of crop physiology for analytical thinking and solving practical problems experienced in agricultural systems To understand and apply ecological principles and understand legislation and measures to solve environmental problems.
PSBO204	**MEDICINAL BOTANY AND DIETETICS** Students will be able to identify medicinal plants and understand the effects of plant chemical constituents on humans and the use of plants in Dietetics and as nutraceuticals.

COURSE OUTCOMES

COURSE CODE	TITLE AND LEARNING OUTCOMES
PSBO101	**Plant Diversity-Cryptogams I (Algae and Fungi)** The students will be able to: • Classify algae into various groups, understand the importance in various fields and will be able to collect and identify them • Classify fungi into various groups, understand the role of fungi in various fields and will be able to collect and identify fungi, fungal pathogens and culture them.
PSBO102	**Plant Diversity – Spermatophyta I (Gymnosperms and Angiosperms)** Learning outcomes: The students will be able to differentiate between gymnosperms and angiosperms , study their origin and nomenclature, understand evolutionary theories for origin of Angiosperms, understand

	characteristics of selected Angiosperm families and learn the rules governing the code of botanical nomenclature, also learn the recent developments as in molecular systematics.
PSBO103	**Plant Physiology** Students should be able to understand how to apply the basic concepts of Plant Physiology in other fields and also to know and discuss the concept of physiological processes of plants.
PSBO104	**Cytogenetics, Molecular Biology and Biotechnology** Students will be able to understand the control points in a cell cycle, Study and apply principles of microbial genetics, understand recombinant DNA technology and study applications of the same for the improvement of crops.
PSBO201	**Plant Diversity- Cryptogams II (Bryophyta and Pteridophyta)** The student will be able to: Classify Bryophytes into various groups, study their importance Classify Pteridophytes into various groups, study their importance and multiplication of important ferns
PSBO202	**Plant Diversity: Spermatophyta II** **(Anatomy, Developmental Botany and Palynology)** Students will be able to understand the development of pollen, spore, fertilization and to apply palynological information to plant systematics
PSBO203	**Plant Physiology and Environmental Botany** The students should be able to: • Distinguish key physiological processes underlying the seed germination • Identify the physiological factors that regulate growth and developmental processes of plants • Demonstrate clear understanding of crop-environment interaction and its implication on crop growth and yield • Integrate and apply their knowledge of crop physiology for analytical thinking and solving practical problems experienced in agricultural systems To understand and apply ecological principles and understand legislation and measures to solve environmental problems.
PSBO204	**MEDICINAL BOTANY AND DIETETICS** Students will be able to identify medicinal plants and understand the effects of plant chemical constituents on humans and the use of plants in Dietetics and as nutraceuticals.

SYLLABUS MSc I BOTANY
SEMESTER I 2020-21

Course Code	TOPIC HEADINGS	Credits	L / Week
PSBO101	Plant Diversity :Cryptogams I (Algae and Fungi)	4	
UNIT I	Algae		1
UNIT II	Applied Phycology		1
UNIT III	Fungi		1
UNIT IV	Plant Pathology		1
PSBOP101	Practical based on the course : Plant Diversity :Cryptogams I (Algae and Fungi)	2	

Course Code	Topic	Credits: 4
PSBO101	**Plant Diversity-Cryptogams I (Algae and Fungi)**	
UNIT 1	**Algae** • Classification of Algae up to orders, according to the system proposed by G.M Smith. • General account of the chloroplasts and chromatophores in different groups of algae • Asexual and Sexual spore bearing structures in various groups of algae • Life cycle of *Scytonema, Nitella*, *Padina and Dictyota.* • *Diversity and distribution of marine algae in Maharashtra.*	1
UNIT 2	**Applied Phycology** • Culturing of algae and preservation • Contributions of Eminent Algologists in India: M. O. P. Iyengar and T. V. Desikachary. • Economic importance of algae with reference to : Food, Agriculture - Fodder, Biofuel, Biofertilizers, Industry: Agar agar, Medicine, Sewage disposal, Water pollution, Energy production. • Cultivation of algae with special reference to *Chlorella* and *Spirulina*	1
UNIT 3	**Fungi** • Classification of fungi up to orders, according to the system proposed by Alexopoulos (1962). • General account of vegetative structure of unicellular and multicellular Mycelia, Septa, Hyphal modifications in various groups of fungi • General account of spore bearing organs and their arrangements in various groups of fungi. • Spore release and dispersal – with special reference to Basidiomycotina, Deuteromycotina • Life cycle of *Stemonitis, Phytophthora*and	1

	Peziza. • Mycorrhiza: type, distribution and significance with reference to agriculture and forestry	
UNIT 4	**Plant Pathology** • Integrated management of diseases • Study of the following diseases with reference to occurrence, symptoms, causal organism, disease cycle, predisposing factors and control measures of the following diseases: a. Red rot of Sugarcane (*Colletotrichum falcatum*) b. Blast of Rice (*Pyricularia oryzae*) c. Wilt of Arhar/ Tur (*Fusarium oxysporum*) d. Green ear of Bajra (*Sclerospora graminicola*) e. Angular leaf spot of Cotton (*Xanthomonas axonopodis*)	1
Learning outcomes: The students will be able to: • Classify algae into various groups, understand the importance in various fields and will be able to collect and identify them • Classify fungi into various groups, understand the role of fungi in various fields and will be able to collect and identify fungi, fungal pathogens and culture them.		

PSBOP101	**Plant Diversity :Cryptogams I (Algae and Fungi)**	**2**
• Study of following type with reference to their systematic position, thallus and reproductive structures: *Scytonema, Lyngbya, Anabaena, Volvox, Scenedesmus, Ulothrix, Enteromorpha, Pithophora, Closterium, Nitella, Padina, Gracilaria and Dictyota.* • Extraction of algal pigments and their separation by paper chromatography. • Culturing of *Chlorella* and *Spirulina* algae • Culturing of *Penicillium* by streak method • Study of the following types with reference to their systematic position, thallus and reproductive structures: *Stemonitis, Saprolegnia, Phytophthora, Penicillium, Peziza, Polyporus, Daedalea, Fusarium and Trichoderma.* • Study of the disease mentioned in the syllabus (theory) with reference to the symptoms, Causal organisms, Disease cycle and Control measures.		

M. Sc. Sem I (Practical) Examination
(09.00 AM to 2.00 PM)
BOTANY-PRACTICAL-I PSBOP101
[Plant Diversity – Cryptogams I (Algae and Fungi)]

Skeleton Question Paper

Time: 9.00 am To 2.00 pm **Max. Marks: 50**

1) Candidates should show their slides/ preparations/ results for all questions to the examiner.
2) Use of logarithm tables / simple calculator is allowed.

Q. 1. Identify, classify and describe the morphological / reproductive structures observed in specimens **A, B, C and D** **(20)**

Q.2. Identify any three algae in the given mixture **E** **(06)**

Q.3. Separate the algal pigments by paper chromatography from the given sample **F** **(05)**

Q.4. Identify and describe slides/ specimen **G, H** and **I** **(09)**

Q.5. Journal **(05)**

Q.6. *Viva-voce* **(05)**

KEY

A and B :(*Scytonema, Lyngbya, Anabaena, Volvox, Scenedesmus, Ulothrix, Enteromorpha, Pithophora, Closterium, Nitella, Padina, Gracilaria and Dictyota.)*

C and D *Stemonitis, Saprolegnia, Phytophthora, Penicillium, Peziza, Polyporus, Daedalea, Fusarium and Trichoderma*

E Mixture of six algae

F Separation of algal pigments by paper chromatography

G, H, I Red rot of sugar cane/ Blast of rice/ Wilt of tur or arhar/Green ear of bajra/ Angular leaf spot of cotton/ algae and fungi other than given above

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Course Code	Title	Credits
PSBO102	**Plant Diversity – Spermatophyta I (Gymnosperms and Angiosperms)**	4
Unit I: Gymnosperms I 1. **Classification** of Gymnosperms up to orders according to the system proposed by C. J. Chamberlain. 2. Characters of Gymnosperms which resemble and differ from Pteridophytes, Angiosperms. 3. General characters; affinities and interrelationships of Cycadofilicales, Bennettitales, Cordaitales and Ginkgoales. 4. Life cycle of *Zamia* and *Araucaria*		1
Unit II: Origin of Angiosperms 1. **Nature of probable ancestors of angiosperms** ➢ Isoetes monocotyledon theory ➢ Coniferales amentiferae theory ➢ Gnetales angiosperm theory ➢ Bennettitalean theory ➢ Caytonialean theory ➢ Pentoxylales theory 2. **Primitive and advanced character in angiosperms.**		1
Unit : III Angiosperms I 1. Study of following families with reference to its systematic position, distribution, floral formula, floral diagram, affinities, morphological peculiarities, economically important plants and their uses. Menispermaceae, Brassicaceae, Tiliaceae, Portulacaceae, Sterculiaceae, Rutaceae, Celastraceae, Sapindaceae, Crassulaceae, Lythraceae, Gentianaceae, Boraginaceae, Chenopodiaceae, Cyperaceae.		1
Unit : IV Angiosperms II 1. **International Code of Nomenclature for Algae, Fungi and Plants (I.C.N.)** Principles and Rules and recommendation. **2 Systems of classification** a. Introduction to Artificial, Natural and Phylogenetic System of classification b. Bentham and Hooker's system of classification up to orders c. Introduction to A. P. G. systems. 3 **Taxonomy as synthetic branch**- Introduction, type function values of taxonomic characters- numerical taxonomy, Molecular systematics.		1
Learning outcomes: The students will be able to differentiate between gymnosperms and angiosperms , study their origin and nomenclature, understand evolutionary theories for origin of Angiosperms, understand characteristics of selected Angiosperm families and learn the rules governing the code of botanical nomenclature, also learn the recent developments as in molecular systematics.		

PSBOP102	**Plant Diversity – Spermatophyta I (Gymnosperms and Angiosperms)**	**2**

Gymnosperms: A study of following types

- *Cycadeoidea*(Fossil)
- *Williamsonia* (Fossil)
- *Zamia*
- *Cupressus*
- *Araucaria*
- *Podocarpus*

Angiosperms:

- A study of the angiosperm families mentioned in theory with reference to their morphological peculiarities and economic importance of its members.

- Identification of genus and species with the help of flora (In addition to the above mentioned families, all families studied in undergraduate classes are included)

University of Mumbai

M. Sc. Sem I (Practical) EXAMINATION

BOTANY-PRACTICAL-II PSBOP102
[Plant Diversity –Spermatophyta I (Gymnosperms & Angiosperms)]

Time: 9.00 am To 2.00 pm **Max. Marks: 50**

Skeleton Question Paper

N.B.

Candidates should show their slides/ preparations/ results for all questions to the examiner.

Q1	Identify, classify and describe specimen **A.**	**(06)**
Q2(a)	Assign specimens **B** and **C** to their respective families giving reasons. Draw the floral diagram and give the floral formulae. Sketch and label the L.S. of the flower and T.S. of ovary.	**(18)**
(b)	With the help of flora, identify the genus and species of specimen **D**	**(05)**
Q3(a)	Describe the morphological peculiarities of specimen **E**	**(05)**
(b)	Give the economic importance of specimen **F**	**(03)**
Q4	Identify and describe specimen/slide G	**(03)**
Q5	Journal	**(05)**
Q6	Field Report	**(05)**

KEY

A *Zamia, Cupressus, Araucaria and Podocarpus* - stem, male cone, female cone

B and C Menispermaceae, Brassicaceae, Tiliaceae, Portulacaceae, Sterculiaceae, Rutaceae, Celastraceae, Sapindaceae, Crassulaceae, Lythraceae, Gentianaceae, Boraginaceae, Chenopodiaceae, Cyperaceae.

D Flora- Any plant from FYBSc to MSc families can be given.

E Any plant from FYBSc to MSc families can be given.

F Any part of the plant from MSc part I families can be given

G Fossil

SEMESTER I
Paper III

Course Code	UNIT	TOPIC HEADINGS	Credits	L / Week
PSBO103	Title of the Paper: Plant Physiology			
	I	Photosynthesis I	4	1
	II	Photosynthesis II		1
	III	Proteins		1
	IV	Plant Hormones		1

Detailed Syllabus

Course Code	Title: Plant Physiology	Credits
PSBO103		4
Unit I: Photosynthesis I (Eukaryotes) **1.** ATP synthesis in chloroplasts (chemiosmotic hypothesis) 2. Regulation of C_3, C_4 and CAM pathways of photosynthesis: **C_3 plants:** Role of light, regulation of RUBISCO **C_4 plants:** Role of light, regulation of PEPcase, transport of metabolites, carbonic anhydrase, NADP-MDH and PPDK Regulation of CAM through transport of metabolites. 3. **Pentose Phosphate Pathway** and its importance, effect of glucose-6-phosphate dehydrogenase deficiency.		1
Unit II: Photosynthesis II (Prokaryotes) **Photosynthesis of prokaryotes**: Classification of photosynthetic bacteria**,** Pigment systems, CO_2 fixation in bacteria and cyanobacteria, Structure and mechanism of light harvesting complex, Reductive TCA cycle.		1
Unit : III Proteins Primary, secondary, tertiary and quaternary structural features and their analysis – Theoretical and experimental; protein folding – biophysical and cellular aspects, Role of chaperons in protein folding.		1
Unit : IV Plant Growth Regulators Auxins, Gibberellins, Cytokinins, Ethylene, Abscisic acid, Brassinosteroids and Jasmonic acid; Biosynthesis, storage, breakdown, transport and their physiological responses.		1
Learning outcomes: Students should be able to understand how to apply the basic concepts of Plant Physiology in other fields and also to know and discuss the concept of physiological processes of plants.		

Practical

PSBOP103	Plant Physiology	2	4

Major experiments

1. Enzyme kinetics: Determination of Km and Vmax of the enzyme amylase (purified amylase).
2. Extraction of cellulase from a suitable fungal culture and study of enzyme activity by DNSA method.
3. Immobilisation of yeast cells and study of invertase activity.
4. Quantitative study of diurnal fluctuation in Titratable Acid Number (TAN) in a CAM plant.
5. Extraction and estimation of GOT and GPT from suitable plant material.
6. Determine the Chl a/Chl b ratio in C_3& C_4 plants.

Minor experiment

1. Separation of organic acids by paper chromatography.
2. Separation of sugars by paper chromatography.
3. A study of the enzyme polyphenol oxidase, from potato peels.
4. Solvent extraction of chlorophyll a/b, xanthophylls and study of absorption pattern.
5. Estimation of the total nitrogen content of a plant using Kjeldahl's method.

University of Mumbai
M. Sc. Botany (Semester-I) Practical Examination
Skeleton Question Paper
Plant Physiology PSBOP103
Practical – III

Time: 9.00 am To 2.00 pm **Max. Marks: 50**

N. B. 1) Candidates should show their slides/preparations/results for all questions to the examiners.
2) Use of **logarithm tables**/simple **calculator** is **allowed**.

Q.1	Perform the given experiments **A & B (major)** and analyze the results.	**(30)**
Q.2	Perform the given experiment **C (minor)** and analyze the results.	**(10)**
Q.3	Journal	**(05)**
Q.4	*Viva-voce*	**(05)**

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MSc Sem 1 Paper IV Theory

Course Code	Title	Credits
PSBO104	**Cytogenetics, Molecular Biology and Biotechnology**	**4**
Unit I: Cytogenetics Cell division and cell cycle: Steps in cell cycle and control of cell cycle. Check points during cell cycle-G_1 to S, progression of S phase, G_2 to M phase, Anaphase check points and components involved as regulators of check points, role of cyclins and CDKs, synthesis and degradation of cyclins, structural features of CDKs and cyclins, activation and inactivation of CDKs; role of E2Fs, and DP proteins, P53, different types of Cyclin dependent CDKs, CDC25, CAKs, Wee1 proteins, nim-proteins, SCFs, Anaphase Promoting Complexes APC (cyclosomes), replication origin and replication initiation complexes. Centrosome activation- structure, duplication of centrosomes, Role of nucleophosmins, organization of mitotic apparatus, binding of tractile fibers to kinetochore complexes, molecular motors involved in movement of chromosomes to equatorial plate and in anaphase movement; cytokinesis by cleavage and phragmoplast formation- different gene products and structures involved and the mechanisms of cytokinesis.		
Unit II: Molecular Biology Microbial Genetics: Molecular basis of transformation, transduction, Conjugation; fine structure of the gene, T4 Phage, complementation analysis, deletion mapping, cis-trans tests. Tetrad analysis in *Neurospora:* Linkage detection (2 genes and centromere)		
Unit : III Recombinant DNA Technology General information onSV-40, Vaccinia, Baculovirus& retroviral vectors. Use of YAC or YEp of yeast (*Saccharomyces cervisiae*) as effective cloning vectors because of their high copy numbers in production of HBsAg vaccine Use of BAC and its advantages Strategies to create Transgenic plants with herbicide resistance: Following strategies to be studied in detail with reference to herbicide Glyphosate resistance: a) Overexpression of the target protein by using a strong promoter. b) Improved plant detoxification resulting in a more and faster conversion of toxic herbicide to non-toxic or less toxic compound. c) Detoxification of herbicide by using a foreign gene. d) Mutation of target protein Methods of modifying the Diazotrophs (N_2 fixing bacteria) by Gene alterations in *Rhizobium* sp. to a) Improve nitrogen fixing efficiency and bacterial and host		

plant interaction. b) Induce symbiotic relationship with non- leguminous plants such as wheat, rice and corn c) Transfer of gene for nitrogen fixation from *Rhizobium*sps. to other bacteria such as *Agrobacterium tumefaciens.*	
Unit : IV Applications of Recombinant DNA technology **Resistance to biotic stress:** a)Transgenic plants with insect resistance: Resistance genes from microbes: Gene from *Bacillus thuringenesis*, Cholesterol oxidase of *Streptomyces* culture filtrate, Isopentenyl transferase gene from *Agrobacterium tumefaciens* Resistance genes from higher plants: Genes for Proteinase inhibitors: eg. Cowpea trypsin inhibitor gene (CpTi), Genes for alpha amylase inhibitors. b)Transgenic plants with viral resistance: Employing virus encoded genes or virus coat proteins; e.g. Transgenic tobacco plants expressing tobacco mosaic virus coat protein gene were developed which express high level of resistance to TMV **Improvement of nutritional content and Quality:** a) Increase in sweetness and flavor in fruits and vegetables for e.g. Monellin gene from African plant (*Dioscorephylum cumminsii*)- introduction in tomato and lettuce b)Increase and change in the quality oils in *Brassica* species (increase in medium chain fatty acids and converting unsaturated fatty acid to saturated fatty acids). c)Increase in starch content (potato). **Transgenics for delayed fruit ripening and extended shelf life**- Tomato. **Transgenic plants**: Plantibodies, vaccines, Biopolymers and vitamins. **Transgenic plants in floriculture**: Increase in the shelf life of cut flowers - (Carnation flowers), Genetic engineering of Orchids, Genetic manipulation of flower pigmentation. **Genetic engineering for inducing Male Sterility in plants.** **Transgenic plants for enhancing phytoremediation.**	
Learning Outcomes: Students will be able to understand the control points in a cell cycle, Study and apply principles of microbial genetics, understand recombinant DNA technology and study applications of the same for the improvement of crops.	

MSc Sem 1 Paper IV Practical

PSBOP104	**Cytogenetics, Molecular Biology and Biotechnology**	2
	1. Preparation of cytological stains, fixatives and pre-treatment agents. 2. Squash preparation from pre-treated root tips (Colchicine/ Paradichlorobenzene/ Aesculin. 3. Squash preparation from mutagen treated root tips for study of aberrations. 4. Smear preparation from any suitable plant material. 5. Problems based on: a. Restriction map analysis and construction of restriction maps, b. Tetrad analysis in *Neurospora* – two genes and centromere. c. Deletion mapping in Bacteriophage.	

University of Mumbai
M. Sc. Botany (Semester-I) Practical Examination
Skeleton Question Paper
Cytogenetics, Molecular Biology and Biotechnology
PSBOTP 104

Time: 9.00 am To 2.00 pm **Max. Marks: 50**

N.B. 1) Candidate should show their slides preparations/results for all questions to the examiners.
2) Use of logarithm tables/simple calculator is allowed
3) Use of Mobile phones is not allowed.

Q. 1. Make a squash preparation of the pre-treated specimen A and identify the anomalies. **(10)**
Q. 2. Make a smear preparation from the anthers of specimen B to show the stages of Meiosis. Comment on the same. **(10)**
Q. 3 Construct a restriction map / deletion map for the given DNA strand from the data provided 'C'. **(08)**
Q. 4 Construct a linkage map for the chromosome of *Neurospora* from the given Data 'D' **(12)**
Q .5. Journal. **(05)**
Q. 6. *Viva-voce.* **(05)**

Key:
A – Pre-treated Onion root tips
B – *Tradescantia discolor* buds
C – Restriction map/ deletion map problem
D – *Neurospora* - tetrad analysis problem

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63. George H.M. 1967, Taxonomy of Vascular plants, Oxford and IBH publishers.

64. Naik V.N. 1999. Taxonomy of Angiosperms, Tata-MacGraw Hill Publishers, Co. Ltd.

65. Sharma O.P. 1988. Plant Taxonomy.

66. Samuel Jones 1987. Plant systematics, Tata-MacGraw Hill Publishers, Co. Ltd.

67. Sivarajan V.V. 1991, Introduction to principles of plant taxonomy, Oxford and IBH publishers, New Delhi.

68. Sneath R.H.A. & R.R. Sokal, 1973. Numerical Taxonomy, W.H. Freeman and Company, San Francisco.

69. Vasudevan Nair R. 1997. Plant systematics, Oxford and IBH publishers.

70. V.V. Sivarajan, 1991. Introduction to Principles of plant Taxonomy, Oxford and IBH publishers.

71. Plant physiology by Lincoln Taiz and Eduardo Zeiger

72. Introduction to plant biochemistry by T W Goodwin and E I Mercer

73. Fundamentals of biochemistry by Donald Voet and Judith G Voet
Biochemistry by Zubay

M.Sc. Semester I and II Botany Syllabus
Choice Based Credit System
To be implemented from the Academic year 2020--2021

SEMESTER II

Course Code PSBO201	**Title of the Paper- Plant Diversity- Cryptogams II (Bryophyta and Pteridophyta)**			
	I	**Bryophyta I**	4	**1**
	II	**Bryophyta II**		**1**
	III	**Pteridophyta I**		**1**
	IV	**Pteridophyta II**		**1**

Course Code	**Title**	**Credits**
PSBO201	**Plant Diversity- Cryptogams II (Bryophyta and Pteridophyta)**	**4**
Unit I: Bryophyta I 1.Classification of Bryophyta, up to orders, according to the system proposed by G. M. Smith. 2. Spore bearing organs in Bryophytes. 3. Alternation of generations in Bryophyta. 4.Type study of *Targionia* and *Pogonatum.*		1
Unit II: Bryophyta II 1.Origin and evolution of Bryophyta with reference to habitat and form 2. Diversity and distribution of Indian Bryophytes. 3. Bryophytes: Applied aspects: Agriculture, medicine, Food technology and environmental aspects. 4. Contribution of Shiv Ram Kashyap and S. C. Srivastava in Bryology.		1
Unit : III: Pteridophyta I 1. Classification of Pteridophyta, up to orders, according to the system proposed by G.M.Smith. 2. Heterospory and seed habit 3. Life cycle of *Psilotum*, *Pteris* and *Azolla*		1
Unit : IV Pteridophyta II 1. The geological time scale and a study of fossil Pteridophytes Horneophyton, Cladoxylon, Sphenophyllum, Coenopteris) 2. Cultivation and maintenance of ornamental Ferns. 3.Abnormalities in the life cycle-Apogamy and Apospory 4. Ethnomedicinal uses of Pteridophytes		1

Learning outcomes: Upon successful completion of this course, the student will be able to: Classify Bryophytes into various groups, study their importance Classify Pteridophytes into various groups, study their importance and multiplication of important ferns

Practical

Course Code	Title	Credits
PSBOP201	**Plant Diversity-Cryptogams II (Bryophyta and Pterdiophyta)**	**2**
	1.Study of vegetative and reproductive structures in *Targionia, Plagiochasma, Fimbraria*, *Pellia* and *Pogonatum*. 2. Study of vegetative and reproductive structures in : *Isoetes*, *Ophioglossum*, *Pteris*, *Angiopteris*, *Lygodium* and *Azolla* 3. Study of fossils :*Horneophyton, Cladoxylon, Sphenophyllum, Coenopteris*	

University of Mumbai
M. Sc. Sem II (Practical)EXAMINATION
BOTANY-PRACTICAL- PSBOP201
[Plant Diversity – Cryptogams II (Bryophyta and Pteridophyta)

Skeleton Question Paper

Time: 9:00 am-2:00 pm **Max. Marks: 50**

N.B.

1) Candidates should show their slides/ preparations/ results for all questions to the examiner.
2) Use of logarithm tables /calculator is allowed.

1. Identify, classify and describe the morphological / reproductive structures observed in specimens A,B,C and D. **(24)**
2. Identify and describe slides/specimens E,F,G and H. **(16)**
3. Journal **(05)**
4. *Viva-voce* **(05)**

Key:
A, B, C and D: Bryophyta and Pteridophyta
E, F, G and H: Bryophyta, Pteridophyta and Fossils (any 2)

Course Code	Title			Credits
PSBO202	**Plant Diversity: Spermatophyta II (Anatomy, Developmental Botany and Palynology)**			
	I	**Anatomy I**	4	**1**
	II	**Anatomy II**		**1**
	III	**Developmental Botany**		**1**
	IV	**Palynology**		**1**

Course Code	Title	Credits
PSBO202	**Plant Diversity- II (Anatomy, Developmental Botany and Palynology)**	**4**
<u>Unit I: Anatomy I</u> **1. Meristems:** Definition type of meristems, apical cell theory, histogen theory and Tunica corpus theory **2. Morphogenesis and organogenesis in plants**: Organization of shoot and root apical meristems; shoot and root development, leaf development and phyllotaxy; transition of flowering, floral meristems and floral development in *Arabidopsis* and *Antirrhinum*		1
<u>Unit II: Anatomy II</u> **1. Study of Tissue system:** **Sensory and tactile tissue system**: Tactile sense organs, gravitational and optical sense organs. **Secretory Tissues:** Introduction, Glands, Digestive glands, Nectaries, Resin ducts and oils ducts, Laticiferous ducts. **2. Wood Anatomy:** Coniferous and Angiosperm wood Parenchyma: Storied and non-storied wood parenchyma, Distribution of axial parenchyma Distribution of vessels Structure of rays Characters used in identification of wood.		1
<u>Unit : III Developmental Botany</u> 1. Male gametophyte: Pollen development and gene expression male sterility sperm dimorphism and hybrid seed production; pollen tube growth and guidance. 2. Female gametophyte; Types of embryo sacs; structure of embryo sac cells. 3. Pollination: Ultrastructural and histochemical details		1

of style and stigma, self and interspecific incompatibility, significance of pollen-pistil interaction, role of pollen wall proteins and stigma surface proteins, barriers to fertilization, methods to overcome incompatibilities, intra-ovarian pollination; in-vitro pollination. 4. Fertilization: heterospermy, differential behavior of male gametes, discharge and movement of sperms; syngamy and triple fusion, post-fertilization metabolic & structural changes in embryo-sac. 5. **Seed development and fruit growth**; endosperm development during Early Maturation and Desiccation stages; embryogenesis, ultrastructure and nucellar cytology; cell lineage during late embryo development; storage proteins of endosperm and embryo; apomixis; embryo culture; dynamics of fruit growth; biochemistry and molecular biology of fruit maturation.	
Unit : IV Palynology 1. Special relationships of pollen grain in pollen tetrads. 2. Pollen Chemistry: Introduction, Chemical constituents of pollen-Major metabolites (Carbohydrates, Mineral content, Callose, Organic acids, Amino acids, Pigments, Vitamin. s, Hormones and steroids), Chemistry of pollen wall, Pollen wall proteins. 3. Palynotaxonomy: Introduction, Systematic palynology-Palynotaxonomy of monocots (Pandanales, Glumiflorae, Principes, Liliflorae and Scitaminae) and dicots (Centospermae, Rhoeadales, Rhamnales, Malvales, Umbelliflorae), Evolutionary trends among pollen grains based on palynotaxonomical work. 4. Utilization of pollen: Pollen as health food, Pollen as medicine, Pollen allergens for diagnosis and therapy.	1
Learning outcomes: Students will be able to understand the development of pollen, spore, fertilization and to apply palynological information to plant systematics	

Practical

Course Code	Title	Credits
PSBOP202	**Spermatophyta II** **(Anatomy, Developmental Botany and Palynology)**	**2**
	1. Study of wood elements in *Annona, Michelia, Sterculia* and *Thuja* & *Araucaria* using the maceration technique. 2. Study of the following leaves with respect to leaf surface characters (wax, cuticle, epidermis, stomata, epidermal outgrowth): *Pistia, Ficus, Avicennia* and *Peperomia.* 3. Study of vessels, parenchyma: Axial & Ray Parenchyma – Apotracheal: Terminal, Diffuse, Banded, Reticulate; Paratracheal: Vasicentric, Aliform, Confluent, Abaxial. Ray Parenchyma &Rays: Homogenous &Heterogenous Wood Fibres from dicotyledonous wood by temporary preparation. 4. Mounting of Glands- salt glands of halophytes- *Avicennia*, *Ipomoea biloba*, *Sesuvium/Suaeda* Nectaries- Euphorbiaceae and Combretaceae (at least 3 examples from each family) Resin ducts- Pinus Oils ducts- *Citrus*, *Eucalyptus*, *Murraya* Laticiferous ducts Apocynaceae and Asclepiadaceae. Digestive glands- From permanent slides/ photomicrograph 5. Microtomy- Processing of material, Block making & staining (5 slides for submission). 6. Camera lucida sketches of parenchyma/ rays. 7. A study of types of ovules & types of embryo sacs with the help of permanent sides/photomicrographs. 8. *In vitro* germination of pollen grains, effect of temperature on pollen viability and short-*term* storage.	

	9. Detection of amino-acids, sugars and lipids by paper/ Thin layer chromatography from pollen grains. 10. Study of the morphology of the pollen (using Chitale's and acetolysis method) from the families studied in sem I & II	

M. Sc. Sem II (Practical) EXAMINATION

BOTANY-PRACTICAL- PSBOP202
[Plant Diversity –SpermatophytaII(Anatomy, Developmental Botany &Palynology)]

(Total Marks: 50)

Skeleton Question Paper

N.B.

1) Candidates should show their slides/ preparations/ results for all questions to the examiner.

1.	Macerate the given material A.	**(05)**
2.	Prepare a T.S. of leaf material B to show _____ &C to mount or show _____. Draw neat & labelled sketches.	**(10)**
3.	Prepare a block of specimen D/ cut the ribbon of material D/ double stain the slide of material D.	**(08)**
4.	Perform the palynology experiment E allotted to you.	**(06)**
5.	Identify and describe slide/ specimen/ photomicrograph of F, G & H.	**(09)**
6.a.	Journal.	**(05)**
6b.	Submission of slides of Microtomy.	**(03)**
7.	*Viva-voce*.	**(04)**

2) Use of logarithm tables /calculator is allowed.

KEY:

A- *Annona, Michelia, Sterculia* and *Thuja* and*Araucaria*

B& C- *Pistia, Ficus, Avicennia* and *Peperomia.*

Salt glands of halophytes- *Avicennia*, *Ipomoeabiloba*, *Sesuvium/Suaeda*
Nectaries- Euphorbiaceae and Combretaceae (at least 3 examples from each family)Resin ducts- *Pinus*
Oils ducts- *Citrus*, *Eucalyptus*, *Murraya*
Laticiferous ducts- Apocynaceae and Asclepiadaceae.

D- Microtomy- Block making and trimming of block OR Ribbon cutting and mounting of ribbon on slide OR Double Staining of mounted ribbon on slide and preparing a permanent slide

E- Palynology experiment: *In vitro* germination of pollen grains, effect of temperature on pollen viability and short-*term* storage

Detection of amino-acids, sugars and lipids by paper/ Thin layer chromatography from pollen grains.

F, G & H- Types of ovules and types of embryo sacs, Digestive glands, pollen grains, Anatomy not asked above.

Course Code PSBO203	Title of the Paper- Plant Physiology and Environmental Botany			
	I	Seed Physiology	4	1
	II	Stress Physiology		1
	III	The Environment, Biogeography and Population Ecology:		1
	IV	Climate Change		1

Course Code	Title	Credits
PSBO203	Plant Physiology and Environmental Botany	4

UNIT I: **Seed physiology:** 1. Physiology and Biochemistry of seed germination, Mobilization of food reserves, Germination and growth factors. 2. Seed dormancy, Control and release of seed dormancy. 3. Factors in control for the long term storage of seeds, seed proteins.	1
UNIT II: **Stress Physiology:** 1. Biotic and abiotic stress, Response of plants to Biotic (pathogenic and insects) stress, Adaptations to eliminate and tolerate the infection, Hypersensitive reaction. 2. Response of plants to abiotic stress - Drought stress, Heat stress - Heat shock proteins, Chilling, and freezing, Salinity stress 3. Signaling pathways activated during stress.	1
UNIT III: **The Environment, Biogeography and Population Ecology**: 1. Environment: Components, Major components of physical environment, biotic and abiotic interactions, 2. Biogeography: Major terrestrial biomes, Theory of island bio-geography, Bio-geographical zones of India. 3. Population Ecology: Characteristics of a population; population growth curves; population regulation; life history strategies (r and K selection).	1
UNIT IV **Climate Change:** 1. Global warming, carbon credits, Kyoto mechanism. 2. Factors responsible for climate change, Climate	1

change in relation to the changes in patterns of temperature, precipitation and sea level rise, Impacts of Climate Change on various sectors – Agriculture, Forestry and Ecosystem. The Montreal Protocol, Paris Agreement, UNFCCC, IPCC. 3. Adaptation Strategy/ Mitigation Measures, Blue carbon initiative.	
Learning outcomes: On completion of the course students should be able to: • Distinguish key physiological processes underlying the seed germination • Identify the physiological factors that regulate growth and developmental processes of plants • Demonstrate clear understanding of crop-environment interaction and its implication on crop growth and yield • Integrate and apply their knowledge of crop physiology for analytical thinking and solving practical problems experienced in agricultural systems To understand and apply ecological principles and understand legislation and measures to solve environmental problems.	

Practical

PSBOP203	**Plant Physiology and Environmental Botany**	**2**
	1. Assessing seed viability by TTC method 2. Determination of Nygard index of algae in a water body. 3. Determination of dust load on lives of roadside plant. 4. Comparison of two population of a species collected from two areas. 5. Determination of primary production of an area by harvest method. 6. Determination of primary production of an area by chlorophyll method. 7. Effect of water and salinity stress on chlorophyll content of leaves. 8. Effect of water and salinity stress on Proline content of leaves 9. Determination of Stomatal Index of leaves. 10. Determination of LAI of different types of trees. 11. Assessment of pollution in ambient air, on	

	the basis of injured leaf area. Field exercises: • Assessment of erosion status of land along a 'stream' on a slope or on flat land • Assessment of status of waste land, on the basis of its appearance and visible plant growth. • Assessment of degradation of a forest on the basis of its canopy cover and height, strata and species diversity	

University of Mumbai

M. Sc. Sem II (Practical) EXAMINATION

BOTANY-PRACTICAL-IV PSBOP203
Plant Physiology and Environmental Botany

Time: 9:00 am-2:00 pm **Max. Marks : 50**

Skeleton Question Paper

N.B.

1) Candidates should show their slides/ preparations/ results for all questions to the examiner.
2) Use of logarithm tables /calculator is allowed.

Q.1. PHYSIOLOGY EXPERIMENT..... **(15)**
Q.2. ECOLOGY EXPERIMENT... **(15)**
Q.3 PHYSIOLOGY EXPI./ MINOR ECOLOGY EXPI .... **(10)**
Q.4. JOURNAL... **(05)**
Q.5. *VIVA VOCE*.... **(05)**

M.Sc – I
SEMESTER – II, PAPER – IV

PSBO204	**Title of the Paper: MEDICINAL BOTANY AND DIETETICS**			
	I	**Medicinal Botany I**	4	**1**
	II	**Medicinal Botany II**		**1**
	III	**Dietetics I**		**1**
	IV	**Dietetics II**		**1**

Course Code	**Title**	**Credits**
PSBO204	**Medicinal Botany and Dietetics**	4
<u>Unit I: Medicinal Botany I</u> Monograph of drugs with respect to Biological source, Geographical distribution, macro and microscopic characters, chemical constituents and therapeutic uses of the following drugs: Root: .....*Withania somnifera* (Ashwagandha) Rhizome:.....*Zingiber officinale*(Ginger) Stem bark:..*Cinnamom zeylanicum* (Cinnamon) and *Holarrhena antidysenterica* (Kurchi) Leaf: .....*Azadirachta indica* (Neem) *Fruit:.....Foeniculum vulgare* (Fennel) Seed: .....*Plantago ovata* (Isabgol*)*		1
<u>Unit II: Medicinal Botany II</u> **Introduction to Pharmacopeia:** Indian pharmacopeia and Ayurvedic pharmacopeia **Quality control of crude drugs:** • Morphological examination – Exomorphic characters • Microscopical evaluation – Anatomical characters • Preliminary phytochemical tests. • Development of standardization parameters – Moisture content, Ash values, Solvent extraction value, bitterness value, foaming index, swelling index and heavy metal.		1
<u>Unit III: Dietetics I</u> Nutraceuticals: • Definition and Introduction, classification (Dietary supplements, functional foods, Medicinal food, Pharmaceuticals) • Role of plant nutraceuticals in health benefits (onion, garlic, tomato, carrot, beet, turmeric). • Current trends and future prospective of nutraceuticals.		1
<u>Unit IV: Dietetics II</u> **<u>Plant Food as medicine</u>** Plant food in the treatment of diseases – arthritis, constipation, diarrhoea,		1

diabetes, , hypertension, cancer, jaundice, memory and piles Concept of Antioxidants, their significance, Plants as a source of antioxidants.	
Learning outcomes: Students will be able to identify medicinal plants and understand the effects of plant chemical constituents on humans and the use of plants in Dietetics and as nutraceuticals.	

PRACTICAL

Course Code	Title	Credits
PSBOP204	**Medicinal Botany and Dietetics**	2

Medicinal Botany –I

1. A study of the macroscopic and microscopic characters and identification of active ingredients of drugs mentioned in the syllabus for theory by means of chemical tests.

- Root:..... *Withania somnifera* (Ashwagandha)
- Rhizome:.....*Zingiber officinale*(Ginger)
- Stem bark: ...*Cinnamom zeylanicum* (Cinnamon) and *Holarrhena antidysenterica* (Kurchi)
- Leaf:.....*Azadirachta indica*(Neem)
- *Fruit*:.....*Foeniculum vulgare* (Fennel)
- Seed: .....*Plantago ovata* (Isabgol)

Medicinal Botany -II

2. Determination of Moisture content, Ash values, Solvent extraction value of the given sample.
3. Determination of foaming index of the given sample.
4. Determination of swelling index of the given sample.

NUTRACEUTICALS

- Extraction and detection of lycopene by TLC
- Amino acid profile of a plant/plant product

6. Identification of plants Nutraceuticals for health benefits (As per theory topics)

University of Mumbai
M. Sc. Sem II (Practical) EXAMINATION

BOTANY-PRACTICAL- PSBOP204
[Medicinal Botany and dietetics]

Time: 9:00 am-2:00 pm **Max. Marks : 50**

Skeleton Question Paper

N.B.

1) Candidates should show their slides/ preparations/ results for all questions to the examiner.
2) Use of logarithm tables /calculator is allowed.

Q 1. Identify and describe Macroscopic and Microscopic characters of specimen A and B. Identify the active ingredients from the same using chemical tests/TLC. **(16)**

Q 2. Estimate the Fresh Weight and Dry Weight ratio and total ash content/foaming index/swelling index of the given plant material C. **(08)**

Q3. Extract and detect lycopene from given material D

OR

Q3. Perform TLC to show the amino acid profile of the plant material D **(08)**

Q4. Identify and describe botanical source and uses of the specimens E and F **(08)**

Q 5. Journal**.** **(05)**

Q 6. *Viva-voce.* **(05)**

KEY:

A and B

Withania somnifera (Ashwagandha)
Zingiber officinale(Ginger)
Cinnamom zeylanicum (Cinnamon) and
Holarrhena antidysenterica (Kurchi)
Azadirachta indica (Neem)
Foeniculum vulgare (Fennel)
Plantago ovata (Isabgol*)*

C and D

Any plant material

E and F

Nutraceuticals as per theory topics

Reference books:

1. Trease D. & Evans W. C.: Text Book of Pharmacognosy: W. B. Saunders.

2. Tyler V.E., Brady L.R. & Robbers J. E.: Pharmacognosy; Lea Feibger, USA.

3. Wallis T. E.; Text Book of Pharmacognosy; CBS Publishers, Delhi.

4. Kokate C.K., Purohit A. P. &Gokhale S. B.: Pharmacognosy; Nirali Publications, Pune.

5. Harbone J. B.: Phytochemical Methods: A guide to modern techniques Analysis: Chapman& Hall, London.

6. Bruneton J.: Pharmacognosy, Phytochemistry, Medicinal Plants: Intercept Limited.

7. Vasudevan T.N. & Laddha K.S.: A Textbook of Pharmacognosy, Vrinda Publication House, Jalgaon.

8. The Indian Pharmacopeia: The Controller of Publication; Delhi.

9. Brain K.R. & Turner T. D.: The Practical Evaluation of Phytopharmaceuticals: Wright, Scientica, Bristol.

10. Iyengar M. A. &Nayak S. G.: Anatomy of Crude Drugs: Manipal Power Press Manipal.

11. Iyengar M. A.: Pharmacognosy of Powdered Drugs; Manipal Power Press, Manipal.

12. Kokate C. K.: Practical Pharmacognosy; Vallabh Prakashan.

13. Wagner, Bladt & Zgainski; Plant Drug Analysis; Springer Verlag.

14. Khandelwal K. R.: Practical Pharmacognosy Techniques and Experiments; Nirali Prakashan, Pune.

15. Vasudevan T. N. and Laddha K. S.: Practical Pharmacognosy; New Vrinda Publishing House, Jalgaon

16. Pulok Mukeerjee, Quality control Advanced Plant Physiology – Noggle & Fritz – Prantice – Hall of India.

18. Introductory Plant Physiology – Malcom Wilkins, Pitman Publication Ltd, 1984.
19. Plant Physiology – Pandey and Sinha, Vikas Publishing House, 1987.

20. Outlines of Biochemistry – Conn &Stumpf, John Willey and Co., 1987.

21. Plant Physiology, Biochemistry and Molecular Biology – Dennis and Turnip, Longman Scientific and Technical, 1990.

22. Plant Physiology – Taiz and Zeiger, Sinauer association Inc.

23. E. P. Odum (1996) Fundamentals of Ecology, Natraj Publisher, Dehra Dun.

24. K.M.M. Dakshini (1999) Principle and Practices in Plant Ecology, CRC, Boston.

25. M.C. Dash (1994) Fundamentals of Ecology, Tata McGraw Hill, New Delhi.

26. M.C. Molles Jr. (1999) Ecology- Concepts and Application, McGraw Hill, New Delhi.

27. V. Ingegnoli (2002) Landscape Ecology: a widening foundation, Springer, Bonn.

28. E.J. Kormondi (1999) Concepts of Ecology, Prentice Hall of India, New Delhi.

29. Chapman, J.L. and Reiss M.J. (2005) Ecology Principles and Applications, Cambridge University Press, London.

30. E.P. Odum and G. W. Barrett (2005) Fundamentals of Ecology, Thomson Asia Pvt. Ltd., Singapore.

31. S.V.S. Rana (2005) Essentials of Ecology and Environmental Sciences, Prentice Hall of India, New Delhi.

32. Environment and Ecology-EAS105/EAS 205-R.Rajagopalan

33. Environmental Studies from Crisis To Cure-2nd Edition-R. Rajagopalan

34. Smith, R.L (1996). Ecology and field biology, Harper Collins, New York

35. Misra R. (1968) Ecology work book. Oxford & IBH New Delhi

36. Kreb C.J. (1989). Ecological Methodology. Harper & Row, New York, USA

37. Agrawal and Deo - Plant Ecology

38. Mohan Arora – Ecology

39. Purohit and Agrawal Environmental Science

40. Verma V., Plant ecology by Ane books. 2011

41. Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies, Editors: Jan F. Feenstra, Ian Burton, Joel B. Smith, Richard S.J. Tol, United Nations Environment Programme (UNEP), 1998IPCC Fourth Assessment Report – The AR4 Synthesis Report, Cambridge University Press. 2007

42. IPCC Fifth Assessment Report- Working Group I,II,III Report, Cambridge University Press. 2014

43. Dash Sushil Kumar, "Climate Change – An Indian Perspective", University Press India Pvt. Ltd, 2007

44. Jan C. van Dam, Impacts of "Climate Change and Climate Variability on Hydrological Regimes", Cambridge University Press, 2003.

45. Statistics Related to Climate Change – India, Ministry of Statistics and Programme Implementation, Government of India, New Delhi, 2013

46. Climate Change and India, Soumya Dutta, Soumitra Ghosh, Shankar Gopalakrishnan, C.R. Bijoy, Hadida Yasmin, Rosa Luxemburg Stiftung—South Asia, Centre for International Co-Operation, New Delhi, Daanish Books, 2013

47. Adaptation to Climate Change with a Focus on Rural Areas and India, Dr S. Satapathy, Ilona Porsché, Dr Nana Künkel et al., GIZ and Ministry of Environment and Forests, Govt. of India, 2011

48. The Rough Guide to Climate Change, Robert Hensen, First Edition, Rough Guides Publishers, 2006

49. Environmental Ecology, biodiversity And Climate Change: Towards Sustainable Development, by H.M. Saxena, 2014.

50.Handbook on Climate Change and India: Development, Politics and Governance by Navroz Dubash, Oxford Publications, 2011

51.The Whole Story of Climate: What Science Reveals About the Nature of Endless Changeby E. Kirsten Peters, 2012

52. Carbon Capture, Storage and, Utilization: A Possible Climate Change Solution for Energy Industry, by Malti Goel, 2014

53. The Climate Solution: India's Climate Change Crisis and What We Can Do About It, by Mridula Ramesh, 2018

54. Global Warming: Climate Change - Vol. 140, by Team Book Matrix, 2013

55. Adapting to Climate Change: Governance Challenges, by Deiric O Broin and Peader Kirby, 2016

56. Dealing with Climate Change: Setting a Global Agenda for Mitigation and Adaptation by R. K. Pachauri, 2010

57. Patil C.S. Current trends and future prospective of Nutraceuticals in health promotion, BIOINFO Pharmaceutical Biotechnology ISSN: 2249–1813 & E-ISSN: 2249–1821, Volume 1, Issue 1, 2011, pp-01-07

58. Jessica Chambers et al. Nutraceutical Gardens.

60. Parasuram Rajam Radhika, Nutraceutical an area of tremendous scope, IJRAP, 2011, 2(2) 410-415.

61. Debjit Bhowmik, Harish Gopinath, B. Pragati Kumar, S. Duraivel, K. P. Sampath Kumar, Nutraceutical – A Bright Scope and Opportunity of Indian Healthcare Market, The pharma innovation Vol. 1 No. 11, Jan 2013 www.thepharmajournal.com Page 29- 41.

UNIVERSITY OF MUMBAI

Syllabus for Semester III and IV

Program: M.Sc.

Course: BOTANY

(Credit Based Semester and Grading System with effect from The academic year 2017–2018)

M.Sc Botany Semester III

Outline of the Course: PSBO301 and PSBO302 are common papers for all specialisations

PSBO301: Techniques and Instrumentation

PSBO302: Cell and Molecular Biology

PSBO303 and PSBO304 are Optional Papers in any one of the following specialisations.

1. Mycology and Plant Pathology (MPP)
2. Plant Physiology and Biochemistry (PPB)
3. Angiosperms and Phytochemistry (ANP)
4. Molecular Biology, Cytogenetics and Biotechnology (MCB)
5. Environmental Botany (EB)

Theory	**PSBO301**	**:**	**4 Credits**
	PSBO302	**:**	**4 Credits**
	PSBO303	**:**	**4 Credits**
	PSBO304	**:**	**4 Credits**
Practicals (based on all 4 courses) PSBOP303 & Project		**: PSBOP301, PSBOP302,**	**16 Credits**

SEMESTER III
Common Papers

Course Code	UNIT	TOPIC HEADINGS	Credits	L / Week
PSBO301	**Title of the Paper: TECHNIQUES AND INSTRUMENTATION**			
	I	Biostatistics	4	1
	II	Bioinformatics		1
	III	pH and buffers and Electrophoresis		1
	IV	Colorimeter, UV-visible spectrophotometer		1
PSBO302	**Title of the Paper: Molecular Biology**			
	I	DNA replication	4	1
	II	Transcription		1
	III	RNA processing		1
	IV	Translation		1

PSBOP301	**Techniques and Instrumentation**	**2**	**4**
PSBOP302	**Molecular Biology**	**2**	**4**

Specialization : Mycology and Plant Pathology (MPP)

PSBOMPP303	**Title of the Paper: General Mycology**	**4**
	I History of Mycology	**1**
	II Taxonomy and Life Histories	**1**
	III Fungal Physiology	**1**
	IV Fungal Cytology & Ecology	**1**
PSBOMPP304	**Title of the Paper: Applied Mycology& Plant Pathology**	**4**
	I Pathogenesis and Crop Pathology	**1**
	II Seed Pathology & Seed Mycoflora	**1**
	III Culture Studies and Food Borne Fungi	**1**
	IV Industrial Mycology	**1**

PSBOMPPP303	**Mycology and Plant Pathology**	**2**	**4**
PSBOMPPP304	**Research project proposal and review of literature**	**2**	**4**

Specialization : Plant Physiology and Biochemistry

PSBOPPB303	**Title of the Paper: Plant Biochemistry**	**4**
	I Enzymes	**1**

	II Vitamins as Coenzymes	**1**
	III Plant proteins	**1**
	IV Nucleotide metabolism	**1**
PSBOPPB304	**Title of the Paper: Plant Physiology**	**4**
	I Solute transport & photo assimilate translocation	**1**
	II Post-harvest technology	**1**
	III Stress Physiology: Drought	**1**
	IV Stress Physiology: Salinity	**1**

PSBOPPBP303	**Plant Biochemistry**	**2**	**4**
PSBOPPBP304	**Research project proposal and review of literature**	**2**	**4**

<u>Specialization : Angiosperms and Phytochemistry (ANP)</u>

PSBOANP303	**Title of the Paper: <u>Angiosperms and Phytochemistry I</u>**			
	I	**Approaches to Angiosperm Taxonomy**	**4**	**1**
	II	**Anatomy**		**1**
	III	**Tools of Angiosperm Taxonomy**		**1**
	IV	**Methods in Evaluating Crude Drugs**		**1**
PSBOANP304	**Title of the Paper: <u>Angiosperms and Phytochemistry II</u>**			
	I	**Evolution**	**4**	**1**
	II	**Cladistics**		**1**
	III	**Nomenclature**		**1**

	IV	Embryology and Palynology		1

PSBOANPP303	Angiosperms -I	2	4
PSBOANPP304	PROJECT	2	4

Specialization : Molecular Biology, Cytogenetics and Biotechnology (MCB)

PSBOMCB303	Title of the Paper: Plant Biotechnology			
	I	Plant Tissue Culture I	4	1
	II	Plant Tissue Culture II		1
	III	Biotransformation		1
	IV	Commercial aspects		1
PSBOMCB304	Title of the Paper: Molecular Biology and Cytogenetics			
	I	Cytology	4	1
	II	Cancer Biology		1
	III	Immune System		1
	IV	Genetic Diseases		1

PSBOMCBP303	Plant Biotechnology	2	4
PSBOMCBP304	PROJECT	2	4

Specialization : Environmental Botany (EB)

PSBOEB303	Title of the Paper: Ecology and Environmental Botany	4
	I Basic Ecological Concept	1

	II Ecosystem	1
	III Bio-Geochemical Cycle	1
	IV Natural Resources	1
PSBOEB304	Title of the Paper: Recent Trends & Applied Environmental Botany	4
	I Conservation Ecology –I	1
	II Conservation Ecology II	1
	III Biodiversity Studies	1
	IV Renewable and Non-Renewable Sources of Energy	1

PSBOEBP303	Ecology and Environmental Botany	2	4
PSBOEBP304	Research project proposal and review of literature	2	4

SEMESTER IV

Common Papers

Course Code	UNIT	TOPIC HEADINGS	Credits	L / Week
PSBO401	Title of the Paper: TECHNIQUES AND INSTRUMENTATION			
	I	Centrifugation	4	1
	II	Chromatography		1
	III	Tracer Technique & PCR		1
	IV	Nanotechnology & IPR		1

PSBO402	**Title of the Paper: Molecular Biology**			
	I	**Gene Regulation I**	**4**	**1**
	II	**Gene Regulation II**		**1**
	III	**Gene Regulation III**		**1**
	IV	**Cell signaling**		**1**

PSBOP401	**Techniques and instrumentation**	**2**	**4**
PSBOP402	**Molecular Biology**	**2**	**4**

Specialization : Mycology and Plant Pathology (MPP)

PSBOMPP403	**Title of the Paper: General Mycology**	**4**
	I History of Mycology	**1**
	II Taxonomy and Life Histories	**1**
	III Fungal Physiology	**1**
	IV Fungal Genetics & Ecology	**1**
PSBOMPP404	**Title of the Paper: Applied Mycology& Plant Pathology**	**4**
	I Pathogenesis and Crop Pathology	**1**
	II Seed Pathology & Seed Mycoflora	**1**
	III Culture Studies and Food Borne Fungi	**1**
	IV Industrial Mycology	**1**

PSBOMPPP403	**Mycology and Plant Pathology**	**2**	**4**
PSBOMPPP404	**Research project report and presentation**	**2**	**4**

Specialization : Plant Physiology and Biochemistry

PSBOPPB403	**Title of the Paper: Plant Biochemistry**	**4**
	I Lipid Metabolism	**1**
	II Amino Acid Metabolism	**1**
	III Cytosolic Carbon & Mitochondrial Metabolism	**1**
	IV Senescence	**1**
PSBOPPB404	**Title of the Paper: Plant Physiology**	**4**
	I PGR	**1**
	II Phytoremediation	**1**
	III Sensory photobiology	**1**
	IV Secondary Metabolism	**1**

PSBOPPBP403	**Plant Physiology**	**2**	**4**
PSBOPPBP404	**Research project submission and presentation**	**2**	**4**

Specialization : Angiosperms and Phytochemistry (ANP)

PSBOANP403	**Title of the Paper: Angiosperms and Phytochemistry III**			
	I	**Approaches to Angiosperm Taxonomy**	**4**	**1**
	II	**Anatomy**		**1**
	III	**Medicinal plant biotechnology**		**1**
	IV	**Methods in Evaluating Crude Drugs**		**1**
PSBOANP404	**Title of the Paper: Angiosperms and Phytochemistry IV**			
	I	**Progressive taxonomy**	**4**	**1**
	II	**Tools of taxonomy**		**1**
	III	**Applied taxonomy**		**1**
	IV	**Evolution of Reproductive elements**		**1**

PSBOANP P403	**Angiosperms and Phytochemistry -I**	**2**	**4**
PSBOANP P404	**PROJECT**	**2**	**4**

Specialization : Molecular Biology, Cytogenetics and Biotechnology (MCB)

PSBOMCB403	**Title of the Paper: Plant Biotechnology**			
	I	**Environmental Biotechnology**	**4**	**1**
	II	**Traditional Knowledge & IPR**		**1**
	III	**Nanotechnology**		**1**
	IV	**Food Biotechnology**		**1**
PSBOMCB404	**Title of the Paper: Molecular Biology and Cytogenetics**			
	I	**Plant Breeding I**	**4**	**1**

	II	Plant Breeding II	1
	III	Molecular plant Breeding	1
	IV	Plant Genetic Engineering	1

PSBOMCBP303	Plant Biotechnology	2	4
PSBOMCBP304	PROJECT	2	4

Specialization : Environmental Botany (EB)

PSBOEB403	Title of the Paper: Ecology And Environment Botany			
	I	Pollution	4	1
	II	Climatic Change		1
	III	Plant Population Dynamics		1
	IV	Coastal Zone Management In India		1

PSBOEB404	Title of the Paper: Recent Trends & Applied Environmental Botany			
	I	Restoration Of Ecosystems I	4	1
	II	Restoration Of Ecosystems II		1
	III	Restoration of Land		1
	IV	Water Shed management		1

PSBOEBP P403	Ecology and Environmental Botany	2	4
PSBOEBP P404	PROJECT	2	4

Detailed Syllabus

SEMESTER III General Papers

Course Code	Topic	Credits
PSBO301	**TECHNIQUES AND INSTRUMENTATION**	**4**
UNIT I: Biostatistics • Hypothesis testing: Theory of errors – Type I and Type II errors, Null Hypothesis, z-test, Test of significance. • Introduction to ANOVA, One-way & two way ANOVA, Dunett's test. • Randomized Block Design and Latin Square. (5 problems to be solved in each category)		**1**
Unit II: Bioinformatics • Organization of biological data, databases (raw and processed), Queering in data bases. • Gene finding, motif finding and multiple sequence alignment. • Protein sequence analysis (theory and algorithms). • Exploration of databases, retrieval of desired data, BLAST etc		**1**
Unit III: pH and Buffers; Electrophoresis • pH and buffer solutions, acids and bases, hydrogen ion concentration, dissociation of acids and bases, measurement of pH, titration curves. Physiological Buffers. • Electrophoresis: Theory and application, • PAGE (Native & SDS) and AGE • 2D Electrophoresis		**1**

Unit IV: Microscopy & Spectroscopy
• Principles, instrumentation, working and applications of
  o Fluorescence microscope, TEM, SEM, Biological sample preparation for electron microscopy
  o IR, AAS , Plasma Emission spectroscopy, NMR, MS
		1

Course Code	Topic	Credits
PSBO302	**Molecular Biology**	**4**
<u>UNIT I:</u> DNA Replication • Molecular details of DNA replication in prokaryotes and eukaryotes. • Assembly of raw DNA into nucleosomes. • DNA recombination, holliday model for recombination.		**1**
<u>Unit II:</u> Transcription • Transcription, RNA synthesis, classes of RNA and the genes that code for them. • Transcription of protein coding genes, prokaryotes and eukaryotes, mRNA molecule. • Transcription of other genes, ribosomal RNA, and ribosomes, tRNA.		**1**
<u>Unit III:</u> RNA processing • Capping, polyadenylation, splicing, introns and exons. • snRNA, Types of snRNA, snRNA in spliceosome, significance of snRNA • Non coding RNAs, ribozyme, riboswitches, RNA localization.		**1**
<u>Unit IV:</u> Translation • Protein structure, nature of genetic code, translation of genetic message. • Post translational modifications, localization, chaperons.		**1**

PBSOP301	TECHNIQUES AND INSTRUMENTATION	2	4
• Hypothesis testing, Normal deviate test. • ANOVA- one way & two way. • Randomized block Design and Latin square • Multiple alignments • Phylogenetic tree. • BLAST • Motif finding • Preparation of buffers (phosphate and acetate) • Determination of pKa			

PBSOP302	**Molecular Biology**	2	4
• Aseptic techniques, safe handling of microorganisms. • Establishing pure cultures, streak plate method (T-streak and pentagon method), Pour plate, spread plate. • Maintenance of cultures - Paraffin embedding, Lyophilisation. • Preparation of culture medium, stock solutions • Determination of cell number, viable count method (using pour plate and serial dilution technique). • Separation of seed proteins using PAGE. • Analysis of proteins by one and two dimensional gel electrophoresis. • Genomic DNA isolation and quantification.			

Special Papers

Specialization: Mycology and Plant Pathology (MPP)

Course Code	Topic	Credits
PSBOMPP303	**General Mycology**	**4**
UNIT I: History of Mycology and Plant Pathology in India & Soil Mycology • History of Mycology and Plant Pathology in India and contribution of Mycologists and Plant Pathologists: o C J. Alexopoulos o E. A. Bessey o K. S. Bilgrami o E. A. Butler o K. S. Thind o M. N. Kamat o R. N. Tandon • Soil Mycology: o Various techniques to determine the fungal population in soil. o Various interactions amongst the soil fungi and other organisms. o Keratinophillic fungi		**1**

<u>Unit II:</u> <u>Fungal Taxonomy & Life history and Systematic position of fungi</u> • Fungal Taxonomy: A comparative account of outline systems of classification of fungi proposed by Bessey and Ainsworth. • Polyphasic taxonomy- morphology, enzymatic and molecular characteristics of class Ascomycetes and Basidiomycetes. • Life cycle and Systematic position of the following fungi: Myxomycetes: *Physarum polycephalum*, Ascomycetes:*Claviceps purpurea* Basidiomycetes: *Ganoderma*	**1**
<u>Unit III:</u> Fungal Physiology • Mode of nutrition-Saprophytic, parasitic, mutualistic, hyperparasitic, predaceous. • Nutrition in fungi with reference to: i) Carbon ii) Sulphur iii) Potassium iv) Magnesium v) Nicotinic acid vi) Riboflavin, vi)Nitrogen, vii) Phosphorus, viii) Thiamine ix) Folic acid x) Pantothenic acid xi) Iron • Melvonate pathway, Shikimic acid pathway	**1**
<u>Unit IV:</u> Fungal Cytology, and Ecology • Fungal Cytology: Microscopic structure of fungal cell, Chemical composition and functional attributes of fungal septa and cell wall. • Fungal Ecology: A) Physical Environmental factors influencing fungal growth: i) Light ii) Hydrostatic pressure iii) Radiations	**1**

Course Code	Topic	Credits
PSBOMPP304	**Applied Mycology and Plant Pathology**	**4**
<u>UNIT I:</u> Pathogenesis and Crop Pathology • Prepenetration, Penetration and entry of pathogen into host tissue – mechanical, physiological, enzymatic and through natural openings • Host-parasite interaction • enzymes and toxins in pathogenesis • Significance of phyllosphere and rhizosphere fungi • Crop Pathology: Causal organism, Symptoms, Disease Cycle and Control measures of the following diseases i) Wart of potato ii) Downy mildew of grapes iii) Bunt of rice iv) Citrus canker		**1**

<u>UNIT II:</u> Seed Mycoflora & Seed Pathology • Seed Mycoflora: Fungi on seeds- a) Field Fungi b) Storage Fungi – i) Characteristics of major storage fungi ii) Effect of storage fungi iii) Control of storage fungi • Seed Pathology: Pathological Effects of Seed borne diseases- i) Seed abortion ii) Shrunken seeds & Reduced seed size iii) Seed rot iii) Sclerotisation & Stromatisation iv) Seed discolouration v) Reduced or complete loss of germinability	**1**
<u>Unit III:</u> Cultural Studies and Food borne Fungi • Cultural Studies in Fungi: Culture Media and their types based on i) Empirical use ii) Physical states iii) Chemical composition • Food borne fungi: Common contaminants of i) Fresh food, ii) Processed food iii) Stored food • Use of chemical preservatives to protect the food against contamination	**1**
<u>Unit IV:</u> Industrial Mycology • Fungal enzymes, extraction and purification • Industrial application of fungal enzymes – i) Protease ii) Cellulase iii) Invertase iv) Phosphatase • Uses of immobilization technique in fermentation by fungi • Fermenters- design and construction, types of fermenters, aseptic operation and use of computer in fermenters, maintenance, types of fermentation process - batch fermentation, fed-batch fermentation, continuous fermentation, scale up of fermentations, industrial processes- upstream and down-stream processes, strain improvement of microbes • Organic Acid Industry - Sources and methods of production of vinegar, and citric acid	**1**

PSBOMPPP303	**Mycology and Plant Pathology**	2	4
• Isolation of soil fungi from different locations (garden loam, agricultural soil, salt marsh, rhizoshpere) by Warcup method and identification of fungi • Study of the following fungal types with reference to their systematic position thallus and reproductive structures: *Physarum, Arcyria, Taphrina, Chaetomium, Phyllachora* • Preparation of artificial key based on appropriate characters • Measurement of fungal growth by linear determination (days) • Study of effect of incubation temperatures on fungal growth (15˚C 30˚C & 60˚C)			

• Immobilization of fungi and biodegradation of azo dye using fungal alginate beads • Isolation of fungal pathogens from infected leaves / wood/ phylloplane • Study of the following diseases: i) Wart of potato ii) Downy mildew of grapes iii) Bunt of rice iv) Citrus canker • Isolation and detection of organic acid from fungal culture • Minimum inhibition concentration of salt/ sodium benzoate on fungal growth • Quantitative estimation of cellulose by DNSA method Note: 1. Compulsory visit to Western Ghats for collection and observation of fungi (at least for three days). 2. Visit to any one Mycology Institute/ Laboratory			
PSBOMPPP304	Projects will be allotted in third semester and students will submit project work having introduction, review of literature, well defined material and methods, expected results and references	2	4

Specialization: Plant Physiology and Biochemistry (PPB)

Course Code	Topic	Credits
PSBOPPB303	**Plant Biochemistry**	**4**
<u>UNIT I:</u> Enzymes • Principles of catalysis, enzymes and enzyme kinetics, enzyme regulation, mechanism of enzyme catalysis, Isozymes.		**1**
<u>Unit II:</u> Vitamins and Coenzymes • Structure, occurrence of all water soluble and fat soluble vitamins and coenzyme activity		**1**
<u>Unit III:</u> Plant Proteins • Lectins and storage proteins in plants, transamination, oxidative deamination and urea cycle.		**1**
<u>Unit IV:</u> Nucleotide Metabolism		**1**

• Purine and pyrimidine biosynthesis and regulation. • Recycling of Purine and Pyrimidine nucleotides by salvage pathways.	

Course Code	Topic	Credits
PSBOPPB304	**Plant Physiology**	**4**
<u>UNIT I:</u> Solute transport and photo assimilate translocation • The concept of water potential; Uptake, transport and translocation of water, ions, solutes and macromolecules across membranes, transpiration; mechanisms of loading and unloading of photoassimilates		**1**
<u>Unit II:</u> Post Harvest Technology • Physiological changes during ripening, fruit preservation, role of ethylene in post-harvest technology.		**1**
<u>Unit III:</u> Stress Physiology: Drought • Morphological and cellular adaptations, mechanism of drought tolerance, role of Proline, Glycine Betaines, Mannitol, Pinitol and Osmotin in stress resistance.		**1**
<u>Unit IV:</u> Stress Physiology: Salinity • Generic Pathway for Plant Response to Stress Effect of salt on metabolic processes, Mechanism of Salt resistance- salt avoidance (exclusion, extrusion & dilution) and tolerance (Regulation of ion homeostasis by SOS pathway), Role of Glycine Betaine and Proline in Salinity Stress, DEAD-Box Helicases in Salinity Stress Tolerance		**1**

PSBOPPBP303	**Plant Physiology**	2	4
• Enzyme kinetics: Effect of substrate variation on the activity of enzyme. • Isolation and estimation of DNA. • Estimation of RNA by Orcinol method. • Extraction and estimation of pectin, sugars, polyphenols and vitamin C from ripe & unripe fruits. • Proline and Na content estimation in garden and salt stressed plants.			

PSBOPPBP304	Projects will be allotted in third semester and students will submit project work having introduction, review of literature, well defined material and methods, expected results and references	2	4

Specialization: Angiosperm and Phytochemistry (ANP)

Course Code	Topic	Credits
PSBOANP303	**Angiosperms & Phytochemistry –I**	**4**
UNIT I: Approaches to Angiosperm Taxonomy • Study the following families with reference to its systematic position, distribution, salient features, floral formula, floral diagram, morphological peculiarities, economic importance, present status, affinities, phylogeny and interrelationships: Ranunculaceae, Annonaceae, Nympheaceae, Pedaliaceae, Onagraceae, Scrophulariaceae, Vitaceae, Acanthaceae, Nyctaginaceae, Orchidaceae		**1**
Unit II: Anatomy • Study of cambium with reference to its origin, position, structure, distribution, behavior and its importance in vascular plants. • Study of Leaf Architecture Patterns in dicotyledonous plants and its significance. • A study on basic features on Node-petiole and Nodal anatomy. • Ontogeny of stomatal development. • Study of abscission zone in Plants. • Floral anatomy in hypogynous, perigynous and epigynous flowers and its significance.		**1**
Unit III: Tools for classification • Morphological characters with respect to study of Root, Stem, fruit, seed and seed germination • Screening of plant extracts – Fingerprinting. • Types of keys o Single access and multi access keys, preparation of keys for Taxon based on exomorphic characters		**1**

Unit IV: Methods in Evaluating Crude Drugs
• Organoleptic
• Microscopic
  ○ Leaf constants: palisade ratio and vein islet number.
  ○ Trichomes and Trichome density
  ○ Stomata structure and types, stomatal frequency & stomatal index.
  ○ Cell inclusions
  ○ Sclereids
  ○ Wood elements: structure and organization
• Physico-chemical:
  ○ Ash content
  ○ Extractive values
  ○ Qualitative chemical analysis
• Quantitative chemical analysis
• Biological
  ○ Hepatoprotective
  ○ Anti-fertility
  ○ Anti-inflammatory
  ○ Anti-ulcer
  ○ Neuro-pharmacological
• Evaluation of powdered drugs
	1

Course Code	Topic	Credits
PSBOANP304	**Angiosperms &Phytochemistry –II**	**4**

UNIT I: Evolution
• The effects of evolutionary theory on systematic, monographic and floristic development
  ○ Primitive versus advanced
  ○ Homology and Analogy
  ○ Parallelism and Convergence.
  ○ Phylogeny, phylogenetic and phynetic ontogeny
  ○ Monophyly and Polyphyly
• Character weighing
		1

UNIT II: Cladistics • **Numerical Taxonomy: Principles,** OTU, Taxonomic characters, coding of characters		**1**

• Use of cladistics in classification • Phylogenetic classification systems-Takhtajan, Cronquist, APGI, II, III • Patterns of variation and phylogenetic trees, cluster analysis; Building Trees-Rooting technique, Distance methods, Maximum likely hood methods, Bootstrapping using trees. Phyllocode	

Unit III: Nomenclature
• International code of Botanical Nomenclature 1830 – Paris Code to 2017 – China Code.
• Major adaptations considered in these International Botanical Congress
• Nomenclatural terminology-
  o Important Rules of ICBN, Principles, articles, recommendations, rules and exercises on plant nomenclature (problems to be asked in theory).
  o Type method (typification) - holotype, isotype, syntype, lectotype, paratype, neotype; Effective and Valid publication; Priority; Scientific names-Correct name, Autonym, Basionym, Homonym, Synonym, Tautonym; alternative, ambiguous, illegitimate, naked, rejected and superfluous names.
	1

Unit IV: Embryology and Palynology • Types, Technique, factors affecting somatic embryogenesis and importance of embryogenesis. • Embryology in relation to taxonomy. • Role of embryology in plant breeding. • Evolution of pollen aperture types in angiosperms • Palynology in relation to taxonomy	**1**

PSBOANPP303	**Angiosperms &Phytochemistry –I**	2	4
• Study of Angiosperm families mentioned for theory with reference to morphological peculiarities, floral diagrams and economic importance of its members with the help of locally available plants. • Study of exomorphic characters to describe a plant in technical terms by study of root, stem, leaves, inflorescence, flower, fruit and seed of families prescribed. • Study of Cambium primary, secondary and cork cambia. • Study of leaf architecture. Prepare permanent leaflet of Tamarind leaf architecture (submission).			

• Study of Node petiole anatomy. • Use of keys for identification of family, genus and species • Writing of species description using taxonomic keys • Macroscopic & Microscopic evaluation, Physico-chemical & Phytochemical analysis of the following crude drugs [TLC to be performed]: *Mimosa pudica* entire plant; *Boerhaavia diffusa* entire plant, *Saraca asoka* bark, Asparagus roots, *Glycyrrhiza glabra* rhizome **Note:** 1. Compulsory visit to Western Ghats for observation of plants (at least for three days). 2. Compulsory excursion for observation of plants (local, atleast 2 in each term) 3. Same Field diary to be continued from Sem I and II & maintained for all four semesters.			
PSBOANPP304	Projects will be allotted in third semester and students will submit project work having introduction, review of literature, well defined material and methods, expected results and references	2	4

Specialization: Molecular Biology, Cytogenetics and Biotechnology (MCB)

Course Code	Topic	Credits
PSBOMCB304	**Plant Biotechnology**	**4**
UNIT I: Plant Tissue Culture I • Micropropagation of floricultural and medicinal plants using organogenensis and embryogenensis. • Factors responsible for *in vitro* and *ex vitro* hardening. • Plant improvement through somaclonal variations.		**1**

<u>Unit II:</u> Plant Tissue Culture II • Plant cell cultures as chemical factories: Cell suspension, enhancement of product formation using biotic and abiotic elicitors, immobilization, permeabilization and product recovery. • Problems in plant tissue culture: contamination, phenolics and recalcitrants. • In vitro storage of germplasm, Cryopreservation	**1**
<u>Unit III:</u> Biotransformation • Biotransformation using: Freely suspended plant cells and Immobilized plant cells, • Biotransformation for Vanillin production from Capsicum cell cultures. • In vitro storage of germplasm, cryopreservation. • Studies on *Agrobacterium* mediated transformed root cultures.	**1**
<u>Unit IV:</u> Commercial aspects • The quest for commercial production from plant cell: scaling up of cell cultures, • Bioreactors: factors for bioreactor design, pneumatically agitated bioreactors, comparison of bioreactors, operating mode, batch, fed-batch, semicontinuous, two stage operation, continuous cultivation. • Factors for growth in Bioreactors. • Shikonin production by *Lithospemum erythrorhizon* cell cultures.	**1**

Course Code	Topic	Credits
PSBOMCB304	**Molecular Biology and Cytogenetics**	**4**
<u>UNIT I:</u> Cytology • Cell membrane and permeability: Molecular models of cell membrane, cell permeability. Differentiation of cell membrane, intercellular communications and gap junctions. Cell coat and cell recognition, cell surface. • Cell Cycle and Apoptosis: Mechanism of Cell division; Regulation, Roles of Cyclins and Cyclin dependent kinases, Cell Plate formation, PCD. • Organization and function of mitochondrial and chloroplast genomes.		**1**

<u>Unit II:</u> Cancer Biology • Cancer cells: Characteristics, division, spread, treatment. Course of cancer cell formation, Carcinogens: radiations, chemicals, oncogenic virus. • Cancer and mutations, reproductive properties of transformed animal cell in culture, oncogenes, protoncogenes and their conversion. Oncogenes and growth factors.	**1**
<u>Unit III:</u> Immune System • Phylogeny of immune system, innate and acquired immunity, nature and biology of antigens, major histocompatibility complex cells of immune system, regulation of immune responses. Production of antibodies by plant cells and organs. • Immunity in Health and Disease: Immunodeficiency and AIDS	**1**
<u>Unit IV:</u> Genetic Diseases • Genetic disorders, genetic counseling and gene therapy • Biochemical disorders, sex linked disorders, cardiovascular disorders.	**1**

PSBOMCBP303	**Plant Biotechnology**	2	4
• Preparation of stock solutions and MS medium. • Callus induction and regeneration. • Isolation of bioactive compounds from callus and plant source using TLC. • Types of Bioreactors.			
PSBOMCBP304	Projects will be allotted in third semester and students will submit project work having introduction, review of literature, well defined material and methods, expected results and references	2	4

Specialization: Environmental Botany (EB)

Course Code	Topic	Credits
PSBOEB303	**Ecology and Environmental Botany**	**4**
<u>UNIT I:</u> Basic Ecological Concept • Ecosytem: Definition, Components of Ecosystems, Trophic Levels, Food Chains, Food Webs, Ecological Pyramids, Ecosystem Energetics, Laws of Thermodymadics, Energy Flow Models in Terrestrial Ecosystem • Concept of Productivity , Principles of Limiting Factor, Liebigs Law, Shelford Law of Tolerance, Basic Concepts in Ecology • Branches of Ecology: Autecology; Aims, Aspects: General Account of Seed, Seed Output, Seed Dispersal, Seed Viability, Seed Dormancy, Reproductive Capacity, Growth Regulators and Seed Germination • Synecology: Plant Community, Ecological Amplitude, Population Characteristics: Associaiton, Consociation Fasciation Society		**1**
<u>Unit II:</u> Ecosystem • Succession; Causes, Types, Steps, Migration , Ecesis, Aggregation, Competition, Invasion, Hydrosere, Xerosere, Climax , Disclimax, Sub Climax • Plant and Plant Communities as Indicators: Forests as Indicators Grassland, Soil types Salinity, Grazing, Indicators of Forests. • Types of Habitat: Marine, Freshwater, Estuarine • Seaweeds: their uses maintenance and control		**1**
<u>Unit III:</u> Bio-Geochemical Cycle • **Gaseous Cycle:** o Nitrogen Cycle: Role of Nitrogen in Plant Metabolism and Biosphere. Nitrogen Cycle change due to human activity – Agricultural Nitrogen Fixation, Industrial Emissions, Transportations. Impact in terms of Eutrophication of Environment and Health. o Carbon Cycle: Forms and places of occurrence of Carbon. Photosynthetic Sequestration of Carbon. Role of Carbon in Forest Ecosystems. Cycling of Carbon in Biosphere. Role of carbon in Global Warming Problem and its possible implication. • **Sedimentary Cycle:** o Sulphur Cycle: Forms of Sulphur in biosphere and geosphere, in fossil fuels and its release with industrialization, Sulphur cycling in Soil Bacterial Metabolism. o Phosphorus Cycle: Ecological Function, Biological Function and		**1**

Process of the Cycle.	
<u>Unit IV:</u> Natural Resources • Forest Resources: Use And Over-Exploitation • Biome types of India • Biocitation of Tropical, Temperate, Alpine And Desert Biomes • Gap Dynamics in Tropical Forests and Parameters Of Gap Dynamics, Importance of gap dynamics	**1**

Course Code	Topic	Credits
PSBOEB304	**Recent Trends & Applied Environmental Botany**	**4**
<u>UNIT I:</u> Conservation Ecology –I • Role of National and International Organisations in Conservation and Some relevant terms UNDP, WWF, World Bank, BNHS, MoEF, DST,DBT, CSIR, CPCB, Municipal Corporation Agenda 21, NGOS, IBGP, TRIPS. • Legislation Aiming at Conservation (Objectives and penalties).,Environment Protection act 1986, Forest Conservation Act 1980, Wildlife protection Act 1972 • Conventions: Earth summit, Vienna Convention, Ramsar Convention, Protocol: Montreal protocol, Cartagena protocol • Case studies: Tuvalu -A sinking nation, Basmati patent issue, Chernobyl disaster		**1**
<u>Unit II:</u> Conservation Ecology II • EIA- Environmental Impact Assessment-Types, Benefits, Process Monitoring and Evaluation, Risk Management. Role or Contribution of Botanist in EIA And EMP • Environmental Impact Assessment for Physical, Chemical, Biological and Socio-Economic Factors; Legislative Implications of EIA, Environmental Impacts Assessment and Environmental Auditing. • Watershed Management: Economics Assessment of Watershed Development Vis-A-Vis Ecological and Environmental Protection. • Soil Conservation - Definition, Causes For Erosion; Types - Wind And Water Erosion; Conservation And Management Of Eroded Soils/Areas, Wind Breaks, Shelter Belts; Sand Dunes; Reclamation Of Saline And Alkaline Soils, Water Logged And Other Waste Lands		**1**
<u>Unit III:</u> Biodiversity Studies		**1**

• Biodiversity: Concepts and Levels, National & Global Status, Role of Biodiversity in Ecosystem Function And Stability, Speciation And Extinction, IUCN Categories Of Threats, Distribution And Global Pattern • Biodiversity Hotspots, Inventory. Types Of Resources., Conservation, In-Situ.,Ex-Situ; Biosphere reserves, National Parks, Sanctuaries, Forest Conservation Chipko Movement • Biodiversity Management Approaches**:** Measures of Maintaining Biodiversity, Need For Preservation of Biodiversity With Special Reference to Tropical Forest Biodiversity Centers of Origin of Crops, Species Concept; Significance of Biodiversity; Plant Genetic Resources, Exploration and Collection; Crop Domestication, Plant Introductions; Migration and Utilization; IUCN Clauses and Concept of Threatened and Endangered species • Endemism, Endemic and Exotic Plants Of India, PAN	
<u>Unit IV:</u> Renewable and Non-Renewable Sources of Energy • Concept and Demand of Energy, Growing Energy Needs, Renewable and Non-Renewable Sources, use of Alternate Energy Sources, Wind Energy, Solar Energy. • Water as Source of Energy. • Biofuels Production, Use and Sustainability, Use and Over Exploitation of Energy Sources and Associated Problems. • Nuclear and geothermal energy	**1**

PSBOEBP303	**Ecology and Environmental Botany**	2	4
• Comparison of Primary Productivity by I) Chlorophyll Method, II) Harvest Method And III) Light And Dark Bottle Method in Polluted and Unpolluted Regions. • Determination of pH, Electrical Conductivity and Water Holding Capacity of Different Types of Soil. • Determination of Total Organic Carbon of the Soil • To Study the Quantitative Characters of Plant Community by Quadrat Method. (Density Frequency Abundance) • To Determine Diversity Indices in Plant Communities. • Identification of Some Medicinal Plants Of India, o Rhizome: *Acorus, Curcuma, Zingiber* o Root: Ashwgandha,*Glycyrrhiza*, Asperagus o Fruit: Amla, *Aegle, Datura* o Stem : *Santalum, Saraca, Tinospora* o Leaves : , *Aloe, Ocimum, Bacopa* • To Determine Viability Of Seeds Under Salinity Stress (TTC method)			

• EIA Report Preparation-(Field Exercise-Report To Be Submitted along with Journal).			
PSBOEBP304	Projects will be allotted in third semester and students will submit project work having introduction, review of literature, well defined material and methods, expected results and references	2	4

M.Sc Botany Semester IV

Outline of the Course: PSBO401 and PSBO402 are common papers for all specialisations

PSBO401: Techniques and Instrumentation

PSBO402: Cell and Molecular Biology

PSBO403 and PSBO404 are Optional Papers in any one of the following specialisations.

1. Mycology and Plant Pathology (MPP)
2. Plant Physiology and Biochemistry (PPB)
3. Angiosperms and Phytochemistry (ANP)
4. Molecular Biology, Cytogenetics and Biotechnology (MCB)
5. Environmental Botany (EB)

Theory	**PSBO401 :**	**4 Credits**
	PSBO402 :	**4 Credits**
	PSBO403 :	**4 Credits**
	PSBO404 :	**4 Credits**
Practicals (based on all 4 courses) : **PSBOP401, PSBOP402, PSBOP403 & Project**		**16 Credits**

Detailed Syllabus

SEMESTER IV

General Papers

Course Code	Topic	Credits
PSBO401	**TECHNIQUES AND INSTRUMENTATION**	**4**
UNIT I: Centrifugation • Basics principle of Sedimentation		**1**

• Types of rotors • Differential & density gradient centrifugation • Preparative centrifugation & Applications; Analytical centrifugation & applications	
<u>Unit II:</u> Chromatography • General Principle of chromatography. • Techniques and applications of Ion exchange, Affinity Chromatography& HPLC • Application of HPTLC & HPLC in validation of herbal drugs	**1**
<u>Unit III:</u> Tracer techniques & PCR • Pattern and rate of radioactive decay, Units of radioactivity, Stable Isotopes • Principle, instrumentation & technique: Geiger-Muller counter, Liquid scintillation counters & Autoradiography • Applications of isotopes in biology: Tracer techniques & Autoradiogrpahy • PCR and its applications	**1**
<u>Unit IV:</u> Nanotechnology & IPR • Synthesis of nanoparticles using biological samples. • Characterization of nanoparticles (FTIR, SEM, TEM, STEM, Scanning Tunneling Microscope, Atomic Force Microscope, UV-Vis,). • IPR: Objectives, process & scope	**1**

Course Code	Topic	Credits
PSBO402	**Molecular Biology**	**4**
<u>UNIT I:</u> Gene Regulation I • Regulations of gene expression in bacteria – trp operon, ara operon, histidine operon. • Regulation of gene expression in bacteriophage λ.		**1**
<u>Unit II:</u> Gene Regulation II • Control of gene expression in eukaryotes, Transcriptional control, RNA processing control, mRNA translocation control, mRNA degradation control, protein degradation control		**1**

<u>Unit III:</u> Gene Regulation III • Genetic regulation of development in *Drosophila* Developmental stages in *Drosophila* – embryonic development, imaginal discs, homeotic genes	**1**
<u>Unit IV:</u> Cell signaling • Hormones and their receptors, cell surface receptor, , intracellular receptor, signaling through G-protein coupled receptors, signal relay pathways-signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two-component systems, light signaling in plants, bacterial chemotaxis and quorum sensing. • Forms of signalling (paracrine, synaptic, autocrine, endocrine, cell to cell contact)	**1**

PBSOP401	**TECHNIQUES AND INSTRUMENTATION**	2	4
• Separation of proteins by Ion exchange chromatography • Separation of amino acids by two dimensional chromatography. • Viscosity studies of proteins: standard BSA and varying concentrations of urea • Synthesis of nanoparticles • Characterization of nanoparticles by UV spectroscopy. • Filing a patent • Industrial visit and report submission.			

PBSOP402	**Molecular Biology**	2	4
• Isolation of plasmid DNA • Quantification of plasmid DNA • Agarose gel electrophoresis separation of plasmid DNA • Restriction enzyme digestion and separation of fragments			

• Southern blot transfer technique • Transformation of *E. coli* cell by plasmid DNA • β-galactosidase expression and assay	

Special Papers

Specialization: Mycology and Plant Pathology (MPP)

Course Code	Topic	Credits
PSBOMPP403	**General Mycology**	**4**
<u>UNIT I:</u> History of Mycology and Plant Pathology in India & Soil Mycology • History of Mycology and Plant Pathology in India and contribution of Mycologists and Plant Pathologists:i) S. D. Garrett ii) K. C. Mehta iii) B. B. Mundkur iv) C. V. Subramanium v) T. S. Sadashivan vi) M. J. Thirumalachar vii) John Webster • Soil Mycology: Distribution of Mycoflora with relation to the soil factors - i) Texture ii) Moisture iii) Temperature iv) Aeration v) pH vi) Organic matter, Phosphate solubilizing fungi, Organic matter decomposition and humus formation, its importance in agriculture		**1**
<u>Unit II:</u> Fungal Taxonomy & Life history and Systematic position of fungi • Fungal Taxonomy: A comparative account of systems of classification of fungi proposed by i) Smith ii) Martin • Phyllogenetic system, ICBN, Basic Principles , major rules, effective and valid publications, Nomenclature of fungi • Life cycle and Systematic position of the following fungi: Phycomycetes: *Saprolegnia* Basidiomycetes: *Cyathus* Deuteromycetes: *Helminthosporium*		**1**
<u>Unit III:</u> Fungal Physiology • Fungal Metabolites: Acetate and Nitrogenous metabolites • Aromatic terpenes • Pigments in Fungi • Organic Acids from fungi • Fungi in Nanotechnology		**1**
<u>Unit IV:</u> Fungal Genetics and Ecology		**1**

• Fungal Genetics: Study of fungal genetics with reference to – Nuclear behavior during cell division . i) Neurospora ii) Saccharomyces iii) Puccinia graminis iv) Ustilago • Parasexual cycle, Heterokaryosis • Fungal Diversity: i) Fresh water fungi ii) Marine fungi iii) Coprophilous fungi iv) Aero-fungi Environmental factors influencing fungal growth: i) Humidity ii) Temperature • Fungal Diversity: Anamorphic fungi- i) Nematophagous fungi ii) Aquatic hyphomycetous fungi iii) Aero-aquatic fungi • Colonization strategies in fungi	

Course Code	Topic	Credits
PSBOMPP404	**Applied Mycology and Plant Pathology**	**4**
<u>UNIT I:</u> Pathogenesis and Crop Pathogeny Symptomology • Study of various symptoms of plant diseases caused by fungi. • Defense mechanism in plants-Pre-existing structural and biochemical defense mechanisms, lack of essential nutrients. Induced structural and biochemical defense mechanisms, inactivation of pathogen enzymes and toxins, altered biosynthetic pathways. • Plant disease management : Physical: Exclusion, eradication and protection. Chemical disease control:– common fungicides, antibiotics and nematicides. Biological disease control: Phytoalexins • Crop Pathology: Causal organism, Symptoms, Disease Cycle and Control measures of the following diseases; i) Club root of cabbage ii) Coffee Rust iii) Brown spot of rice iv) Papaya mosaic		**1**
<u>Unit II:</u> Seed Mycoflora & Seed Pathology • Seed Mycoflora: Detection of Seed borne pathogens by- i) Washing test ii) Incubation method: a) Blotter method b) Agar plate method • Seed Pathology: Management of Seed borne diseases - i) Chemicals ii) Antibiotics iii) Biological control agents iv) Host – Resistance in disease management		**1**
<u>Unit III:</u> Cultural Studies and Fungal Toxins • Cultural Studies in Fungi: Preservation techniques of fungal cultures – i) Sub-culturing ii) Storage under mineral oil iii) Storage in distilled water iv) Storage by drying v) Storage by freezing		**1**

• Fungal Toxins: Mycotoxins- historical background, detection, estimation, effect on human /animal health. • Mycotoxins and their types i) Alternaria Toxins ii) Citrinin iii) Ochratoxins iv) Patolin v) Penicillic Acid vii) Sterigmatocystin viii) Zearalenone	
<u>Unit IV:</u> Industrial Mycology • Fungal bio-conversions of Lignocellulose materials i) Lignocellulose ii) Potential bio-products and their applications • Fungal bioremediation • Food Industry- SCP single cell protien- advantages and disadvantages, production of yeast biomass, production of mycoproteins, traditional fungal foods (Shoyu, Miso, Sake, Tempeh)	**1**

PSBOMPPP403	**Mycology and Plant Pathology**	2	4
• Study of the following fungal types with reference to theirsystematic position, thallus and reproductive structures: i) *Achlya* *ii) Allomyces iii) Cyathus iii) Uromyces iv)Curvularia* • Problems in Nomenclature • To study effect of different nitrogen sources on fungal growth in term of biomass • Light as physical factor influencing fungal growth & sporulation • Isolation of fresh water fungi by baiting technique. • Study of effect of relative humidity on fungal growth ($CaSO_4.5H_2O$ - 98%, KCl-85% & $CaNO_3.4H_2O$ -52%) • Study of different symptoms of plant diseases: i) Wilting ii) Leaf spot iii) Canker iv) Leaf mosaic • Study of Seed Surface Mycoflora by Dry Seed Agar Plate technique .& Micrometry: Measurement of spores of fungal pathogens • Detection of Mycotoxins by Paper Chromatographic method • Preparation of slants by Sub-culturing of fungal culture from pour plate culture /slide culture • Percent infection and spore count of AMF from rhizosphere soils. • Study of wood rotting fungi: i) *Pleurotus ii) Schyzophyllum iii) Auricularia* iv) *Hexagonia* • Collection of fungal specimens, tour report, submissions of the fungal specimens			

PSBOMPPP404	Research methodology will be discussed and well defined material and methods, discussion, results and conclusions, references and its presentation based on some advanced techniques in Botany	2	4

Specialization: Plant Physiology and Biochemistry (PPB)

Course Code	Topic	Credits
PSBOPPB403	**Plant Biochemistry**	**4**
UNIT I: Lipid metabolism • Synthesis and Function of membrane, structural & storage lipids, Omega fatty acids, beta oxidation of odd and even carbon containing fatty acids		**1**
Unit II: Amino acid metabolism • Biosynthesis of Amino Acids (Proline, Glycine, Aspergine, Tryptophan, Phenylalanine), Regulation of amino acid biosynthesis.		**1**
Unit III: Cytosolic carbon and Mitochondrial metabolism • Synthesis and breakdown of Sucrose and starch, regulation of Glycolysis and Gluconeogenesis. Catabolic role of the TCA cycle, Anabolic role of the TCA cycle intermediates, anapleurotic CO_2 fixation, provision of acetyl CoA for biosynthesis, Regulation of TCA.		**1**
Unit IV: Senescence • Pigment Metabolism, protein metabolism and oxidative metabolism during senescence. Programmed cell death (PCD) an overview.		**1**

Course Code	Topic	Credits
PSBOPPB404	**Plant Physiology**	**4**
UNIT I: PGR's • Modulation of plant genomes by natural PGRs- Auxins, GA,		**1**

Cytokinins, Ethylene & ABA.	
<u>UNIT II:</u> Phytoremediation • Types of Phytoremediation- Advantages & limitations, Remedial measures- Rhizosphere based & Plant based, Hyper accumulators • Role of genetic engineering & various enzymes in phytoremediation	**1**
<u>UNITIII:</u> Sensory Photobiology • Structure, function and mechanism of phytochromes cryptochromes and phototropins, phytochrome induced whole plant response, Molecular basis of flower organization: MADS box genes and their expression. Problems based on ABC model for flower organization	**1**
<u>UNIT IV: Secondary Metabolism</u> • General biosynthetic pathways in the formation of secondary metabolites Biosynthesis and role of Phenols, Phenylpropanes, Coumarinns, lignins, flavonoids, alkaloids, tannins, and terpenes.	**1**

PSBOPPBP403	**Plant Biochemistry**	2	4
• Estimation of Saponification & Iodine Value of Fats and Oil • Measurement and Characterization of Chlorophylls and Carotenoids by Spectroscopy at different stages of Senescence. • Estimation of Tryptophan. • Study of enzymes SDH and effect of inhibitors on its activity. • Estimation of polyphenols. • Extraction & separation of Glucosinolates from Mustard • Extraction & separation of Piperine from *Piper* • Extraction & separation of lycopene from *Lycopersicum*			
PSBOPPBP404	Research methodology will be discussed and well defined material and methods, discussion, results and conclusions, references and its presentation based on some advanced techniques in Botany	2	4

Specialization: Angiosperm and Phytochemistry (ANP)

Course Code	Topic	Credits
PSBOANP403	**Angiosperms &Phytochemistry –III**	**4**
UNIT I: Approaches to Angiosperm Taxonomy • Study the following families with reference to its systematic position, distribution, salient features, floral formula, floral diagram, morphological peculiarities, economic importance, present status, affinities, phylogeny and interrelationships: Anacardiaceae, Oleaceae , Plumbaginaceae, Sapotaceae, Bignonaceae, Caryophyllaceae , Loranthaceae, Urticaceae, Casuarinaceae and Araceae		**1**
Unit II: Anatomy • Fruit and seed anatomy. • Evolution of Tracheary elements • Types of stomata (Follow Dilcher's Classification)		**1**
Unit III: Medicinal plant biotechnology • **Genetics as applied to medicinal herbs**: Mutation; polyploidy, chemodemes; artificial mutation; hybridization; genetic engineering and recombinant DNA technology • **Plant tissue culture as source of biomedicinals**: types of cultures; culture mediums; surface sterilizationof explants; establishment of cultures; phytopharmaceuticals in plant tissue culture; bioproduction of useful metabolites in hairy root and multiple shoot cultures • **Introduction to biogenesis of phytopharmaceuticals**: biosynthesis of alkaloids; isoprenoid compounds & triglycerides.		**1**
Unit IV: Methods in Evaluating Crude Drugs • History, origin, characteristics, uses, present status and varieties of Ginger, Chilly, and Eucalyptus. • Psychoactive drugs: Narcotics, Hypnotics and Hallucinogens: Introduction to Narcotics, Hypnotics and Hallucinogens; biological source, chemical constituents and uses, effects; cultivation, collection, processing of *Erythroxylum coca*, Opium & *Cannabis* • Fumitories and Masticatories: Introduction to Fumitories & masticatories, biological source, chemical constituents and uses & effects; cultivation, collection, processing of tobacco; Betel leaves & areca nut		**1**

• Mild stimulants: tea, coffee, cocoa • Detection of adulterants and quality testing of crude drugs	

Course Code	Topic	Credits
PSBOANP404	**Angiosperms &Phytochemistry –IV**	**4**

UNIT I: Progressive Taxonomy
• Internet
  o Taxonomic databases
• Present status and future scope of Taxonomy in India
  o Vegetation survey
  o Floristics
  o Revisionary and monographic studies
  o Ethnobiological studies
  o Development and establishment of new herbaria
• Global Positioning System in vegetation studies
		1

Unit II: Tools of Taxonomy
• **Library**
  o Literture:definition,origin,History and Evolution of Literature of Taxonomy in India.
  o Classification of Taxonomic Literature: Checklist, Catalogue, Floras, Monographs, Revisions, Encyclopedias, Indices, Dictionaries, Journals.
• **Museum(Herbarium)**
  o Definition, Steps involved in development of a herbarium, Maintenance of Herbarium, General account of Herbaria in India. Role of B.S.I in Herbaria, Private herbaria, Herbarium of KEW, Utility and importance of Herbaria in Taxonomy.
• **Garden**
  o Origin, History and Development of gardens in India
  o Types of Gardens
  o Role of gardens in taxonomic studies
  o Preservation of germ-plasm techniques and its importance in taxonomy.
		1

Unit III: Applied Taxonomy • **Remote Sensing** o History, Principles and types of Remote sensing		**1**

○ Advantages and limitations of remote sensing ○ Applications of Remote Sensing in Vegetation Classification and Forest resource Management. ○ Remote sensing of soil and water • **Plant quarantine** ○ Purpose ○ Historical account ○ Plant protection organization ○ Exclusive quarantine ○ Regular quarantine ○ Domestic quarantine ○ Certification of plant materials • **Green -belt planning** ○ Concept and recommendations ○ Utility of GBP ○ List of plants (ornamental, Flowering, shade loving) ○ Importance of Green Belt in the current environmental conditions in India • **Relevance of taxonomy** ○ Taxonomy and conservation of bioresources ○ Taxonomy and sustainable utilization of bioresources ○ Taxonomy and ecosystem research	
Unit IV: Evolution of Reproductive elements • Stamens and evolution of stamens. • Carpel and evolution of carpels based on position and placentation • Placentation and its types, evolution of placentation • Evolution of fruits in angiosperms	**1**

PSBOANPP403	**Angiosperms &Phytochemistry –III**	2	4
• Study of Angiosperm families mentioned for theory with reference to morphological peculiarities, floral diagrams and economic importance of its members with the help of locally available plants. • Study of fruit anatomy ○ Study of dehiscent fruit: Lady finger, *Alstonia*, *Linum*, *Phaseolus* ○ Study of indehiscent fruit: Lotus, *Physalis*, Maize, wheat ○ Study of fleshy fruit: *Citrus* ○ Study of Pome: Apple • Study of seed coat structure in Cotton, *Ludvigia*, *Bauhinia*, Castor, Pumpkin,			

Canna.
• Detection of adulterants in the following samples on the basis of organoleptic, microscopic and physico-chemical evaluation.
  o Tobacco leaves (adulterant *Diospyros* leaf)
  o Pepper fruits (adulterant lantana fruits/papaya seeds)
  o *Terminalia arjuna* bark (*Terminalia tomentosa*)
• Extraction and detection of alkaloids from Tobacco using TLC.
• Extraction and detection of tannins from Areca nut using TLC.
• Extraction and detection of Volatile oils from Betel leaves using TLC.
Note:
1. Compulsory visit to Western Ghats for observation of plants (at least for three days).
2. Compulsory excursion for observation of plants (local, atleast 2 in each term)
Same Field diary to be continued from Sem I, II, III.			

PSBOANPP404	Research methodology will be discussed and well defined material and methods, discussion, results and conclusions, references and its presentation based on some advanced techniques in Botany	2	4

Specialization: Molecular Biology, Cytogenetics and Biotechnology (MCB)

Course Code	Topic	Credits
PSBOMCB403	**Plant Biotechnology**	**4**
UNIT I: Environmental Biotechnology • Biosorption: use of fungi, algae and biological components • Biomass for energy:Sources of biomass, advantages &disadvantages, uses of biomass • Biogas production from food processing waste: vegetable canning waste,,flour,mollases etc • Ethanol from biomass and Lignocellulosic residue • Risks of GMO		**1**

<u>Unit II:</u> Traditional Knowledge & IPR • Different property rights & IPR in India • TRIPS &Patent laws: Introduction & standards for patent protection • WTO& Indian Patent Laws • Protection of traditional knowledge– objective, concept of traditional knowledge, holders, issue concerning, bio-prospecting and biopiracy; Advantages of IPR , some case studies • International Depository authority ,Gene patenting, plant variety protection ,trade secrets & plant breeders right	**1**
<u>Unit III:</u> Nanotechnology • Introduction, properties of nano-materials. • Green synthesis of nano-materials, biological methods, use of microbial system & plant extracts, use of proteins & templates like DNA • Application of nano-materials in food, cosmetics, agriculture, environment management and medicine • Risk of Nanomaterial to human health and Environment	**1**
<u>Unit IV:</u> Food Biotechnology • Factors affecting spoilage • Quality control of food • Enzyme immunoassays (ELISA) • Radioimmunoassay (RIA), Monoclonal antibodies and DNA probes.	**1**

Course Code	Topic	Credits
PSBOMCB404	**Molecular Biology and Cytogenetics**	**4**
<u>UNIT I:</u> Plant Breeding I • Aims and objectives, plant introductions and acclimatization. • Selection – mass, pure line and clonal. • Hybridization techniques, hybridization in self pollinated and cross pollinated plants. • Genetic control and manipulation of breeding systems including male sterility and apomixes		**1**

<u>Unit II:</u> Plant Breeding II • Distant hybridization: In nature (plant breeding) – Barriers to the production of distant hybrids; Unreduced gametes in distant hybridization; Sterility in distant hybrids; Consequences of segregation in distant hybrids; 2.Applications and Achievements of distant hybridization in crop improvement; Limitations of distant hybrids.	**1**
<u>Unit III:</u> Molecular plant Breeding (Transgenic Crops) • Natural method of gene transfer (*Agrobacterium* and virus), selectable markers • Artificial methods of gene transfer: Direct DNA uptake by protoplast, electroporation, liposome mediated and particle gun transformation • Production of Transgenic plants :virus resistant & Herbicide –resistant, plants, Bt Cotton, Golden rice	**1**
<u>Unit IV:</u> Plant Genetic Engineering • Production of bio pharmaceuticals in transgenic plants. • Edible vaccines & Plantibodies • DNA-based molecular marker aided breeding: RAPD, RFLP, AFLP, STS, ISSR, Microsatellites	**1**

PSBOMCBP403	**Plant Biotechnology**	2	4
• Identification of mutant genotype in Drosophila and Arabidopsis stocks maintained by the department. • Field exploration for detection of male sterile plants and estimation of their pollen fertility in locally grown plants (Tomato, Brassica, Linum). • Study of mitotic index. • Culturing of Drosophila and study of genetic traits. • Blood group testing. • Identification of genetic diseases by chemical tests. • Karyotypes of genetic disorders.			
PSBOMCBP404	Research methodology will be discussed and well defined material and methods, discussion, results and conclusions, references and its presentation based on some advanced techniques in Botany	2	4

Specialization : Environmental Botany (EB)

Course Code	Topic	Credits
PSBOEB403	**Recent Trends & Applied Environmental Botany**	**4**

<u>UNIT I:</u> Pollution
 	
• **Environmental Polllution:**
  ○ Photochemical smog-Concept, London type smog, inhibition, adverse effect of photochemical smog. Types of particulate matter, removal of particulate matter from air.
  ○ Radiation- Manmade and natural, biological effects of radiation. Maximum permissible doses. Abnormal exposures in emergencies and accidents. Nuclear fission and radiation hazards Radioactive waste management.
  ○ Fossil fuels automobile emmissions from vehicles. Alternate fuels-CNG, Propane and methanol.
  ○ Environmental impact of petroleum products-Impact of crude oil on marine life
		1

<u>Unit II:</u> Climatic Change • Global Climate Change: Concept, Green House Gases, Their Major Sources, Ozone Layer • Consequences Of Climate Change (CO_2 Level, Global Warming, UV Radiation). • Kyoto Protocol: Major Recommendations, • Concept Of Carbon Footprint, Carbon Credits, Importance Of Carbon Foot Printing.		**1**
<u>Unit III:</u> Plant Population Dynamics • Population - Characteristics And Measurement; Communities - Habitats, Niches, Population Dynamics, Species And Individual in the Ecosystem. • **Allelopathy:** Concept, Allelochemicals, Leachates, Root Exudates, Weed – Crop Interactions, Weed Control, Herbicides From Natural Compunds, Methods For Determining Allopathy, Petriplate Experiments,Allelochemicals As Nematicides(Narwals Work) • **Stress ecology:** Stress and plant life stress due to temperature, radiation, water, salt and anthropogenic activity, • Bioidicators of stress.		**1**
<u>Unit IV:</u> Coastal Zone Management In India • Coastal Zone Management In India- Coastal Environment India, Coastal Issues,		**1**

Land Use and Changes • Coastal Zone Management, initiatives In India, Prohibited and Regulated activities in Coastal Areas, State Coastal Zone Management Authorities. • Mangrove: Habitat And Characteristics, Mangrove, Plantation-Establishment and Rehabilitation of degraded mangrove formations; silvicultural systems. • Mangrove protection of habitats against natural disasters.	

Course Code	Topic	Credits
PSBOEB404	**Recent Trends & Applied Environmental Botany**	**4**
<u>UNIT I:</u> Restoration Of Ecosystems I • Urban Forests. Role of Urban Forests. Study of Urban Health Through Surveys Of Urban Trees • Holistic approach to study- Industrial Areas, Population and their Habitats, water and Waste Disposal. • Transportation, Infrastructure, Education, Health, Sport And Entertainment. Amenities And Cultural Issues- And Relationship of all these With Plants. • Urban Issues: Urban Challenges, Urban Transport System, Energy Demand • Case Study: Mumbai and Kolkata, with reference to: ○ Air Pollution, Noise Pollution Water Pollution. ○ Restoration efforts Gardens, design of Waste Management, waste storage Transportation, reclamation. ○ Urban forestry and ecotourism		**1**
<u>Unit II:</u> Restoration Of Ecosystems II • Restoration Of Mangrove Ecosystem- Mangroves of coastal Maharashtra, Selection and Treatment Of Coastal Area with Reference to Tidal situation and Physical Properties. • Restoration of Mangroves: Choice of Species, Collection of Seeds and Seedling Material, Storage and Plantation. • Problems of Seed Dormancy, Tidal Forces, Predation Nutrient Supply and restoration methods. • Disaster management: Natural calamities and their impact, PEER – Program for enhancement of Emergency response and LCA –Life cycle assessment.		**1**
<u>Unit III:</u> Restoration of Land • Solid waste management: Classification of waste, waste generation, separation and processing, waste treatment and disposal , Factors governing the choice of technology		**1**

• Municipal solid waste management and handling rules 2013, Responsibilities of Municipal authorities, state and Central control Boards, Management of municipal soild waste (MSW act 2013). • Biological treatment of waste water from food processing Industry • Biopesticides and integrated pest management • Microbial transformation of heavy metals	
<u>Unit IV:</u> Water Shed management • Concepts of watershed; role of mini-forests and forest trees in overall resource management, forest hydrology • Watershed development in respect of torrent control, river channel stabilization, avalanche and landslide controls, rehabilitation of degraded areas; hilly and mountain areas • Watershed management and environmental functions of forests; • Water-harvesting and conservation; ground water recharge and watershed management; role of integrating forest trees, horticultural crops, field crops, grass and fodders	**1**

PSBOEBP403	**Ecology and Environmental Botany**	2	4
• Comparative study of Foliar Dust Capturing Capacity from Different Plant Species (minimum five) collected from polluted and unpolluted sites. • Comparative study of Water Turbitdity of Sea Water, Pond Water, Polluted Water • Comparative study of Biological Oxygen Demand Value For Industrial Waste effluent collected from any two sites. • Comparative study of Chemical Oxygen Demand Value For Industrial Waste effluent collected from any two sites. • Measurement of sound using decibel meter in different areas, at different time. • Identification of Mangroves • Determination of Water, Ascorbic Acid content and pH of Leaf collected from polluted and unpolluted sites. • Study of mangrove: Field report			
PSBOEBP404	Research methodology will be discussed and well defined material and methods, discussion, results and conclusions, references and its presentation based on some advanced techniques in Botany	2	4

AC 26/2/2015
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UNIVERSITY OF MUMBAI

Syllabus for F.Y.B.Sc.
Program BSc

Course: ZOOLOGY

Semester I and II

(Credit Based Semester and Grading System
with effect from the academic year 2015–2016)

Syllabus Committee Members

Dr. Anil S. Singh	-	Convenor
Dr. Manisha Kulkarni	-	Co-convenor
Dr. Jyotsna Mahale	-	Co-convenor
Dr. Meenakshi Sundaresan	-	Co-convenor
Prof. Lata Sardesai	-	Co-convenor
Prof. P.C. Mathew	-	Co-convenor
Dr. Dilip Kakavipure	-	Co-convenor
Dr. V.M. Patole	-	Co-convenor
Dr. Kantilal H. Nagare	-	Co-convenor
Prof. Shanta Janyani	-	Co-convenor
Dr. S. Rangoonwala	-	Co-convenor
Dr. Minakshi Gurav	-	Member (Teacher)
Dr. Shirley B. Agwuocha	-	Member (Teacher)
Dr. Vishakha Shingala	-	Member (Teacher)
Dr. Gayathri N.	-	Member (Teacher)
Dr. Ansariya Rana	-	Member (Teacher)
Dr. Aditya S. Akerkar	-	Member (Teacher)
Dr. Shashikala Prajapati	-	Member (Teacher)
Dr. R.B. Singh	-	Member (Teacher)
Prof. Nitin Wasnik	-	Member (Teacher)
Prof. Nikhil C. Disoria	-	Member (Teacher)
Ms. Purva S. Prabhu	-	Member (Student)
Ms. Sachi R. Mayekar	-	Member (Student)
Ms. NehaVajandar	-	Member (Student)
Ms. Payal A. Shah	-	Member (Student)
Ms. Anuradha Gaikar	-	Member (Student)
Ms. Sonal S. Prabhulkar	-	Member (Student)

Syllabus for
FYBSc
Course – ZOOLOGY

1. Preamble
2. Pedagogy
3. Syllabus Semester I & II
4. References and Additional Reading
5. Scheme of Examination and Paper Pattern
6. Distribution of periods
7. Model Question bank

Aims

- To nurture interest in the students for the subject of Zoology
- To create awareness of the basic and modern concepts of Zoology
- To orient students about the importance of abiotic and biotic factors of environment and their conservation.
- To provide an insight to the basic nutritional and health aspects of human life.
- To inculcate good laboratory practices in students and to train them about scientific handling of important instruments.

Preamble

While presenting this new syllabus to the teachers and students of Semester I and Semester II (F.Y.B.Sc.) Zoology, I am extremely happy to state that for the first time efforts have been made to seek inputs of all the stake holders to make it more relevant.

In the first meeting of the Board of Studies an apex committee was formed to study syllabi worldwide with a view to include modern modules and plan semesters at UG and PG programs in advance to avoid overlapping and duplication of topics in various courses.

Meeting with the industry at the Indian Merchants' Chamber and with the meritorious alumni helped adding need based components. For the first time students were a part of the syllabus committee and the process became participative when the draft was finalized in an open meeting with all the Zoology teachers after having sought democratic criticism on the proposed syllabus placed on the University website for about one month.

While following the guidelines of UGC, use of animals is excluded from the practicals, substituting the same with audiovisual, ICT and simulation aids and that the syllabus is made more interesting with new, innovative topics. Providing the pedagogy as also indicating objectives and desired outcome of every topic for the teachers, and question bank for the students apart from the question paper pattern became an integral part of the syllabus, therefore.

Care is taken to provide the drafts from time to time and declare the final syllabus well in advance enabling the teachers to make preparations before commencement of the academic year and facilitating students to execute their right to know the details before admissions.

The success of this revamped syllabus will depend totally on the enthusiasm of the teachers which is very high all throughout the process and their hands will be strengthened by publishing the University text books for the first time. This curriculum of the Zoologists, for the Zoologists and by the Zoologists developed with the united efforts will take our ever progressive subject to greater heights in the years to come.

- VINAYAK DALVIE, Chairman, BOS in Zoology

Syllabus for
FYBSc.
Course – ZOOLOGY
To be implemented from Academic year 2015-16
SEMESTER - I

COURSE CODE	UNIT	TOPICS	CREDITS	LECTURES/WEEK
USZO101	I	Wonders of animal world	2	1
	II	Biodiversity and its conservation		1
	III	Footsteps to follow		1
USZO102	I	Laboratory safety and Units of Measurement	2	1
	II	Animal Biotechnology		1
	III	Instrumentation		1
USZOP1	Practical based on both courses		2	6

SEMESTER - II

COURSE CODE	UNIT	TOPICS	CREDITS	LECTURES/WEEK
USZO201	I	Population Ecology	2	1
	II	Ecosystem		1
	III	National park and Sanctuaries		1
USZO202	I	Nutrition and Health	2	1
	II	Public health and Hygiene		1
	III	Common human Diseases		1
USZOP2	Practical based on both courses		2	6

SYLLABUS F.Y.B.Sc. ZOOLOGY

UNIT WISE DISTRIBUTION

Semester I		Semester II	
Course 1	**Course 2**	**Course 3**	**Course 4**
Unit 1 Wonders of animal world	Unit 1 Laboratory Safety and Units of Measurement	Unit 1 Population Ecology	Unit 1 Nutrition and Health
Unit 2 Biodiversity and its Conservation	Unit 2 Animal Biotechnology	Unit 2 Ecosystem	Unit 2 Public Health and Hygiene
Unit 3 Footsteps to follow	Unit 3 Instrumentation	Unit 3 National Parks and Sanctuaries	Unit 3 Common Human Diseases
Practical (USZO P1)	Practical (USZO P1)	Practical (USZO P2)	Practical (USZO P2)

PEDAGOGY

F.Y.B.Sc. Syllabus

First year B.Sc. course is the entry point for the students to undergraduate classes which acts like a guiding force for them to make up their mind in selecting a subject they would wish to pursue their studies in future for carving their career in a particular field.

The syllabus committee in the subject of Zoology for F.Y.B.Sc. Class has designed this syllabus with a view that it is most appropriate time when we transform our traditional closed classroom teaching learning practices to more of field and activity based studies, the correct methodology for the study of Natural Sciences. It is recommended to orient the students about ecosystem, bio-diversity, wildlife conservation and management with the help of models, photographs, movies, documentaries, charts and use of ICT and then take learners to field to have realistic experiences. This will enable them to get true insight about endurance of animal life in relation to human activity inducing sentiment of love, care and protection in the young mind and heart leading to understand importance of co-existence and conservation of bio-diversity. An interaction with the officials of wildlife protection force should be allowed to get basic knowledge about the relevant acts through lectures which for creating awareness about these issues and also to make best use of the knowledge in their own interest as well as for the country. Instrumentation and Animal Biotechnology component would initiate academia- industry interface and should be edified in collaboration with expertise from relevant research institutes and industrial establishments and entrepreneurs by inviting them as guest speakers or through industrial visits, excursions for practical experience about the principle, working and application of the instruments for commercial use. Population ecology need to be explained in the context with census to enlighten pupils about the effect of diversity and dynamism of human population on socio economic status of India. Experts from the field of nutrition and health can be invited to enlighten learners on the topics of nutritional value of food, balanced diet, ill-effects of eating junk food and aerated drinks. Medical professionals, relevant NGO's maybe engaged to educate students regarding myth, precautionary measures, immunization drives of common diseases, ill-effects of self-medication and stress, significance of BMI through series of programmes. During medical emergencies it is of immense importance to provide first aid assistance to the diseased within the golden period i.e. of few minutes. This enhances the possibility to save life, thus it is strongly recommended to form a consortium of colleges to conduct training in rotation of first aid techniques for teachers and students both with the help of organizations like Red Cross Society, Health Department of Civic Bodies, Civil Defence Department and Local Self Government etc.

Dr. Anil S. Singh
Convenor

F.Y.B.Sc. ZOOLOGY

(THEORY)

SEMESTER I

USZO101 (Course 1)
Wonders of Animal World, Biodiversity and its Conservation

Unit 1: Wonders of Animal World (15 L)

Objective: *To take learners through a captivating journey of hoarded wealth of marvellous animal world.*

Desired Outcome*: Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest and love for the subject of Zoology.*

1.1**:** Echolocation in Bats and Cetaceans - Dolphins and Whales

1.2**:** Mechanism of Pearl formation in Mollusca

1.3**:** Bioluminescence in Animals: Noctiluca, Glow worm, Firefly, Angler Fish (Mechanism and use for the animal)

1.4**:** Regeneration in Animals - Earthworm (Annelida) and Lizard (Reptile)

1.5**:** Mimicry in Butterflies and its significance: Great Eggfly and Common Crow, Common Palmfly and Plain Tiger.

1.6**:** Mechanism of Coral formation and types of Coral reefs

1.7**:** Bird migration: Definition, types and factors inducing bird migration

1.8**:** Adaptive features of desert animals: Reptiles (Phrynosoma) and Mammals (Camel)

1.9**:** Breeding and Parental care in:

1.9.1**:** Pisces - Ovo-viviparous (Black Molly/Guppy), Mouth brooders (Tilapia), Brood pouches (Sea horse)

1.9.2**:** Amphibia - Mouth brooders (Darwin's Frog), Egg carriers (Midwife Toad)

1.9.3**:** Mammals - Egg-laying (Duck-billed Platypus), Marsupials (Kangaroo)

1.10**:** Aves: Brood Parasitism (Cuckoo)

Unit 2: Biodiversity and its Conservation (15 L)

Objective*: To orient learners about rich heritage of Biodiversity of India and make them understand significance of its conservation.*

Desired Outcome*: Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation*.

2.1: Introduction to Biodiversity - Definition, Concepts, Scope and Significance

2.2: Levels of Biodiversity - Introduction to Genetic, Species and Ecosystem Biodiversity

2.3: Introduction of Biodiversity Hotspots- (Western Ghats and Indo-Burma Border)

2.4: Values of biodiversity - Direct and Indirect use value

2.5: Threats to Biodiversity - Habitat loss and Man-Wildlife conflict

2.6: Biodiversity conservation and management

2.6.1**:** Conservation strategies: *in situ*, ex-situ, National parks, Sanctuaries and Biosphere reserves.

2.6.2**:** Introduction to International efforts : Convention on Biological Diversity (CBD), International Union for Conservation of Nature and Natural Resources (IUCN), United Nations Environment Program - World Conservation Monitoring Centre (UNEP-WCMC)

2.6.3**:** National Biodiversity Action Plan, 2002

2.6.4**:** Introduction to Indian Wildlife (Protection) Act, 1972 and Convention for International Trade of endangered species

Unit 3: Footsteps to follow (15 L)

Objective*: To teach learners about innovative and novel work of scientists/philosopher/entrepreneurs in the field of biological sciences.*

Desired Outcome*: Minds of learners would be impulsed to think differently and would be encouraged ipso facto to their original crude ideas from the field of biological sciences.*

3.1**:** Dr. Hargobind Khorana (Genetic code)

3.2**:** Dr. Varghese Kurien (Amul –White revolution)

3.3**:** Dr. Salim Ali (Ornithologist)

3.4**:** Anna Hazare (Water Conservation-Ralegan Siddhi)

3.5**:** Baba Amte (Anandvan)

3.6**:** Kiran Mazumdar Shaw (Biocon)

3.7**:** Gadre Fisheries (Surimi)

Two cases preferably of local importance to the college be additionally taught.

USZO102 (Course 2)

INSTRUMENTATION and ANIMAL BIOTECHNOLOGY

Unit 1: Laboratory safety, Units and Measurement (15 L)

Objective: *To make learners aware of risks involved in handling of different hazardous chemicals, sensitive (electrical/electronic) instruments and infectious biological specimens especially during practical sessions in the laboratory and to train them to avoid mishap.*

Desired Outcome*: Learners would work safely in the laboratory and avoid occurrence of accidents (mishaps) which will boost their scholastic performance and economy in use of materials/chemicals during practical sessions.*

1.1: Introduction to good laboratory practices

1.2: **Use of safety symbols**: meaning, types of hazards and precautions

1.3: **Units of measurement**:

1.3.1**:** Calculations and related conversions of each: Metric system- length (meter to micrometer); weight (gram to microgram), Volumetric (Cubic measures)

1.3.2**:** Temperature: Celsius, Fahrenheit, Kelvin

1.3.3**:** Concentrations: Percent solutions, ppt, ppm, ppb dilutions, Normality, Molarity and Molality.

1.3.4**:** Biostatistics: Introduction and scope, Sampling and its types, Central Tendencies (mean, median, mode) Tabulation, Graphical representations (Histograms, bar diagrams, pie diagrams).

Unit 2: Animal Biotechnology **(15 L)**

Objective: *To acquaint learners to the modern developments and concepts of Zoology highlighting their applications aiming for the benefit of human being.*
Desired Outcome*: Learners would understand recent advances in the subject and their applications for the betterment of mankind; and that the young minds would be tuned to think out of the box.*

2.1: **Biotechnology**: Scope and achievements of Biotechnology (Fishery, Animal Husbandry, Medical, Industrial)

2.2: **Transgenesis**: Retro viral method, Nuclear transplantation method, DNA microinjection method and Embryonic stem cell method

2.3: Cloning (Dolly)

2.4: Ethical issues of transgenic and cloned animals

2.5: **Applications of Biotechnology**:

2.5.1**:** DNA fingerprinting: Technique in brief and its application in forensic science (Crime Investigation)

2.5.2**:** Recombinant DNA in medicines (recombinant insulin)

2.5.3**:** Gene therapy: Ex-vivo and *In vivo,* Severe Combined Immunodeficiency (SCID), Cystic Fibrosis

2.5.4**:** Green genes: Green Fluorescent Protein (GFP) from Jelly fish- valuable as reporter genes used to detect food poisoning.

Unit 3: Instrumentation (15 L)

Objective: *To provide all learners a complete insight about the structure and train them with operational skills of different instruments required in Zoology.*
Desired Outcome: *Students will be skilled to select and operate suitable instruments for the studies of different components of Zoology of this course and also of higher classes including research.*

3.1: Microscopy

3.1.1**:** Construction, principle and applications of dissecting and compound microscope.

3.2: Colorimetry and Spectroscopy - Principle and applications.

3.3: pH - Sorenson's pH scale, pH meter - principle and applications.

3.3: Centrifuge - Principle and applications (clinical and ultra centrifuges).

3.4: Chromatography - Principle and applications (Partition and Adsorption)

3.5: Electrophoresis - Principle and applications (AGE and PAGE)

SEMESTER I

Practical USZOP1 (Course I)

1. Mounting of foraminiferan shells from sand (any 3)
2. Study of types of Corals - Brain, Organ pipe, Stag Horn, Mushroom coral Study of

3Study of the following;

a. Symbiosis (Termite and Trychonympha, hermit crab and sea anemone)
b. Camouflage (leaf insect, chameleon)
c. Cannibalistic mate-eating animals (Spider and Praying Mantis)
d. Animal architects: Termites, Harvester ant and Baya weaver bird
e. Study of bioluminescent organisms – Noctiluca, glow worm, fire fly, angler fish.

4. Breeding and parental care in Amphibia- *Rhacophorus*, Midwife toad, Darwin's frog, Caecilian.
5. Mounting of scales of fish (placoid, cycloid and ctenoid)

6 a) Study of Adaptive radiation in Reptiles - Turtle, Tortoise, *Phrynosoma*, *Draco*)
b) Identification and differentiation of venomous and non-venomous snakes (Scales, Fangs, Bite marks, etc.)

7. Study of Types of feathers(contour, filoplume, down), beaks(Nectar feeding , Insect catching, Fruit eating, Scavenging, Filter feeding), claws (perching, wading, swimming, hopping) in birds

8 a. Identification of birds - Coppersmith Barbet, Bulbul, Rose ringed Parakeet, Magpie Robin, two local birds.
b. Field Report – To be done in a group of ten students (submission of written / typed report preferably along with photographs/ tables/ graphs.

Other Suggested topics for field observation/survey:

- Butterflies/ Fishes/ Migratory birds of local area.
- Variations in Human like Attached vs. Free Earlobes, Blood Groups, Eye colour, etc. using statistical method.

9. Observations of fauna in the field (with reference to theory syllabus).

***Note - The practicals may be conducted by using specimens authorised by the wild such other regulating authorities though it is strongly recommended that the same sh taught by using photographs/audio-visual aids/ simulations / models, etc. as recomme the UGC and as envisaged in the regulations of the relevant monitoring bodies. specimens, however, shall be procured for the purpose of conducting practicals me here-in-above.**

#There shall be at least one excursion/field trip

SEMESTER I

Practical USZOP1 (Course II)

1. Interpretation of safety symbols (toxic, corrosive, explosive, flammable, skin :itant, oxidizing, compressed gases, aspiration hazards and Biohazardous fectious material.)
   b) Study of Central tendencies and plotting of Bar diagram, histogram and pie diagram.
2. Identification of transgenic fish (Trout and Salmon) / cloned animals (Dolly sheep, cc cat and Snuppy dog) from photograph.
3. Extraction of fruit juice with pectinase from apple/guava/or any other suitable fruit
4. Calculation of pH of three different samples (one each acidic, alkaline and neutral) using pH paper/Universal Indicator and confirming the result with pH meter.
   Application of DNA Fingerprinting in criminology (photograph of electrophoretic pattern to be given for interpretation by the students)
5. a) Study of parts of microscope and their functions.
   b) Technique of focussing a permanent slide under 10x and 45x (objectives).
6. a) Dilution of given sample and estimation of OD by using colorimeter.
   b) Calculation of concentration from the given OD using formula.
7. Calculation of pH of three different samples (one each acidic, alkaline and neutral) using pH paper/universal indicator/pH indicator from red cabbage and confirming the result with pH meter.
8. a) Seperation of amino acids from the mixture by paper chromatography.
   b) Calculation of Rf value of separated pigments/amino acids from given chromatogram and their identification from standard chart.
9. a) Seperation of pigments by adsorption chromatography using chalk.
   b) Seperation of lipids by TLC,

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

Course I (USZO101)

REFERENCES AND ADDITIONAL READING

1. Wonders of the Animal World - University Text Book of Zoology, F.Y.B.Sc. Semester I Course 1. V.V. Dalvie, G.B. Raje, P. Sardesai, N.S. Prabhu, University Press.
2. Vertebrate Zoology Volume I- Jordan and Verma , S. Chand and Co.
3. Invertebrate Zoology Volume II- Jordan andVerma , S. Chand and Co.
4. Invertebrate Zoology- T. C. Majupuria , S. Nagin and Co.
5. Chordate Zoology- P. S. Dhami and J. K. Dhami , R. Chand and Co.
6. Invertebrate Zoology- P. S. Dhami and J. K. Dhami , R. Chand and Co.
7. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition
8. Zoology- S. A. Miller and J. B. Harley, Tata McGraw Hill
9. Modern Textbook of Zoology, Invertebrates, R. L. Kotpal
10. Fundamentals of Ecology- E. P. Odum , Sunders Publication
11. Fundamentals of Ecology- M.C.Dash-2nd edition, Tata McGraw Hill
12. Essentials of Ecology and Environmental Science - S.V.S Rana
13. Biodiversity- S.V.S Rana- Prentice Hall Publications
14. Modern Biology- V. B. Rastogi
15. Biology of Mollusca- D. R. Khanna
16. A Textbook of Zoology, Vol. II- T. Jeffery Parker and William. A. Haswell- Low Price Publications
17. Ecology and Environment- P. D. Sharma, R. K. Rastogi Publications
18. Introduction to Ecology- R. Dajoz
19. Wildlife Laws and its Impact on Tribes- Mona Purohit , Deep and Deep Publications
20. Biodiversity- K.C.Agarwal- Agro Botanica Publications
21. Butterflies of India – Isaac Kehimkar- BNHS Publication

Course II (USZO102)

REFERENCES AND ADDITIONAL READINGS

1. Basic Laboratory Techniques, Instrumentation and Biotechnology- University Text Book of Zoology, F.Y.B.Sc. Semester I Course 2. V.V. Dalvie, R. G. Deshmukh, R. D'souza and H.U. Shingadia University Press.

2. Introduction to Practical Biochemistry – David T. Plummer (Tata McGraw Hill Publishing Co. Ltd.)
3. Introductory Practical Biochemistry – S.K. Sawhney and Randhir Singh (Narosa Publishing House)
4. Methods in Biostatistics – B. K. Mahajan, (Jaypee Publications)
5. Microscopy and Cell Biology - V. K. Sharma, (Tata McGraw Hill Publishing Co. Ltd.)
6. Bioinstrumentation – L. Veerakumari, (M.J.P. Publishers)
7. Principles and Techniques of Practical Biochemistry – Keith Wilson and John Walker, (Cambridge University Press)
8. Biotechnology- Thieman and Pallidino, Pearson edu.
9. Biotechnology –Glick and Pasternak
10. Biochemistry –Satyanarayana
11. Understanding biotechnology- Aluizio Borem ,David Bowe-Low price edition –Pearson Publication
12. A Textbook of Biotechnology – R. C. Dubey, S. Chand Publication.
13. A Manual of Medical Laboratory Technology -A. H. Patel, Navneet Prakashan Ltd.
14. Biological instruments and methodology – Dr. P. K. Bajpai, S. Chand company Ltd.
15. Calculations in Molecular biology and Biotechnology - Frank H. Stephenson, Academic Press.

SCHEME OF EXAMINATION (THEORY)

(a) Internal assessment of twenty five (25) marks per course per semester should be conducted according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2014-15.

(b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton question paper pattern.

(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Time: 2.5 hours **Total marks: 75**

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

(a) Match the column (b) MCQ

(c) Give one word for (d) True and False

(e) Define the term (f) Answer in one sentence etc.

MODEL QUESTION BANK SEMESTER I

USZO101(COURSE I)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT 1 - (05 Marks)

1. Write a note on echolocation in Dolphins/ Whales
2. Write a short note on : Pearl formation in Mollusca
3. Describe : Mechanism of bioluminescence
4. Enumerate the uses of bioluminescence
5. Describe the uses of bioluminescence for…… (Noctiluca, Glow worm, Firefly, Angler fish, etc.)
6. Write a short note on : Luciferin – Luciferase interaction
7. Describe the process of regeneration in Earthworm
8. What is regeneration? Explain the term with an example
9. What is mimicry? Explain with an example.
10. Describe: mimicry in butterfly
11. Describe briefly the formation of Corals
12. Write a short note on types of coral reefs.
13. Describe needs of migration in birds.
14. Describe briefly, the factors inducing migration in birds.
15. How does Camel adapt itself to the desert environment?
16. Describe parental care and breeding in ……. (Examples of Pisces, Amphibia)
17. Describe briefly: Brood parasite
18. Explain parental care in Duck-billed Platypus

UNIT 2 - (05 Marks/10 Marks)

Questions that could be asked for 10 marks:

1. Explain biodiversity and its importance. What is a biodiversity hotspot? Explain Western Ghats as biodiversity hotspot in India.
2. Explain: Direct use value / Indirect use value
3. Explain biodiversity and its types.
4. Enumerate and explain threats to biodiversity.
5. State the factors which amount to habitat loss.
6. Explain the concept of Man-Wildlife conflict with an example.
7. Give a detailed account on *in situ* hybridization and ex-situ hybridization

8. Describe National Park and state its importance in conservation
9. Describe Sanctuary and state its importance in conservation
10. Give a brief account on biosphere reserve.
11. Give a detailed account on: CBD (Convention on Biological Diversity).
12. Give an account of national biodiversity plan 2002.
13. Describe important clauses of Convention for International Trade of endangered species.

Questions that could be asked for 05 marks:

1. Explain biodiversity and mention its types.
2. Explain biodiversity and give two importance
3. Explain biodiversity hotspot
4. Describe *in situ* conservation strategies.
5. Write note on ex-situ conservation strategies.
6. Give an account of genetic / species / ecosystem biodiversity.
7. Enumerate importance threat to biodiversity.
8. State direct and indirect use value of biodiversity.

UNIT 3 - (10 Marks)

1. Give a detailed account on: …….(Name of the eminent personality) For e.g.: Gadre Fisheries, Kiran Mazumdar Shaw, Baba Amte etc.
2. Describe in detail - ……(Name of the case study)
   For e.g.: Amul white revolution, Biocon, Genetic code etc.
3. Give a detailed account on the contribution made by Dr.Salim Ali in the field of Ornithology.
4. What is white revolution? State contribution of Dr. Verghese Kurian for it.
5. Describe the work of water conservation of Anna Hazare.

MODEL QUESTION BANK SEMESTER I USZO102 (COURSE II)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT I: (5 marks)

1. Describe in brief (Minimum five points)
   a. Good laboratory practices
   b. Chemical hazards in a laboratory
   c. Physical hazards in a laboratory
   d. Biological hazards in a laboratory
   e. Personal hygiene in laboratory
   f. Waste disposal
2. Define and give conversions of the three scales of measuring temperature.
3. Define Molarity. How would you prepare
   a. 1 litre of 0.1 M NaOH solution? (Mol.wt. of NaOH=40)
   b. 100 ml of 1M NaOH
   c. 500 ml of 0.2 M NaOH
4. Define Normality. How would you prepare 1 litre of 2 N NaOH solution?
5. Explain briefly the measures of central tendencies?
6. Define mean, median and mode and explain each with an example.
7. The observations of length (in cm) of 10 fishes are 22, 24, 34, 26, 28, 31, 20, 25, 36, 32. Calculate the arithmetic mean of fish length (in cm).
8. Calculate the arithmetic mean for the following data on fish length by Direct method.

Class interval (length in cm)	5-15	15-25	25-35	35-45	45-55
Frequency (no. of fish)	9	21	40	22	8

9. Calculate the arithmetic mean for the above data on fish length by shortcut method.
10. How do you find the median of the data and state the significance of median?
11. What is mode? How do you calculate mode for ungrouped and grouped data?
12. What is random sampling? State the significance.
13. Explain simple, subdivided and multiple bar diagrams.
14. What is a pie diagram? Write the formula for calculating the angles of degrees for different components.
15. The following data shows the areas in million square miles of the oceans of the world. Construct a pie diagram for the data.

16.

Ocean	Pacific	Atlantic	Indian	Antarctic	Arctic	Total
Area (million sq. miles)	70.8	41.2	28.5	7.6	4.8	152.9

t

Plot a histogram/Bar diagram? Explain how it is constructed.

UNIT 2: (5 marks)

1. Give applications of Biotechnology in the field of Medicine / Fishery / Animal Husbandry.
2. Give the Scope of Biotechnology in different areas as a diagrammatic sketch
3. What is SCID? Name the scientist who discovered the gene therapy for it.
4. In SCID which enzyme does not work properly?
5. Which cells are used for SCID gene therapy?
6. Which gene is defective in SCID?
7. Define transgenesis and mention any two transgenic animals.
8. Ethical issues of transgenesis.
9. Enlist five applications of DNA finger printing.
10. What are green genes? State one application of it.

(10 marks)

1. Describe SCID and its treatment with suitable diagram.
2. Explain various methods of transgenesis.
3. What is Cystic fibrosis? Explain its diagnostic biotechnological method.
4. Define transgenesis and explain retro viral method with its application.

UNIT 3: (10 marks)

1. Describe the components of a compound microscope giving function.

2. Explain the principle and the applications of compound microscope.
3. Discuss in detail the principle, construction and applications of dissecting microscope.
4. Write the principle and applications of
    a. Colorimeter
    b. Centrifuge
    c. Spectroscopy
    d. Compound microscope
    e. Dissecting microscope
5. Explain the principle of centrifugation and add a note on its application.
6. What is pH? Give the principle and applications of pH meter.
7. Describe paper chromatography as a separation technique.
8. Describe Agarose gel electrophoresis. Add a note on its applications.
9. Explain the principle and applications of Polyacrylamide gel electrophoresis.
10. With the help of a diagram, explain the parts of a colorimeter. Discuss the principle and uses.
11. Describe principle and uses of colorimeter.
12. Explain the principle and application of adsorption chromatography.

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PRACTICALS

USZOP1 (Course I)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q.1. From the given sample mount foraminiferan shells (Minimum three types) (15 Marks)

OR

Mounting of scales (placoid and cycloid/ctenoid) from fishes.

Q.2. Identify the photograph of the given animals and comment on the type of interaction /speciality. (symbiosis, camouflage, cannibalistic mate eating animals and animal architects,bioluminiscence). Any two (10 Marks)

Q.3. Identify giving reasons - Venomous/Non-venomous snake (from photographs). (5 Marks)

Q.4. Identification (one specimen each) (10 Marks)

a. Types of corals

b. Amphibians-breeding and parental care

c. Adaptive radiation in reptiles

d. Types of feathers/ claws in birds

e. Types of beaks in birds

Q.5. Field study report (Biodiversity) and viva on it. (10 Marks)

Semester I

USZOP1 (Course II)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q. 1 Dilute the given sample and estimate the OD using colorimeter (Three dilutions) (15marks)

OR

Calculate concentration from given OD by formula (3 concentrations)

OR

Find pH of water samples (three) and comment on their chemical nature.

OR

Using red cabbage pH indicator, determine pH of the given samples and comment on their chemical nature

OR

Extract fruit juice using pectinase and compare the result with a set without using pectinase.

Q. 2. Perform experiment for separation of pigments by adsorption chromatography. (10Marks)

OR

Perform experiment for separation of mixture of amino acids by paper chromatography

OR

Calculate R_f value and identify the pigment from chromatogram.

OR

Perform Thin Layer Chromatography (TLC) for separation of lipids

Q. 3. Focus the given slide under 10 X and 45 X and show it to examiner. (5 Marks)

OR

Prepare a frequency distribution table / Plot histogram / Pie diagram / Bar diagram from the given data.

Q. 4. Identification (10 Marks)

(Safety Symbols (two), parts of compound microscope, transgenic animals, DNA fingerprinting)

Q. 5. Journal and Viva voce(on practical component) (10 Marks)

SEMESTER-II

USZO201 (Course: 3)

Ecology and Wildlife Management

Unit 1: Population ecology: (15 L)

Objective: *To facilitate the learning of population ecology, its dynamics and regulatory factors important for its sustenance.*

Desired Outcome: *This unit would allow learners to study about nature of animal population, specific factors affecting its growth and its impact on the population of other life form.*

1.1: Population dynamics

1.1.1: Population density
1.1.2: Natality
1.1.3: Mortality
1.1.4: Fecundity
1.1.5: Age structure
1.1.6: Sex ratio
1.1.7: Life tables
1.1.8: Survivorship curves
1.1.9: Population dispersal and distribution patterns
1.1.10 Niche concept

1.2: Population growth regulation

1.2.1: Intrinsic mechanism – Density dependent fluctuations and oscillations
1.2.2: Extrinsic mechanism- Density independent, environmental and climate factors, population interactions

1.3: Population growth pattern

1.3.1: Sigmoid
1.3.2: J Shaped

1.4: Human census (India) – Concept, mechanism and significance

Unit 2: Ecosystem: (15 L)

Objective: *To impart knowledge of different components of ecosystem and educate about essentials of coexistence of human beings with all other living organisms.*

Desired Outcome: *Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment and will lead to better understanding about implications of loss of fauna specifically on human being, erupting spur of desire for conservation of all flora and fauna.*

2.1: Concept of Ecosystems

2.1.1**:** Ecosystem - Definition and components
2.1.2**:** Impact of temperature on biota
2.1.3**:** Biogeochemical cycles (Water, Oxygen, Nitrogen, Sulphur)
2.1.4**:** Fresh water ecosystem – Lentic and Lotic
2.1.5**:** Food chain and food web in ecosystem (Fresh water and Grass land).
2.1.6**:** Ecological pyramids - energy, biomass and number.
2.1.7**:** Animal interactions (commensalism, mutualism, predation, antibiosis, parasitism)

Unit 3: National parks and Sanctuaries of India (15 L)

Objective: *To enlighten learners about the current status of wild life conservation in India in the light of guidelines from different relevant governing agencies vis-à-vis with adversity of poaching and biopiracy.*
Desired Outcome: *Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism*.

3.1: Concept of Endangered and Critically Endangered species using examples of Indian Wildlife with respect to National Parks and Wildlife

Sanctuaries of India (Sanjay Gandhi National Park, Tadoba Tiger Reserve, Corbett National Park, Kaziranga National Park, Gir National Park, Silent Valley, Pirotan Island Marine Park, Keoladeo Ghana National Park, Bandipur Sanctuary)

3.2: Management strategies with special reference to Tiger and Rhinoceros in India

3.3: Ecotourism

3.4: Biopiracy

SEMESTER-II

Course: 4 [USZO 202]

NUTRITION, PUBLIC HEALTH AND HYGIENE

Unit 1: Nutrition and Health (15 L)

Objective: *To make learners understand the importance of balanced diet and essential nutrients of food at different stages of life.*

Desired Outcome: *Healthy dietary habits would be inculcated in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits.*

1.1**:** Concept of balanced diet, dietary recommendations to a normal adult, infant, pregnant woman and aged.
1.2**:** Malnutrition disorders – Anemia (B_{12} and Iron deficiency), Rickets, Marasmus, Goiter, Kwashiorkar (cause, symptoms, precaution and remedy).
1.3**:** Constipation, piles, starvation, acidity, flatulence, peptic ulcers (cause, symptoms, precaution and remedy).
1.4**:** Obesity (Definition and consequences).
1.5**:** Importance of fibres in food.
1.6**:** Significance of breast feeding.
1.7**:** Swine flu and Dengue (cause, symptoms, precaution and remedy).
1.8**:** BMI calculation and its significance.

Unit 2: Public Health and Hygiene (15 L)

Objective: *To impart knowledge about source, quantum and need for conservation of fast depleting water resource and essentials of maintaining proper sanitation, hygiene and optimizing use of electronic gadgets.*

Desired Outcome: *Promoting optimum conservation of water, encouragement for maintaining adequate personal hygiene, optimum use of electronic gadgets, avoiding addiction, thus facilitating achievement of the goal of healthy young India in true sense.*

2.1: Health

2.1.1**:** Definition of Health, the need for health education and health goal.

2.1.2**:** Physical, psychological and Social health issues.

2.1.3**:** WHO and its programmes - Polio, Small pox, Malaria and Leprosy (concept, brief accounts and outcome with respect to India).

2.1.4: Ill effects of self-medication.

2.2: Water and water supply

2.2.1**:** Sources and properties of water.

2.2.2**:** Purification of water, small scale, medium scale and large scale (rapid sand filters)

2.2.3 **:** Water footprint (concept, brief accounts and significance).

2.3: Hygiene:

2.3.1**:** Hygiene and health factors at home, personal hygiene, oral hygiene and sex hygiene.

2.4: Radiation risk:

2.4.1**:** Mobile Cell tower and electronic gadgets (data of recommended level, effects and precaution).

2.5: First Aid:

2.5.1**:** Dog bite and its treatment.

2.6: Blood bank – Concept and significance

UNIT 3: Common Human Diseases and Disorders (15 L)

Objective: *To educate learners about causes, symptoms and impact of stress related disorders and infectious diseases.*

Desired Outcome: *Learners will be able to promptly recognize stress related problems at initial stages and would be able to adopt relevant solutions which would lead to psychologically strong mind set promoting positive attitude important for academics and would be able to acquire knowledge of cause, symptoms and precautions of infectious diseases*.

3.1: Stress related disorders

3.1.1**:** Hypertension, Diabetes type II, anxiety, insomnia, migraine, depression (cause, symptoms, precaution and remedy)

3.2: Communicable and non-communicable diseases

3.2.1**:** Tuberculosis and Typhoid

3.2.2**:** Hepatitis (A and B), AIDS, Gonorrhea and Syphilis

3.2.3**:** Diseases of respiratory system- Asthma, Bronchitis.

3.2.4: Oral Cancer

(Discuss cause/causative agents, symptoms, diagnostics, precaution /prevention and remedy)

SEMESTER II

Practical USZOP2 (Course III)

1. Interpretation of the given graphs/ tables and comment on pattern of population nature :
   i. Survivorship curve
   ii. Life tables
   iii. Fecundity tables
   iv. Age structure
   v. Sex ratio

2. a) Calculation of Natality, Mortality, Population density from given data
   b) Estimation of population density by capture recapture method

3. Interpretation of Growth curves (Sigmoid and J shaped)

4. Estimation of hardness from given water sample (tap water v/s well water)
5. Estimation of Free carbon dioxide (Free CO_2) from two different samples- aerated drinks(diluted) v/s tap water
6. Identification and interpretation of aquatic and terrestrial (Grassland) food chains and food webs
7. Construction of food chain/food web using given information/data.
8. a) Identification and interpretation of ecological pyramids of energy, biomass and number
   b) Construction of different types of pyramid from given data.

9. Study of the following:
   a) Endangered (Great Indian Bustard, Asiatic lion, Blackbuck, Olive Ridley sea turtle) and critically endangered species (Slender-billed vulture, Gharial, Malabar civet) of Indian wildlife and state reasons for their decline
   b) Study Biodiversity hotspots using world map (Western Ghats and Indo-Burma)
   Study of sanctuaries, national parks, biosphere reserves in India with respect to its brand fauna (as listed in theory)

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

#There shall be at least one excursion/field trip

SEMESTER II

Practical USZOP2 (Course IV)

. 1. Qualitative estimation of Vitamin C by Iodometric method.

2. Study of microscopic structure of starch granules of different cereals (wheat, maize and jowar).

3. a) Estimation of maltose from brown/white bread.

   b) Moisture content from biscuits or other suitable food products.

4. Food adulteration Test:

   a) Milk adulterants (starch and glucose), methylene blue reduction Test (MBRT).

   b) Adulterants in Cheese, Butter, Jaggery, Ghee, Honey, Iodised Salt.

5. a) Estimation of protein content of two egg varieties.

   b) Study of efficacy of different antacids (any two antacids).

6. .Study of Human Parasites

   Endoparasites - Protozoans (*Entamoeba*, *Plasmodium*),
   Helminths (*Ascaris*, *Wuchereria*),
   Ectoparasites (Head louse, tick) and Exoparasites (Bed bug, Mosquito).

7. Screening of anaemic/non-anaemic persons using $CuSO_4$ method.

8. First Aid – Demonstration Practical Training for teachers and students to be conducted by the experts from Redcorss, Civil defence, Civic authorities by individual institute or cluster colleges in rotation.

9. BMI analysis - Measurement of Height/ Weight and calculation of BMI using formula, preparation and submission of report. (10 students/ group-50 readings/group)

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

Semester II USZOP2 (Course III)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q.1. Estimate Hardness from given water samples and compare the results. (15 Marks)

OR

Estimate Free CO_2 from given samples and compare the results.

Q.2. Solve the given problems (using statistical approach wherever possible) based on (Any two) (10Marks)

Natality
Mortality
Sex Ratio
Fecundity
Population density

Q.3. Identify brand animals (Min. 4) and place them in their respective National parks/ Sanctuaries on the given map quoting reasons for their decline. (5 Marks)

OR

Mark National parks and Sanctuaries on the map of India and mention the name of their brand animals stating reason for their decline. (Min. 4)

(5 Marks)

OR

Identify endangered and critically endangered animals (photographs) one each and state their reason of decline (5 Marks)

Q.4. Study the given information and give answers on the basis of food chain/food web and ecological pyramids. (10 Marks)

OR

Prepare food chain/food web and ecological pyramid from the given data and give its significance. (10 Marks)

OR

Identify and interpret the given graph/growth curve/age structure and comment on the pattern of population dispersal. (10 Marks)

OR

Determine Population density by capture and recapture method. (10 Marks)

Q.5. Journal and Viva voce (Based on practical component) (10 Marks)

Semester II USZOP2 (Course IV)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q.1. Estimate Vitamin C from given sample. (15 Marks)

OR

Estimate Maltose content from bread.

OR

Estimate protein content from two different types of eggs.

Q.2. Analyse the given food sample and identify food adulterants (any 2 samples). (10 Marks)

OR

Evaluate milk quality by Methylene Blue Reduction Test (MBRT).

OR

Determine efficacy of different antacids (any two) on acidic solution.

Q.3. Determine moisture content from biscuits/ any other suitable food product. (5 Marks)

OR

On the basis of microscopic structure of starch granules identify different cereals (any two).

OR

Detect adulterants present in th given milk sample (any two).

OR

Determine whether given blood sample is from anaemic/non-anaemic person using $CuSO_4$ Method and suggest the appropriate diet.

Q.4. Identification (10 Marks)

a) One specimen of Protozoan Parasites.

b) One specimen of Helminth Parasites.

c) One specimen from Ectoparasite

d) One specimen from Exoparasite

e) One specimen from Endoparasite

Q.5. Submission of report of Body Mass Index (viva based on it) (10 Marks)

Note: There shall be at least one excursion/field trip.

USZO201 (Course III)

REFERENCES AND ADDITIONAL READING

1. Introduction to Ecology and Wildlife - University Text Book of Zoology, F.Y.B.Sc. Semester II Course 3. University Press.
2. Fundamentals of Ecology - Eugene P. Odum and Grey W. Barrett, Brook Cole/ Cengage learning
3. Fundamentals of Ecology - M. C. Dash , Tata McGraw Hill company Ltd, New Delhi
4. Ecology - Mohan P. Arora , Himalaya Publishing House
5. Field Biology and Ecology -- Alen H. Benton and William E. Werner ,Tata McGraw Hill ltd, New Delhi
6. Ecology and Environment - Sharma P. D , Rastogi Publication, Mumbai
7. Ecology : Principles and Applications - Chapman J.L , Cambridge University trust
8. Ecology - Subramaniam and Others, Narosa Publishing House
9. Wildlife laws and its impact on tribes - Mona Purohit, Deep and deep Publication
10. Biology - Eldra Solomon, Linda R. Berg and Diana W. Martin, Thomson/ Brooks/ Cole
11. Economic Zoology, Biostats and Animal Behaviour - Shukla, Mathur, Upadhyay, Prasad. Rastogi Publications.

USZO202 (Course IV)

REFERENCES AND ADDITIONAL READING

1. Common Diseases, Health and Hygiene - University Text Book of Zoology, F.Y.B.Sc. Semester II Course 4. University Press.
2. Common Medical Symptoms edited - P. J. Mehta National Inblisents and Distributions
3. Parks Textbook of Preventive and Social Medicine K. Park M/S Banarasidas Bhanot Jabalpar.
4. Human Physiology – Volume I – II C. C. Chatterjee, Medical Allied agency, Kolkatta.
5. Parasitology (Protozoology and Helminthoology) - K. D. Chatterjee, Chatterjee Medial Publishers.

6. Nand’s handbook of Forensic Medicine and Toxicology - Apurba Nandy, NCBA publication.
7. Essentials of Public Health and Sanitation- Part I and Part II. All India Institute of Local Self Government.
8. Epidemiology and Management for Health Care for all. P.V. Sathe, A. P. Sathe, Popular Prakashan, Mumbai.
9. Textbook of Medical Parasitology- C. K. JayaramPaniker. Jaypee Brothers.
10. A Treatise on Hygiene and Public Health. -B. N. Ghosh. Calcutta Scientific Publishing Company.
11. Prevention of Food Adulteration, Act 1954. Asian Law House.
12. Clinical Dietetics and Nutrition - F. P. Antia and Philip, Oxford University Press.
13. A Complete Handbook of Nature Cure - Dr. H. K. Bakru, Jaico Publishing House.
14. Dietetics - B. Srilakshmi, New Age International (P) Ltd. Publishers.
15. Nutrition: Principles and Application in Health Promotion - J. B. Lippincott Company. Philadelphia.
16. Are You Healing Yourself Mr. Executive - Dr. R. H. Dastur. IBH Publishing Company.
17. Food Nutrition and Health- Dr. Shashi Goyal, Pooja Gupta, S. Chand Publications.
18. Public Health Nutrition. Edited - Michael J. Gidney, Barrie M. Margetts, John M. Kearney and Lenore Arab. Willey Blackwell Publication.
19. Food and Nutrition – Vol. I and II - Dr. Swaminathan , Bappco Publication.
20. Textbook of Human Nutrition - Mahtab Bamji, Prahlad Rao.
21. Total Health by Paramjit Rana.

SCHEME OF EXAMINATION THEORY

(a) Internal assessment of twenty five (25) marks per course per semester should be conducted as class test according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2014-15.

(b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton paper pattern.

(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Time: 2.5 hours **Total marks: 75**

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

(a) Match the column (b) MCQ

(c) Give one word for (d) True and False

(e) Define the term (f) Answer in one sentence etc.

MODEL QUESTION BANK

SEMESTER II

USZO203 (COURSE III)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT 1: (10 marks)

Describe with suitable Example

1. J-Shaped and Sigmoid growth patterns
2. Population dispersal and distribution patterns
3. Natality and Mortality
4. Natality and Fecundity
5. Fecundity and Mortality
6. Density dependant fluctuation and oscillations
7. Population interactions
8. Age structure and population density
9. Concept of niche and its significance in population ecology.

Write notes on / Give a brief account of: (5 marks)

1. Population density
2. Natality
3. Mortality
4. Fecundity
5. Age structure
6. Sex ratio
7. Survivorship curve
8. Sigmoid growth pattern
9. J-shaped growth curve
10. Intrinsic mechanism
11. Extrinsic mechanism
12. Niche
13. Population dispersal and distribution pattern

UNIT 2: (5 marks)

1. Effect of temperature on metabolism

16. Impact of temperature on reproduction
17. Effect of temperature on animal behaviour
18. Define ecosystem and describe any two abiotic factors
19. Define ecosystem and describe any two biotic factors
20. Explain producers / autotrophs
21. Give a brief account of various levels of consumers in an ecosystem
22. Describe in short the inter-relationship between biotic and abiotic factors
23. Describe the following (any one of the cycles can be asked) water cycle, nitrogen cycle and oxygen cycle, sulphur cycle.
24. Explain any one of the following - lake or river
25. Explain food chain from terrestrial or aquatic ecosystem
26. What is food web and explain the same with a suitable example
27. Give a brief account of: Energy pyramid, Pyramid of biomass, Pyramid of numbers.

Unit 3: (10 marks question)

1. State the differences between National park and Wildlife Sanctuary?
2. Write an account of critically endangered species of Indian wildlife with at least two examples.
3. Explain briefly management strategy of any one tiger project in India.
4. Briefly explain management strategy of Rhinoceros project in India.
5. Write in detail about Indian Wildlife (Protection) Act 1972.
6. What is biopiracy? Explain with suitable examples.
7. Write a note on flora and fauna of Sanjay Gandhi national park.
8. Write an account of Tadoba tiger reserve project.
9. Give an account of biodiversity of Jim Corbett national park.
10. Write a note on Ranthambore Tiger reserve.
11. Write in details about Gir Lion project.
12. Write a note on Keoladeo Ghana National park.
13. Write an account of biodiversity of Silent valley.
14. Describe in detail about Bandipur sanctuary.
15. Write a note on ecotourism in India with few examples.

MODEL QUESTION BANK (COURSE IV) SEMESTERII

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

Unit I (5 marks)

Explain the following:

1. Concept of balanced diet and dietary recommendations of any one of the following:
   a) Normal adult b)Infant c) Pregnant woman d) Aged
2. Cause and symptoms of the following: a) Anemia b) B_{12} deficiency c) Vitamin D deficiency d) Marasmus e) Kwashiorkar f) Goiter, g) Swine flu, h) Dengue
3. Precautions and remedy for all above mentioned health conditions.
4. Significance of breast feeding.
5. Importance of fibres in food.
6. Food adulterants and toxins with two side effects of each.
7. Causes, symptoms, precautions and treatment of a) Constipation, b) Piles, c) Insomnia, d) Starvation, e) Flatulence, f) Peptic ulcer, g) Obesity
8. BMI and its significance.

Unit II (5/10 marks)

Question of 5 marks:

1. Give a brief account and outcome of WHO Programs:
   a) Polio b) Smallpox c) Malaria d) Leprosy
2. a) Explain the concept of health goal and health knowledge.
   b) Enlist different needs of health education.
   c) State five points of social health issues.

Question of 10 marks:

1. Describe sources and properties of water in relation to human consumption.

2. Describe methods of purification of water – small scale, medium scale and large scale.
3. Explain the concept of water footprint and give its significance.
4. Describe disposal of human and animal waste – STP and ETP, its functioning and significance.
5. Give a brief of risk of radiation from mobile cell towers and electronic gadgets.
6. Explain the concepts of physical health, psychological health and myth related to it.
7. Describe the term hygiene and explain in brief health factors related to it at home.
8. Explain personal hygiene, oral hygiene and sex hygiene with significance of each.
9. Describe ill effects of self medication with respect to antibiotics and steroids.
10. Give brief account of first aid symbols.

Unit III (10 marks)

1. Explain causes, symptoms, precautions and remedy
   a) Hypertension b) Diabetes Type II c) Anxiety and Insomnia d) Migraine and depression
2. Explain causes, symptoms, precautions and remedy
   a) Tuberculosis b) Common flu c) Dengue d) Malaria e) Typhoid f) Hepatitis A g) Hepatitis B h) AIDS

AC 11/03/2016
Item No. 4.7

UNIVERSITY OF MUMBAI

Program: S.Y.B. Sc.

Course: Zoology

(Credit Based Semester and Grading System

with effect from the academic year 2016–2017)

AC 11/03/2016
Item No. 4.7

Syllabus Committee Members

Dr Anita S. Jadhav	Convenor
Dr Mansi Phanse	Co- convenor
Dr Supriya Deshpande	Co- convenor
Dr Mrinalini Kagwade	Co- convenor
Dr Manisha Kayande	Co- convenor
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Dr Lalna Khot	Member (Teacher)
Ms Jariya Khan	Student
Ms Pranjali Tripathi	Student
Mr Nishant Gupta	Student
Ms Tanuja Amasa	Student

AC 11/03/2016
Item No. 4.7

Syllabus for

S.Y.B.Sc.

Course – ZOOLOGY

To be implemented from Academic year 2016-17

SEMESTER - III

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES/ WEEK
USZO301	I	Fundamentals of Genetics,	2	1
	II	Chromosomes and Heredity,		1
	III	Nucleic acids		1
USZO302	I	Study of Nutrition and Excretion	2	1
	II	Study Respiration and circulation,		1
	III	Control and coordination, Locomotion and Reproduction		1
USZO303	I	Ethology	2	1
	II	Parasitology		1
	III	Economic Zoology		1
USZOP3	Practical based on all three courses		03	**9**

SEMESTER - IV

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES/ WEEK
USZO401	I	Origin and evolution of Life,	2	1
	II	Population genetics and evolution,		1
	III	Scientific Attitude methodology , writing and ethics		1
USZO402	I	Cell Biology,	2	1
	II	Endo membrane System		1
	III	Biomolecules		1
USZO403	I	Comparative Embryology,	2	1
	II	Aspects of Human Reproduction,		1
	III	Pollution and its effect on organisms		1

AC 11/03/2016
Item No. 4.7

USZOP4	Practical based on all three courses	03	**9**

Syllabus for
S.Y.B.Sc
Course – ZOOLOGY

1. Syllabus Semester III & IV (Theory and Practical)
2. References and Additional Reading
3. Scheme of Examination and Paper Pattern (Thoery and Practical)
4. Model Question bank

AC 11/03/2016
Item No. 4.7

S.Y.B.Sc. ZOOLOGY UNIT WISE DISTRIBUTION					
Semester III			**Semester IV**		
Course 5	**Course 6**	**Course 7**	**Course 8**	**Course 9**	**Course 10**
Unit 1 Fundamentals of Genetics	**Unit 1** Study of Nutrition & Excretion	**Unit 1** Ethology	**Unit 1** Origin & Evolution of Life	**Unit 1** Cell Biology	**Unit 1** Comparative Embryology
Unit 2 Chromosome & Heredity	**Unit 2** Study of Respiration & circulation	**Unit 2** Parasitology	**Unit 2** Population Genetics & Evolution	**Unit 2** Endomembrane System	**Unit 3** Aspects of human Reproduction
Unit 3 Nucleic Acids	**Unit 3** Control and Coordination Locomotion & Reproduction	**Unit 3** Economic Zoology	**Unit 3** Scientific Attitude, Methodology, Writing & Ethics	**Unit 3** Biomolecules	**Unit 3** Pollution & Effects on Animals
Practical (USZO P3)	**Practical (USZO P3)**	**Practical (USZO P3)**	**Practical (USZO P4)**	**Practical (USZO P4)**	**Practical (USZO P4)**

AC 11/03/2016
Item No. 4.7

S.Y.B.Sc SYLLABUS DRAFT

SEMESTER III

Sr. No	USZO301 COURSE-5	No of lect allotted	Learning pleasure
	Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids		
	Unit 1: Fundamentals of Genetics	**15L**	**25hrs**
	***Objectives* :** ➢ *To Introduce basic terms of genetics* ➢ *To study Mendelian principles of inheritance and other forms pattern of inheritance*		
.	**Desired *outcomes :*** ➢ *Understand and apply the principles of inheritance.* ➢ *Understand the concept of multiple alleles, linkage and crossing over.*		
1.1	**Introduction to genetics** ➢ Definition, scope and importance of genetics. ➢ Classical and Modern concept of Gene (Cistron, muton, recon). ➢ Brief explanation of the following terms: Allele, wild type and mutant alleles, locus, dominant and recessive traits, homozygous and heterozygous, genotype and phenotype, genome.	**2L**	**2hrs**
1.2	**Mendelian Genetics** ➢ Mendelian Genetics**:** Monohybrid cross, Dihybrid cross, test cross, back cross, Mendel's laws of Inheritance, Mendelian traits in man. ➢ Exceptions to Mendelian Inheritance: Incomplete dominance, Co-dominance, Lethal alleles, Epistasis - Recessive, Double recessive, dominant and double dominant. ➢ Chromosome theory of inheritance. ➢ Pedigree analysis-Autosomal dominant and autosomal recessive, X-linked dominant, and X-linked recessive	**8L**	**12hrs**
1.3	**Multiple Alleles and Multiple Genes** ➢ Concept of multiple alleles, Coat colour in rabbit, ABO and Rh blood group systems ➢ Polygenic inheritance with reference to skin colour and eye colour in man. ➢ Concept of pleiotropy.	**3L**	**06hrs**

1.4	**Linkage and Crossing Over** ➢ Linkage and crossing over, types of crossing over, cytological basis of crossing over.	**2L**	**05hrs**
	Unit: 2: Chromosomes and Heredity	**15 L**	**26hrs**
	Learning objectives: ➢ *To familiarize the learners with the structure, types and classification of chromosomes.* ➢ *To introduce the concept of sex determination and its types, sex influenced and sex limited genes.*		
	Desired Outcomes: ➢ *Learners would understand the structure and types of chromosomes.* ➢ *Learners would understand mechanisms of sex determination.* ➢ *Learners would be able to correlate the disorders linked to a particular sex chromosome.*		
2.1	**Chromosomes** ➢ Types of chromosomes–Autosomes and Sex chromosomes ➢ Chromosome structure - Heterochromatin, Euchromatin ➢ Classification based on the position of centromere ➢ Endomitosis, Giant chromosomes- Polytene and Lamp brush chromosomes and significance of Balbiani rings.	**4L**	**8hrs**
2.2	**Sex- determination** ➢ Chromosomal Mechanisms: XX-XO, XX-XY, ZZ-ZW. ➢ Sex determination in honey bees- Haplodiploidy, ➢ Sex determination in *Drosophila*-Genic balance theory, intersex, gynandromorphs. ➢ Parthenogenesis. ➢ Hormonal influence on sex determination-Freemartin and sex reversal. ➢ Role of environmental factors- Bonellia and Crocodile ➢ Barr bodies and Lyon hypothesis	**7L**	**10hrs**
2.3	**Sex linked, sex influenced and sex limited inheritance.** ➢ X-Linked: Colourblindness, Haemophilia ➢ Y-linked: Hypertrichosis ➢ Sex-influenced genes ➢ Sex limited genes	**4L**	**8hrs**
	Unit: 3 Nucleic acids	**15 L**	**30hrs**
	***Objectives*:** ➢ *To introduce to the learners the classical experiments proving DNA as the genetic material.* ➢ *To make the learner understand the structure of nucleic acids and the concept of central dogma of molecular biology.* ➢ *To familiarize the learner with the concept of gene regulation.*		
	Desired Outcomes: ➢ *Learner would understand the importance of nucleic acids as genetic material.*		

	➢ *The learners would understand and appreciate the regulation of gene expressions.*		
3.1	**Genetic material** ➢ Griffith's transformation experiments, Avery-Macleod and McCarty, Hershey Chase experiment of Bacteriophage infection ➢ Chemical composition and structure of nucleic acids. ➢ Double helix nature of DNA, Solenoid model of DNA. ➢ Types of DNA – A, B, Z & H forms. ➢ DNA in Prokaryotes -chromosomal and plasmid. ➢ Extra nuclear DNA -mitochondria and chloroplast. ➢ RNA as a genetic material in viruses. ➢ Types of RNA: Structure and function.	**7L**	**14hrs**
3.2	**Flow of genetic information in a Eukaryotic cell** ➢ DNA Replication ➢ Transcription of mRNA ➢ Translation ➢ Genetic code	**5L**	**08hrs**
3.3	**Gene Expressions and regulation** ➢ One gene-one enzyme hypothesis /one polypeptide hypothesis ➢ Concept of operon ➢ Lac operon	**3L**	**08hrs**

Sr. No	**USZO302 COURSE-6**	**No of lect allotted**	**Learning pleasure**
	Study of Nutrition and Excretion , Respiration and circulation, Control and coordination, Locomotion and Reproduction		
	Unit: 1 Study of Nutrition and Excretion	**15L**	**23hrs**
	Objective : ➢ *To introduce the concepts of physiology* of nutrition, excretion and osmoregulation. ➢ *To expose the learners to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms.*		
	Desired Outcome : ➢ *Learners would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.* ➢ *Learners would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.*		
1.1	➢ Comparative study of Nutritional Apparatus (structure and function): Amoeba, Hydra, Earthworm, Cockroach, Bivalve,	5L	06hrs

	Amphioxus, Pigeon, Ruminants.		
1.2	➢ Physiology of digestion in man	2L	04hrs
1.3	➢ Comparative study of Excretory and Osmoregulatory structures and function a. Amoeba -contractile vacuoles b. Planaria -Flame cells c. Earthworm -Nephridia d. Cockroach-Malphigian tubules and green gland e. Bivalve -Organ of Bojanus	5L	08hrs
1.4	➢ Categorization of animals based on principle nitrogenous excretory products	1L	01hrs
1.5	➢ Structure of kidney, Uriniferous tubule and physiology of urine formation in man.	2L	04hrs
	Unit: 2 Study of Respiration and circulation	**15L**	**27hrs**
	***Objective* :** ➢ *To introduce the concepts of physiology of respiration and circulation* ➢ *To expose the learners to various respiratory and circulatory structures in different classes of organisms.*		
	Desired Outcome: ➢ *Learners would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy.* ➢ *Learners would be able to correlate the habit and habitat with respiratory and circulatory structures.*		
2.1	➢ Comparative study of Respiratory organs (structure and function) Earthworm, Spider, Rohu, Frog and Pigeon.	**3L**	**06hrs**
2.2	➢ Accessory respiratory structures: Anabas /Clarius	**1L**	**02hrs**
2.3	➢ Structure of lungs and physiology of respiration in man	**2L**	**04hrs**
2.4	➢ Comparative study of circulation: Open and closed - single and double .	**1L**	**02hrs**
2.5	➢ Types of circulating fluids- Water, coelomic fluid, haemolymph, lymph and blood.	**2L**	**02hrs**
2.6	➢ Comparative study of Hearts (Structure and function) Earthworm, Cockroach, Shark, Frog, Crocodile and Pigeon.	**4L**	**07hrs**
2.7	➢ Structure and mechanism of working of heart in man	**2L**	**04hrs**
	Unit: 3 Control and coordination, Locomotion and Reproduction	**15L**	**25hrs**
	***Objective* :** ➢ *To introduce the concepts of physiology of control and coordination and locomotion and reproduction*		

	➢ *To expose the learners to various locomotory and reproductive structures in different classes of organisms*		
	***Desired Outcome**:* ➢ *Learners would understand the process of control and coordination by nervous and endocrine regulation.* ➢ *Learners would be fascinated by various locomotory structures found in the animal kingdom.* ➢ *Learners would be acquainted with various reproductive strategies present in animals.*		
3.1	**Control and coordination** ➢ Irritability –Paramoecium , Nerve net in Hydra, Nerve ring and nerve cord in earthworm ➢ Types of neurons on the basis of structure and function ➢ Conduction of nerve impulse: Resting potential, action potential and refractory period ➢ Synaptic transmission ➢ Endocrine regulation: Hormones as chemical messengers, feedback mechanisms	**5L**	**08hrs**
3.2	**Movement and Locomotion** ➢ Locomotory organs -structures and functions a. Pseudopodia in Amoeba (sol gel theory), Cilia in Paramecium b. Wings and legs in Cockroach c. Tube feet in Starfish d. Fins of fish	**4L**	**08hrs**
3.3	➢ Structure of Striated muscle fibre in human and Sliding filament theory	**2L**	**02 hrs**
3.4	**Reproduction** a. Asexual Reproduction- Fission, fragmentation, gemmule formation, budding b. Sexual reproduction i. Gametogenesis ii. Structure of male and female gametes in human iii. Types of fertilization iv. Oviparity, viviparity, ovo-viviparity	**4L**	**07hrs**
	USZO 303 COURSE-7		
	Ethology , Parasitology, Economic Zoology	**15L**	**26hrs**
	Unit: 1 Ethology		
	Objective: ➢ *To equip learners with a sound knowledge of how animals interact with one another and their environment.* ➢ *To enable the learners to understand different behavioural patterns.*		
	Desired Outcome:		

	➢ *Learners would gain an insight into different types of animal behaviour and their role in biological adaptations.* ➢ *Learners would be sensitized to the feelings instrumental in social behavior.*		
1.1	**Introduction to Ethology** ➢ Definition, History and Scope of Ethology ➢ Animal behaviour - Innate and Learned behaviour ➢ Types of learning -Habituation, Imprinting and types of imprinting -filial and sexual, Classical conditioning, Instrumental learning and insight learning.	**4L**	**06hrs**
1.2	**Aspects of animal behaviour** ➢ Communication in Bees and Ants ➢ Mimicry and colouration ➢ Role of hormones and pheromones in sexual behaviour ➢ Displacement activities, Ritualization ➢ Migration in fish, schooling behaviour ➢ Habitat selection, territorial behaviour, food selection and foraging behaviour in African ungulates	**6L**	**12hrs**
1.3	**Social behaviour** ➢ Social behaviour in primates -Hanuman langur ➢ Elements of Socio-biology: Selfishness, cooperation, altruism, kinship and inclusive fitness	**5L**	**08hrs**
	Unit: 2 Parasitology	**15L**	**27hrs**
	Objective: ➢ *To acquaint learners with the concepts of parasitism, their relationship with environment.* ➢ *To make learners aware about the modes of transmission of parasites.*		
	Desired Outcome: ➢ *Learners would understand the general epidemiological aspects of parasites that affect humans and apply simple preventive measures for the same.* ➢ *Learners would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment.*		
2.1	**Introduction to Parasitology and types of parasites** ➢ Definitions: parasitism, host, parasite, vector-biological and mechanical ➢ **Types of parasites-** Ectoparasites, Endoparasite and their subtypes ➢ Parasitic adaptations in Ectoparasites and Endoparasites ➢ Types of hosts: intermediate and definitive, reservoir	**2L**	**06hrs**
2.2	**Host-parasite relationship-Host specificity** ➢ Definition, structural specificity, physiological specificity and ecological specificity.	**2L**	**06hrs**

2.3	**Life cycle, pathogenicity, control measures and treatment** ➢ *Entamoeba histolytica, Fasciola hepatica, Taenia solium, Wuchereria bancrofti*	**5L**	**06hrs**
2.4	**Morphology, life cycle, pathogenicity, control measures and treatment** ➢ Head louse (*Pediculus humanus capitis*), Mite (*Sarcoptes scabei),* Bed bug (*Cimex lectularis)*	**2L**	**06hrs**
2.5	**Parasitological significance** ➢ Zoonosis- Bird flu, Anthrax, Rabies and Toxoplasmosis	**4L**	**03hrs**
	Unit 3 Economic Zoology	**15L**	**24hrs**
	Objective: ➢ *To disseminate information on economic aspects of zoology like apiculture, vermiculture, dairy science.* ➢ *To encourage young learners for self employment.*		
	Desired Outcome: ➢ *Learners would gain knowledge on animals useful to mankind and the means to make the most of it.* ➢ *Learners would learn the modern techniques in animal husbandry.* ➢ *Learners would be pursuing entrepreneurship as careers*		
3.1	**APICULTURE**	**5L**	**08hrs**
3.1.1	**Methods of bee keeping and management** ➢ An introduction to different species of honey bees used in apiculture. ➢ Selection of flora and bees for apiculture. ➢ Advantages and disadvantages of traditional and modern methods of apiculture. ➢ Pests and Bee enemies- Wax moth, wasp, black ants, bee eaters , king crow and disease control ➢ Bee keeping industry- Present status and recent efforts to improve and boost the industry		
3.1.2	**Economic importance** ➢ Honey- Production, Chemical composition and economic importance ➢ Bees wax- Economic importance. ➢ Role of honey bees in pollination.		
3.2	**VERMICULTURE**	**4L**	**08hrs**

3.2.1	**Rearing methods, management and economic importance** ➢ An introduction to different species of earthworms used in vermiculture. ➢ Methods of vermiculture. ➢ Maintenance and harvesting ➢ Economic importance: advantages of vermiculture, demands for worms; market for vermicompost and entrepreneurship.		
3.3	**DAIRY SCIENCE**	**6L**	**08hrs**
3.3.1	**Dairy development in India** ➢ Role of dairy development in rural economy, employment opportunities		
3.3.2	**Dairy Processing** ➢ Filtration, cooling, chilling, clarification, pasteurization, freezing		
3.3.3	**Milk and milk products** ➢ Composition of milk ➢ Types of milk: Recombined milk, Soft curd milk, Skimmed and toned milk, Artificial milk. ➢ Milk products		

	SEMESTER III
	Practical USZOP3 (Course V)
1	Extraction and detection of DNA
2	Extraction and detection of RNA.
3	Mounting of Barr bodies.
4	Study of polytene chromosome.
5	Study of mitosis- temporary squash preparation of Onion root tip
6	Detection of blood groups and Rh factor.
7	Problems in genetics a. Monohybrid/ Dihybrid cross b. X- linked inheritance c. Multiple alleles
8	Chromosome morphology: Metaphase spreadsheet (photograph to be provided)
9	Pedigree analysis
10	Problems on molecular biology
	Practical USZOP3 (Course VI)
1	Urine analysis—Normal and abnormal constituents
2	Detection of ammonia in water excreted by fish
3	Detection of uric acid from excreta of Birds
4	Study of striated and non- striated muscle fibre

5	Study of nutritional Apparatus (Amoeba, Hydra, Earthworm, Pigeon, Ruminant stomach)
6	Study of respiratory structures: a. Gills of Bony fish and Cartilaginous fish. b. Lungs of Frog c. Lungs of Mammal. d. Accessory respiratory structure in Anabas (Labyrinthine organ) e. Air sacs of Pigeon.
7	Study of locomotory organs (*Amoeba*, *Unio*, Cockroach, Starfish, Fish, and Birds)
8	Study of hearts (Cockroach, Shark, Frog, *Calotes*, Crocodile, Mammal)
9	Study of permanent slides on topic of Reproduction a. Sponge gemmules b. Hydra budding c. T.S. of mammalian testis d. T.S. of mammalian ovary
	Practical USZOP3 (Course VII)
1	Extraction of Casein from Milk and its qualitative estimation
2	Preparation of paneer from given milk sample
3	Measurement of density of milk using different samples by Lactometer
4	Study of Honey Bee : a) Life Cycle of Honey Bee and Bee Hive b) Mouthparts of Honey Bee c) Legs of Honey Bee d) Sting Apparatus of Honey Bee
5	Study of ethological aspects: a) Warning Colouration b) Instincts c) Imprinting d) Communication in animals: Chemical signals and sound signals e) Displacement activities in animals: Courtship and mating behavior in animals and ritualization
6	Study of Protozoan parasites: a. *Trypanosoma gambiense* *b. Giardia intestinanalis*
7	Study of Helminth parasites: *a) Ancylostoma duodenale* *b) Dracunculus medenensis*
8	Parasitic adaptations: Scolex and mature proglottid of Tapeworm
9	Study of Ectoparasites: a. Leech b. Tick c. Mite

10	Project- Suggested topics on economic zoology (eg Apiculture, sericulture/ lac culture / vermicompost Technique / Construction of artificial beehives /Animal husbandry/ aquaculture etc)

Note -The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.
#There shall be at least one excursion/field trip.

Semester –III

REFERENCE BOOKS AND ADDITIONAL READING

COURSE-V (USZO301)

1. Principles of Genetics. Gardner, E.J., Simmons, M.J and Snustad, D.P. John Wiley and Sons
2. Concepts of Genetics. Klug, W.S., Cummings M.R., Spencer, C.A. Benjamin Cummings.
3. Genetics- A Molecular Approach. Russell, P. J Benjamin Cummings.
4. Genetics: Analysis of Genes and Genomes. Daniel L., Hartl, Elizabeth W. Jones Jones & Bartlett Publishers
5. Introduction to Genetic Analysis. Griffiths, A.J.F., Wessler. S.R., Lewontin, R.C. and Carroll, S.B. W. H. Freeman and Co.
6. Cell Biology Genetics , Molecular Biology Evolution and Ecology Verma P.S. and Agrawal P.K., 9th edition, S. Chand Publication, New Delhi.
7. Principles of Genetics – Eight edition- Eldon john Gardner, Michael J. Simmons, D. Peter Snustad
8. Genetics- Weaver, Hedrick, third edition, Mc Graw Hill Education
9. Genetics A Mendelian approach Peter J.Russel, Pearson Benjamin Cummings
10. Genetics A conceptual approach, Benjamin A. Pierce, Southwestern University, W.H. Freeman and company, New York
11. Genetics, Third Edition, Monroe W. Strickberger
12. Genetics from gene to genome, third edition, Leeland H. Hartwell, Leeroy Hood, Michael 7. L. Goldberg, Ann E. Reynolds, Lee M. Silver, McGraw Hill Education

COURSE-VI (USZO302)

1. Vertebrate Zoology Volume I- Jordan and Verma , S. Chand and Co.
2. Invertebrate Zoology Volume II- Jordan and Verma , S. Chand and Co.
3. Invertebrate Zoology- Majupuria T. C., Nagin S.and Co.
4. Chordate Zoology- Dhami P. S. and Dhami J. K. , R. Chand and Co.
5. Invertebrate Zoology- Dhami P. S. and Dhami J. K., R. Chand and Co.

6. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition.
7. Zoology- Miller S. A. and Harley J. B., Tata McGraw Hill.
8. Modern Textbook of Zoology, Invertebrates, Kotpal R. L.
9. Biological Science, Taylor D.J., Stout G.W., Green N.P.O, Soper R.,Cambridge University Press.

COURSE-VII (USZO303)

1. Animal Behaviour- David Mc Farland
2. Animal Behaviour- Mohan Arora
3. Animal Behaviour- Reena Mathur
4. An introduction to Animal Behaviour- Dawkins
5. Animal Behaviour-Agarwal
6. Animal Behaviour- Tinbergen
7. Biology of Insects- 1992 Saxena S. C. Oxford and IBH Publishing Co New Delhi. Bombay. Calcutta
8. A Text Book of Entomology- 1974Mathur V. K. and Upadhayay K Goel Printing press, Barani.
9. Bee and Bee Keeping- Roger A. Morse, Conell University Press London
10. Vermiculture Technology - Clive A. Edwards, Norman Q. Arancon and Rhonda Sherman
11. Parasitology- Chatterjee K.D., Chatterjee Medical Publishers.
12. Medical Parasitology- Arora
13. Textbook of Medical Parasitology-. C.K Jayaram Paniker, Jaypee Brothers.
14. A text book of Parasitology- Kochhar S.K. Dominant Pub. & Dis, New Delhi.
15. Essentials of Parasitology- Gerald and Schmidt: Universal Bookstall, New Delhi.
16. Parasitology- Sharma P.N.and Ratnu L.N., Chand S & Co.Pvt.Ltd.
17. Introduction to Parasitology- Chandler and Read John Wiley & Sons
18. Economic Zoology- Biostatistics and Animal behaviour – S.Mathur, Rastogi Publicatons.
19. Economic Zoology- Shukla G.S. & Upadhyay V.B., Rastogi Publications.
20. A handbook on Economic Zoology, S.Chand & Co.

AC 11/03/2016
Item No. 4.7

SCHEME OF EXAMINATION (THEORY)

(a) Internal assessment of twenty five (25) marks per course per semester should be conducted according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2015-16.
(b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton question paper pattern.
(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory
Figures to the right indicate full marks

Time: 2.5 hours **Total marks: 75**

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

(a) Match the column (b) MCQ
(c) Give one word for (d) True and False
(e) Define the term (f) Answer in one sentence etc

AC 11/03/2016
Item No. 4.7

MODEL QUESTION BANK SEMESTER III

USZO301(COURSE V)

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

Unit :1 (10 Marks)

1. Define genetics and explain its scope and importance.
2. Explain Mendel's laws of inheritance.
3. Describe in detail the monohybrid cross and state the Mendelian principle of inheritance derived from it. Add a note on Co-dominance.
4. Describe in detail dihybrid cross and state the Mendelian principles of inheritance derived from it.
5. Discuss in brief inheritance of Mendelian phenotypic traits in humans.
6. Describe incomplete dominance with a suitable example.
7. Describe Co-dominance with a suitable example.
8. What is epistasis? Give a detailed account of double dominant epistasis.
9. What is epistasis? Give a detailed account of recessive epistasis.
10. What is epistasis? Give a detailed account of dominant epistasis
11. What is epistasis? Give a detailed account of double recessive epistasis.
12. Explain the pattern of inheritance of recessive and dominant lethal alleles.
13. Explain the inheritance of multiple alleles with the help of a suitable example.
14. Describe polygenic inheritance with reference to skin colour and eye colour in man.
15. Compare and contrast pleiotropy and polygenic inheritance.
16. Explain the phenomenon of linkage with respect to Morgan's Experiment. Add a note on the differences between complete and incomplete linkage.

17. Describe the pattern of inheritance of blood group and Rh factor in man.
18. Explain the cytological basis and molecular mechanisms of crossing over.
19. Explain pedigree analysis of X-linked recessive traits.

Unit :1 (5 Marks)

1. Describe the classical concept of gene.
2. Explain the modern concept of gene.
3. Differentiate between (Any two):
   (a) Genotype and phenotype of an organism
   (b) Dominant and recessive traits
   (c) Gene and genome
   (d) Homozygous and heterozygous
   (e) Monohybrid and dihybrid cross
   (f) Incomplete Dominance and co-dominance
   (g) Multiple alleles and polygenes
   (h) Test cross and backcross
4. Explain how probability is used to predict the results of genetic crosses.
5. Write a note on the chromosome theory of inheritance.
6. Describe co-dominance with a suitable example.
7. Give an account of the symbols used in human Pedigree analysis
8. Characteristics of autosomal dominant traits
9. Characteristics of X-linked recessive traits
10. Characteristics of autosomal recessive traits
11. Characteristics of X-linked dominant traits
12. Intermediate lethal alleles
13. Phenylketoneuria
14. Albinism
15. Explain the inheritance of skin colour in humans.
16. Write a note on pleiotropy.

Unit: 2 (10 Marks).

1. Explain the structure of eukaryotic Chromosome.
2. Classify chromosomes on the basis of position of centromere.
3. Explain any two mechanisms of chromosomal basis of sex determination.
4. Explain the inheritance of colour blindness in man.
5. Explain sex determination in man/ Honey bee/ Birds/ Drosophila.

Unit: 2 (05 Marks)

1. Describe the terms euchromatin and heterochromatin.
2. Write a note on polytene chromosomes.
3. Write a note on Lampbrush chromosomes.
4. Write a note on salivary gland chromosome of Drosophila,
5. Write a note on Balbiani rings.
6. Explain endomitosis.
7. Write a note on Gyanandromorphs
8. Explain the role of environment on sex determination.
9. Explain the role of hormones in sex determination.
10. Explain hypertrichosis.
11. Differentiate between sex linked and sex influenced genes.
12. Differentiate between human X and Y chromosome.
13. Differentiate between autosomes and sex chromosomes.
14. Write a note on Lyons hypothesis.
15. What are Barr bodies? Give a scientific reason that Barr bodies are present only in women and not in men.
16. Give a scientific reason that Y chromosome is a sex determining chromosome in man.
17. Explain parthenogenesis.
18. Give scientific reason that the X linked genes affect males more than females in human beings.
19. What is centromere? Explain its role during cell division.

Unit: 3 (10 marks)

1. Describe Griffith transformation experiment.
2. Explain Avery, Macleod, McCarty's experiment
3. Give an account of Hershey Chase experiment of bacteriophage infection.
4. Write a note on types of DNA.
5. Explain RNA as a genetic material.
6. Describe the process of DNA replication
7. Write in detail the process of transcription
8. Discuss the process of translation
9. What is gene expression? Describe the regulation of genes with Lac operon.

Unit 3: (5 Marks)

Write short notes on –

1. Chemical composition of nucleic acid
2. A and B DNA
3. Plasmid
4. Function of mRNA

5. Function of tRNA
6. Genetic code
7. One gene one enzyme hypothesis
8. Concept of operon
9. Z DNA
10. H DNA
11. Chromosomal DNA in prokaryotes
12. Mitochondrial DNA
13. DNA in chloroplast

MODEL QUESTION BANK SEMESTER III

USZO302 (COURSE VI)

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

Unit 1: (05 Marks)

1. Write a note on nutrition apparatus in amoeba.
2. Describe briefly gastro-vascular cavity in hydra.
3. Explain briefly digestive system of earthworm.
4. Explain briefly digestive system of cockroach.
5. Explain briefly digestive system in bivalve.
6. Write a note on Wheel organ of Amphioxus.
7. Explain briefly digestive system of pigeon.
8. Write a note on ruminant stomach.
9. Explain briefly physiology of digestion in cockroach.
10. Write short note on digestion of proteins with respect to man.
11. Write short note on digestion of carbohydrates with respect to man
12. Write short note on digestion lipids with respect to man
13. Give a brief account of enzymes involved in the process of digestion in cockroach
14. Write short note contractile vacuoles as excretory and osmoregulatory structures in protozoa.
15. Write a note on flame cells.
16. Describe the structure of septal nephridia with the help of a neat labeled diagram.
17. Write a note on nephridia as excretory organs in earthworm.
18. Describe briefly excretory and osmoregulatory structures in arthropods.
19. Write a note on Organ of Bojanus

20. Write a note on structure of kidney in fish.
21. Write a note on structure of amphibian kidney.
22. Write a note on structure of kidney in bird.
23. Write a note on structure of mammalian kidney.
24. Write a note on Ammonotelic organisms.
25. Write a note on Ureotelic organisms.
26. Write a note on Uricotelic organisms.
27. Write a note on ultrafiltration
28. Give a brief account of process of urine formation in man.

Unit 2: (10 Marks)

1. Describe briefly air sacs in pigeon.
2. Describe briefly the process of internal respiration with respect to man
3. Describe briefly the process of external respiration with respect to man
4. Give a brief account of types of circulating fluids present in animals.
5. Describe briefly mechanism of working of heart.
6. Describe briefly two chambered heart in shark.
7. Describe briefly structure of heart of frog.
8. Describe briefly heart of crocodile.
9. Give a brief account of heart of man.

Unit 2: (5 Mark)

1. Write short note on cutaneous respiration.
2. Write a note on Spiracle in cockroach.
3. Write a note on book lungs in spider.
4. Explain the structure of gills of bony fish
5. Explain the structure of gills of cartilaginous fish.
6. Describe briefly lungs as respiratory organs in frog.
7. Describe briefly lungs as respiratory organs in man.
8. Explain briefly accessory respiratory structure in *Anabas*.
9. Write short note on open circulation.
10. Write short note on closed circulation.
11. Write a note on heart of cockroach
12. Write a note on heart of earthworm.

Unit 3:(10 Marks)

1. Describe different types of neurons on the basis of structure and function.

2. Explain conduction of nerve impulse.
3. Briefly describe synaptic transmission.
4. Describe briefly hormones as chemical messenger.
5. Explain briefly feedback mechanism of hormone regulation.
6. Explain sol-gel theory of amoeboid movement.
7. Describe ciliary movement in *Paramecium*.
8. Give an account on types of wings in insects.
9. Explain types of fins in Pisces.
10. Describe sliding filament theory.
11. Describe briefly asexual reproduction in animals.
12. Describe the structure and function of tube feet.
13. Describe spermatogenesis.
14. Describe oogenesis.
15. Describe briefly the structure of mammalian gametes.
16. Give an account on types of fertilization.

Unit 3: (5 Marks)

1. Write a note on irritability in *Paramecium*
2. Write a note on resting potential of nerve membrane.
3. Write a note on action potential of nerve membrane.
4. Describe different types of neurons on the basis of structure.
5. Describe briefly different types of neurons on the basis of functions.
6. Describe the structure of synapse.
7. Write a note on striated muscle fibre.
8. Describe the structure of cilia.
9. Give an account on types of legs in insects.
10. Write a note on ovo-vivipariry.
11. Write a note on viviparity.
12. Write a note on oviparity.
13. Describe the structure of mammalian egg.
14. Describe the structure of mammalian sperm.
15. Describe the formation of gemmule in sponges.
16. Write a note on budding as asexual reproduction in mammals

MODEL QUESTION BANK SEMESTER III

USZO303 (COURSE VII)

AC 11/03/2016
Item No. 4.7

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

Unit 1: (5 Marks)

1. How do honey bees communicate for foraging?
2. What is classical conditioning? Explain with an example.
3. What is imprinting? Explain different types of imprinting.
4. What do you mean by learning? Describe any two types of learning.
5. Describe the various ways in which ants communicate.
6. What is the significance of mimicry and warning coloration?
7. What is mimicry? Explain different types of mimicry with examples.
8. What is displacement activity? In what situations do displacement activities occur? Explain with examples.
9. Write notes on:
   i. Migration in Fish
   ii. Territorial behavior
   iii. Schooling behavior in fish
   iv. Altruism and kinship
10. Which are the different types of social groups seen in non human primates?
11. Comment on any two aspects of non human primate social behavior.

Unit 2: (10 Marks)

1. Give an account of the life history and pathogencity of the parasite causing amoebic dysentery.
2. Describe in detail part of life cycle of *P.vivax* in mosquito.
3. Give an account of asexual cycle of *P.vivax* in man.
4. Describe the life history of *Taenia solium*.
5. Give an account of parasitic adaptive features of *Taenia solium*.
6. Give an account of the life history of *Fasciola hepatica.*
7. Give an account of the life history of filarial worm and discuss its pathogenic effects.
8. Describe the life history of bedbug and suggest some control measures.
9. Give an account of the life history of *Sarcoptes scabiei.*
10. Give an account of the life history of head louse *Pediculus.*
11. What is bird flu? How is it spread and what are its symptoms?
12. How would you control the transmission of anthrax among humans?
13. How is anthrax transmitted to man?

Unit 2: (5 Marks)

1. Describe the structure of *E. histolytica.*
2. Where is *E. histolytica* found and what disease does it cause?
3. Write a short note on pathogenecity of *E. histolytica*.

4. Briefly describe the life cycle of *E. histolytica*.
5. What are the symptoms of malaria? Write its control measures.
6. Give an account of symptoms and pathogenecity of *Plasmodium vivax.*
7. Illustrate the complete life history of *T. solium* with the help of diagram only.
8. What is the effect of *Fasciola* on the hosts?
9. What are the primary and secondary hosts of *Wuchereria bancrofti*? Which stage of *Wuchereria* is infective for man?
10. What is host specificity?
11. What are the signs and symptoms of bird flu?
12. How is rabies transmitted?
13. What are the preventive measures to be taken to prevent infection of rabies virus?
14. What is toxoplasmosis and what are its causes?
15. Write notes on:
    i. Parasitic adaptations in endoparasites
    ii. Cysticercus or bladder worm.
    iii. Pathogenecity of *Wuchereria*
    iv. Control measures of bedbug.
    v. Types of hosts

Unit 3: (10 Marks)

1. What does the modern method of apiculture include? Explain in brief.
2. How is an artificial bee hive constructed?
3. How do you select the flora and bee species for apiculture?
4. What are the benefits of vermiculture?
5. Describe any two methods of vermiculture.
6. How is raw milk processed?
7. What are the common adulterants of milk in India?

Unit 3: (5 Marks)

1. State the economic importance of honey and beeswax.
2. What are the disadvantages of the indigenous method of apiculture?
3. How does the wax moth cause damage to the honey comb?
4. Name any two bee enemies and explain how they harm the bees.
5. Give an account of the commonly found species of honey bee in India.
6. What are the advantages of the modern method of apiculture?
7. Which type of flora is beneficial for apiculture?
8. Which type of bee is suitable for apiculture?
9. What is the chemical composition of honey?
10. What is the suitable material for culturing earthworms?
11. What are the advantages of processing dairy products?

12. What is skimmed milk and toned milk? How are they prepared?
13. How is recombined milk prepared?

PRACTICAL
USZOP3 (Course V)
Skeleton-Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Major Question 15 marks

Q1. Extraction and detection of DNA
OR
Q1. Extraction and detection of RNA

Minor Question 07 marks

Q2. Mounting of Barr bodies
OR
Q2. Study of mitosis-Temporary squash preparation of Onion root tip
OR
Q2. Detection of blood groups and Rh factor

Q3. Problems on Genetics and Molecular biology (Transcription /Genetic code) (01 problem each) 10 marks

Q4. Identification 08 marks

a. Chromosome morphology
b. Pedigree analysis

Q5. Viva and Journal 10 marks

PRACTICAL
USZOP3 (Course VI)
Skeleton-Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Major Question 15 marks

Q1. Urine analysis—Normal and abnormal constituents

Minor Question 10 marks

Q2. Detection of ammonia in water excreted by fish
OR
Q2. Detection of uric acid from excreta of Birds

Q3. Identification 15 marks

c. Nutritional apparatus
d. Respiratory structures
e. Locomotory organs
f. Study of hearts
g. Permanent slides on reproduction

Q4. Viva 05 marks

Q5. Journal 05 marks

PRACTICAL
USZOP3 (Course VII)
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Major Question 12 marks

Q1. Extraction of Casein from Milk and its qualitative estimation
OR
Q1. Preparation of paneer from the given milk sample.
OR
Q1. Measurement of density of milk using different samples by lactometer

Minor Question 08 marks

Q2. Life Cycle of Honey Bee and Bee Hive
OR
Q2. Mouthparts of Honey Bee
OR
Q2. Legs of Honey Bee

OR

Q2. Sting Apparatus of Honey Bee

Q3. Identifiy and describe as per instructions 15 marks

a. Ethology
b. Protozoan parasites
c. Helminth parasites
d. Ectoparasites
e. Parasitic adaptations

Q4. Project submission and Viva based on project 10 marks

Q5. Journal 05 marks

	SEMESTER IV		
	USZO401 COURSE-8		
	Origin and evolution of Life, Population genetics and evolution, Scientific Attitude methodology , writing and ethics		
	Unit 1 : Origin and evolution of Life	**15L**	**30hrs**
	Objective : ➢ *To impart scientific knowledge to the learner about how life originated and evolved on our planet.*		
	Desired Outcomes : ➢ *Learner will gain insight about origin of life.* ➢ *Learner will know about the different theories of evolution.*		
1.1	**Introduction.** ➢ Origin of universe ➢ Chemical evolution - Miller-Urey experiment, Haldane and Oparin theory ➢ Origin of life ➢ Origin of eukaryotic cell.	**5L**	**10hrs**
1.2	**Evidences in favour of organic evolution** ➢ Evidences from: Geographical distribution, Paleontology	**4L**	**8hrs**

	Anatomy, Embryology, Physiology and Genetics.		
1.3	**Theories of organic evolution** ➢ Theory of Lamarck. ➢ Theory of Darwin and Neo Darwinism ➢ Mutation Theory ➢ Modern Synthetic theory ➢ Weismans germplasm theory ➢ Neutral theory of molecular evolution	**6L**	**12hrs**
	Unit 2: Population genetics and evolution	**15L**	**28hrs**
	Objective: ➢ *To develop learner's knowledge and understanding of genetic variability within a population and how the change in the gene pool leads to evolution of species.*		
	Desired Outcomes: ➢ *Learner would understand the forces that cause evolutionary changes in natural populations.* ➢ *Learner would comprehend the mechanisms of speciation* ➢ *Learner will be able to distinguish between microevolution, macroevolution and megaevolution*		
2.1	**Introduction to population genetics**	**1L**	**3hrs**
	➢ Definition		
2.1.1	**Brief explanation of the following terms:** ➢ Population, gene pool, Allele frequency, genotype frequency, phenotype frequency, microevolution		
2.2	**Population genetics**	**6L**	**10hrs**
2.2.1	➢ Hardy-Weinberg Law		
2.2.2	➢ Factors that disrupt Hardy Weinberg equilibrium- ➢ Mutation, ➢ Migration (Gene flow), ➢ Non-random mating (Inbreeding, inbreeding depression, Assortative mating-Positive and Negative, Disassortative mating), ➢ Genetic drift (Sampling error, fixation, Bottleneck effect and Founder effect) ➢ Natural Selection.		

2.2.3	**Patterns of Natural Selection** ➢ Stabilizing selection, ➢ Directional Selection (Examples: Peppered moth, Antibiotic resistance in bacteria, Pesticide resistance) ➢ Disruptive selection		
2.3	**Evolutionary genetics** ➢ **Genetic variation:** Genetic basis of variation-Mutations and Recombination (crossing over during meiosis, independent assortment of chromosomes during meiosis and random union of gametes during fertilization). ➢ Nature of genetic variations- Genetic polymorphism, Balanced polymorphism, Mechanisms that preserve balanced polymorphism-Heterozygote advantage and frequency dependent selection, ➢ Neutral variations. ➢ Geographic variation (Cline).	**8L**	**15hrs**
2.3.1	➢ **Species Concept:** Biological species concept and evolutionary species concept		
2.3.2	**Speciation and Isolating mechanisms**: ➢ Definition and Modes of speciation (Allopatric, Sympatric , Parapatric and Peripatric) ➢ Geographical isolation ➢ Reproductive isolation and its isolating mechanisms (Prezygotic and Postzygotic)		
2.3.3	**Macroevolution and Megaevolution :** ➢ Concept and Patterns of macroevolution (Stasis, Preadaptation /Exaptation, Mass extinctions, Adaptive radiation and Coevolution), ➢ Megaevolution		
	Unit 3: Scientific Attitude methodology , writing and ethics	**15L**	**32hrs**
	***Objective*:** ➢ *To inculcate scientific temperament in the learner.*		
	Desired outcome: ➢ *The learner will develop qualities such as critical thinking and analysis.* ➢ *The learner will develop the skills of scientific communication.* ➢ *Learner will understand the ethical aspects of research*		
3.1	**Process of science: A dynamic approach to investigation**	**4L**	**10hrs**

	The Scientific method ➢ Deductive reasoning and inductive reasoning, Critical thinking, Role of chance in scientific discovery		
	Scientific Research ➢ Definition, difference between method and methodology characteristics, types		
	Steps in the Scientific Method ➢ Identification of research problem, Formulation of research hypothesis, Testing the hypothesis using experiments or surveys, Preparing research/study design including methodology and execution (Appropriate controls, sample size, technically sound, free from bias, repeat experiments for consistency), Documentation of data, Data analysis and interpretation, Results and Conclusions		
	Dissemination of data ➢ Reporting results to scientific community (Publication in peer-reviewed journals, thesis, dissertation, reports, oral presentation, poster presentation)		
	Application of knowledge ➢ Basic research, Applied research, Translational research, Patent		
3.2	**Scientific writing**	**4L**	**10hrs**
	Structure and components of a research paper ➢ (Preparation of manuscript for publication of research paper)- Title, Authors and their affiliations, Abstract, Keywords and Abbreviations, Introduction, Material and Methods, Results, Discussion, Conclusions, Acknowledgement, Bibliography; Figures, Tables and their legends		
3.3	**Writing a review paper**	**3L**	**5hrs**
	Structure and components of research report: ➢ Report writing, Types of report		
	Computer application ➢ Plotting of graphs, Statistical analysis of data. Internet and its application in research-Literature survey, Online submission of manuscript for publication		
3.4	**Ethics**	**3L**	**5hrs**
	Ethics in animal research ➢ The ethical and sensitive care and use of animals in research, teaching and testing, Approval from Institutional animal ethics		

	Committee.		
	Ethics in clinical research ➢ Approval from Clinical Research Ethics Committee ➢ Informed consent		
	Approval from concerned/ appropriate authorities : ➢ National Biodiversity Authority ➢ State Biodiversity Board ➢ Forest Department		
	Conflict of interest		
3.5	**Plagiarism**	**1L**	**2hrs**
	USZO402 COURSE-9		
	Cell Biology, Endo membrane System and Biomolecules		
	Unit 1 : Cell Biology	**15L**	**26hrs**
	***Objective* :** ➢ *To study the structural and functional organization of cell with an emphasis on nucleus, plasma membrane and cytoskeleton.*		
	***Desired outcome* :** ➢ *Learner would acquire insight of transport mechanisms for maintenance and composition of cell*		
1.1	**Introduction to cell biology** ➢ Definition and scope ➢ Cell theory ➢ Generalized prokaryotic , eukaryotic cell: size, shape and structure	**2L**	**4hrs**
1.2	**Nucleus** ➢ Size, shape, number and position ➢ Structure and functions of interphase nucleus ➢ Ultrastructure of nuclear membrane and pore complex ➢ Nucleolus: general organization, chemical composition and functions ➢ Nuclear sap/ nuclear matrix ➢ Nucleocytoplasmic interactions	**5L**	**6hrs**
1.3	**Plasma membrane** a. Fluid Mosaic Model b. Junctional complexes c. Membrane receptors	**4L**	**8hrs**

	d. Modifications: Microvilli, Desmosomes and Plasmodesmata.		
1.4	**Transport across membrane** **a.** Diffusion and Osmosis **b.** Transport: Passive and Active **c.** Endocytosis and Exocytosis	**2L**	**4hrs**
1.5	**Cytoskeletal structures** ➢ Microtubules: Composition and functions ➢ Microfilaments: Composition and functions	**2L**	**4hrs**
	Unit 2 Endomembrane System	**15L**	**25hrs**
	***Objective* :** ➢ *To acquaint the learner with Ultrastructure of cell organelles and their functions.*		
	Desired outcome: ➢ *Learner would appreciate the intricacy of endomembrane system.* ➢ *Learner would understand the interlinking of endomembrane system for functioning of cell.*		
2.1	**Endoplasmic reticulum** ➢ Discovery, occurrence and Types ➢ Ultrastructure and Functions	**3L**	**5hrs**
2.2	**Golgi complex** ➢ Origin, occurrence and morphology ➢ Ultra structure and functions	**3L**	**4hrs**
2.3	**Lysosomes** ➢ Origin, occurrence and polymorphism ➢ Ultrastructure and Functions	**3L**	**4hr**
2.4	**Mitochondria** ➢ Origin, occurrence and morphology ➢ Ultrastructure and functions ➢ Marker enzymes, Mitochondrial biogenesis, Semiautonomous nature of mitochondria	**6L**	**12hrs**
	Unit 3: Biomolecules	**15L**	**30hrs**
	***Objective* :** ➢ *To give learner insight into the structure of biomolecules, and their role in sustenance of life.*		

	Desired outcome: ➢ *The learner will realize the importance of biomolecules and their clinical significance.*		
3.1	**Biomolecules** ➢ Concept of Micromolecules and Macromolecules**.**	2L	5hrs
3.2	**Carbohydrates** ➢ Definition Classification, Properties and Isomerism, Glycosidic bond ➢ Structure of a. Monosaccharides- Glucose and Fructose b. Disaccharides - Lactose and Sucrose c. Polysaccharides - Cellulose, Starch, Glycogen and Chitin ➢ Biological role and their Clinical significance	4L	8hrs
3.3	**Amino Acids and Proteins** ➢ Basic structure of amino acid, classification of amino acids , Essential and Non-essential amino acids, Peptide bond ➢ Protein conformation : Primary, Secondary, Tertiary, Quaternary ➢ Types of proteins – Structural (Keratin, Collagen) and functional proteins (Hemoglobin) ➢ Biological role and their Clinical significance	5L	8hrs
3.4	**Lipids** ➢ Definition, classification of lipids with examples, Ester linkage ➢ Physical and Chemical properties of lipids ➢ Saturated and Unsaturated fatty acids , Essential fatty acids ➢ Triacylglycerols, Phospholipids (Lecithin and Cephalin) and Steroids (Cholesterol). ➢ Biological role and their Clinical significance	4L	5hrs
3.5	**Vitamins** ➢ Water soluble vitamins(e.g. Vit C, Vit B12) ➢ Lipid soluble vitamins (e.g. Vit A, Vit D) ➢ Biological role and their Clinical significance	2L	4hrs
	USZO403 COURSE-10		
	Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms		
	UNIT 1: Comparative Embryology	**15L**	**25hrs**
	Objective: ➢ *To acquaint the learner with key concepts of embryology.*		
	Desired Outcomes:		

	➢ *Learner will be able to understand and compare the different pre- embryonic stages* ➢ *Learner will be able to appreciate the functional aspects of extra embryonic membranes and classify the different types of placentae.*		
1.1	➢ Types of Eggs- Based on amount and distribution of yolk	2L	4hrs
1.2	➢ Structure and Types of Sperms	1L	1hr
1.3	➢ Types of Cleavages.- Holoblastic and Meroblastic	1L	3hrs
1.4	➢ Types of Blastulae	1L	3hrs
1.5	➢ Gastrulation	2L	4hrs
1.6	➢ Coelom -Formation and types	2L	3hrs
1.7	➢ Extra embryonic membranes ➢ Types of Placentae -Based on histology, morphology and implantation	6L	10hrs
	UNIT 2: Aspects of Human Reproduction	**15L**	**30 hrs**
	Objectives: ➢ *To acquaint the learners with different aspects of human reproduction.* ➢ *To make them aware of the causes of infertility, techniques to overcome infertility and the concept of birth control*		
	Desired Outcome: ➢ *Learners will able to understand human reproductive physiology* ➢ *Learners will become familiar with advances in ART and related ethical issues.*		
2.1	**Human Reproductive system and Hormonal regulation** ➢ Anatomy of human male and female reproductive system ➢ Hormonal regulation of Reproduction and Impact of age on reproduction-Menopause and Andropause	2L	4hrs
2.2	**Contraception & birth control** ➢ Difference between contraception and birth control ➢ Natural Methods: Abstinence , Rhythm method, Temperature method, cervical mucus or Billings method, Coitus interruptus, Lactation amenorrhea ➢ Artificial methods **:** Barrier methods, Hormonal methods, Intrauterine contraceptives, Sterilization, Termination , Abortion	2L	4hrs

2.3	**Infertility** **Female infertility** ➢ **Causes -** Failure to ovulate; production of infertile eggs ; damage to oviducts (oviduct scarring and PID or Pelvic inflammatory disease, TB of oviduct), Uterus (T. B. of uterus and cervix) ➢ **Infertility associated disorders (**Endometriosis, Polycystic Ovarian syndrome (PCOS), POF (Primary ovarian failure) STDs (Gonorrhea, Chlamydia, Syphilis and Genital Herpes); Antibodies to sperm; Genetic causes-Recurrent abortions; Role of endocrine disruptors	4L	8hrs
	Male infertility **Causes :** Testicular failure, infections of epididymis, seminal vesicles or prostate, hypogonadism, cryptorchidism , congenital abnormalities ,Varicocele , Blockage, Azoospermia, Oligospermia, abnormal sperms, autoimmunity, ejaculatory disorders and Idiopathic infertility.		
2.5	**Treatment of Infertility** ➢ Removal /reduction of causative environmental factors ➢ Surgical treatment ➢ Hormonal treatment- Fertility drugs ➢ Assisted Reproductive Technology ➢ Sperm banks, cryopreservation of gametes and embryos ➢ Surrogacy	4L	8hrs
2.6	**Techniques and Ethical considerations of ART** ➢ In vitro fertilization, Embryo transfer (ET), Intra-fallopian transfer (IFT), Intrauterine transfer (IUT), Gamete intra-fallopian transfer (GIFT), intra-zygote transfer (ZIFT), Intracytoplasmic sperm injection (ICSI) with ejaculated sperm and sperm retrieved from testicular biopsies – Testicular sperm extraction (TESE), Pronuclear stage transfer (PROST).	3L	6hrs
	UNIT3: Pollution and its effect on organisms	**15L**	**27hrs**
	***Objective*:** ➢ *To provide a panoramic view of impact of human activities leading to pollution and its implications.*		
	Desired Outcome : ➢ *The learners will be sensitized about the adverse effects of pollution and measures to control it.*		

3.1	**Air Pollution** ➢ Types and sources of air pollutants ➢ Effects and control measures	3L	6hrs
3.2	**Water Pollution** ➢ Types and sources of water pollutants ➢ Effects and control measures	3L	6hrs
3.3	**Soil Pollution** ➢ Types and sources of soil pollutants ➢ Effects and control measures	3L	4hrs
3.4	**Noise pollution** ➢ Different means of noise pollution ➢ Effects and control measures	1L	3hrs
3.5	**Radioactive pollution**	1L	2hrs
3.6	**Solid waste Pollution** ➢ Types and sources, ➢ Effects and control	2L	4hrs
3.7	**Pollution – Climate change and Global warming**	2L	2hrs

	SEMESTER IV
	Practical USZOP4 (Course VIII)
1	Study of population density by Line transect method & Quadrant method and calculate different diversity indices. a. Index of Dominance. b. Index of frequency. c. Rarity Index. d. Shannon Index. e. Index of species diversity

2	Study of Prokaryotic cells (bacteria) by Crystal violet staining technique.
3	Study of Eukaryotic cells (WBCs) from blood smear by Leishman's stain.
4	Identification and study of fossils a. Arthropods : Trilobite b. Mollusca: Ammonite c. Aves : Archaeopteryx
5	Identification of a) Allopatric speciation (Cyprinodon species) b) Sympatric speciation.(hawthorn fly and apple maggot fly) c) Parapatric speciation. (Snail)
6	Bibliography/ Abstract writing.
7	Preparation of Power point presentation
	Practical USZOP4 (Course IX)
1	Study of permeability of cell through plasma membrane (Osmosis in blood cells).
2	Measurement of cell diameter by occulometer (by using permanent slide)
3	Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Barfoed's test, Anthrone test)
4	Qualitative tests for protein (Ninhydrin test, Biuret test, Millon's test, Xanthoproteic test)
5	Qualitative test for lipids (solubility test, Sudan III test)
6	Study of rancidity of lipid by titrimetric method.
7	Ultra structure of cell organelles – (Electron micrographs) a. Nucleus b. Endoplasmic reticulum (Smooth and rough) c. Mitochondria. d. Golgi apparatus e. Lysosomes
8	Study of clinical disorders due to carbohydrates, proteins and lipids imbalance.(photograph to be provided / significance to given and disorder to be identified) a. Hyperglycemia , Hypoglycemia. b. Thalessemia, Kwashiorkar c. Obesity, Atherosclerosis
	Practical USZOP4 (Course X)

1	Estimation of Dissolved oxygen from the given water sample .
2	Estimation of Salinity by refractometer from the given water sample.
3	Estimation of conductivity by conductometer from the given water sample .
4	Determination of blood pressure by spyghmomanometer.
5	Detection of Creatinine in urine.
6	Determination of blood sugar by GOD and POD method
7	Study of bleeding time and clotting time.
8	Study of the following permanent slides, museum specimens and materials. a. Mammalian sperm and ovum. b. Egg types –Fish eggs, Frog eggs , Hen's egg. c. Cleavage , blastula and gastrula (Amphioxus, Frog and Bird).
9	Study of commercially important fishery (Catla, Rohu, Catfish, Mackerel, Pomfret, Bombay duck, Prawn/ Shrimp, Crab, Lobster, Edible oyster)
10	Review writing based on programmes telecast by Doordarshan, Discovery channel, Gyandarshan, UGC programmes, Animal planet
11	Study of natural ecosystem and field report of the visit

Note -The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.
#There shall be at least one excursion/field trip

Semester IV

REFERENCE AND ADDITIONAL READING

COURSE-VIII (USZO401)

1. Theory of Evolution- Smith, Cambridge Press, and Low price Ed.
2. Evolution - Strickberger, CBS publication
3. Evolution- P.S.Verma and Agarwal
4. Introduction to Evolution by Moody
5. Biology. E. P. Solomon, L. R. Berg, D. W. Martin, Thompson Brooks/Cole

6. Biology -The Unity and Diversity of Life**.** C. Starr, R. Taggart, C. Evers, L. Starr, Brooks/Cole Cengage learning International Edition
7. Research Methodology, Methods and Techniques- by C.R. Kothari, Wiley Eastern Ltd. Mumbai
8. Practical research planning and design 2nd edition- Paul D Leedy, Macmilan Publication

COURSE-IX (USZO402)

1. Cell Biology by Singh and Tomoar Rastogi Publication..
2. Cell and molecular Biology E.D.P De Robertis and E.M.R Robertis ,CBS Publishers and Distributors
3. The cell A molecular Approach Goeffrey M.Coper ASM Press Washington D.C.
4. A textbook of cytology Suruchi Tyagi Dominant Publishers and Distributors New Delhi.
5. Cell and molecular biology Gupta P.K , Rastogi Publication, India.
6. Cell Biology Pawar C.B. Himalaya publication
7. Molecular Biology of the cell (6th ed) by the Insertus
8. Campbell Biology (9th Ed.)
9. Principles of Biochemistry, 2005, 2nd and 3rd edn. Lehninger A.L. Nelson D.L. and Cox M.M ,
10. Biochemistry, Dushyant Kumar Shrma, 2010, Narosa Publishing house PVT.Ltd.
11. Fundamentals of Biochemistry, Dr AC Deb, 1983, New Central Book Agency Ltd.
12. A Textbook of Biochemistry, 9th edition , Dr. Rama Rao A.V.S.S and Dr A Suryalakshmi.
13. Biochemistry-G Zubay , Addison Wesley, 1983
14. Biochemistry, L Stryer, 3rd/4th/5th ed, 1989 , Freeman and Co. NY
15. Harper's Biochemistry,1996, 26th edition, Murray R.K. Granner D.K. Mayes P.A. Rodwell V.M. Hall international USA
16. Outline of Biochemistry, 1976, E.E. Conn and P.K. Stumpf. John Wiley and Sons USA

COURSE-X (USZO403)

1. Developmental Biology- 5th Edition, Scot F. Gilbert, Sinauer Associates Inc.
2. Developmental Biology- Subramoniam T., Narosa Publishers.
3. Developmental Biology- Berril N.J., Tata Mc Graw –Hill Publication.
4. Essential Reproduction-Martin H. Johnson, Wiley-Blackwell Publication.
5. Chick Embryology- Bradley M. Pattern.
6. Embryology- Mohan P. Arora.
7. Chordate Embryology- Dalela,Verma and Tyagi

8. Human Anatomy and Physiology. E. L. Marieb, Pearson Education Low Price Edition
9. Biological Science. Taylor, Green and Stout. Cambridge Publication
10. Biology. E. P. Solomon, L. R. Berg, D. W. Martin, Thompson Brooks/Cole
11. Human Biology-Daniel D Chiras Jones and Bartlett
12. The Physiology of Reproduction Vol I & II - E.K .Nobil and JU. D.Neil, Raven Press, New York.
12. Air Pollution, Kudesia V.P. Pragati Prakasan, Meerut
13. Fundamentals of Air Pollution Daniel A. Vallero,Academic press 5th Edition
14. Principles and Practices of Air Pollution Control and Analysis J.R. Mudakani I K International Pub. House Pvt. Ltd.
15. Text Book of Air Pollution and its Control, S.C.Bhatia Atlantic
16. Water Pollution, Kudesia V.P., Pragati Prakasan, Meerut
17. A text book of Environmental Chemistry and Pollution Control, S.S.Dogra, Swastic Pub, New Delhi
18. Practical Methods for water and Air Pollution Monitoring,S.K.Bhargava,New Age International
19. Hand Book of Water and waste water Analysis, Kanwaljit Kaur, Atlantic
20. Aquatic Pollution by Edward A. Laws
21. Environmental Science and Technology, Stanely E.Manahan
22. Environmental Chemistry, A.K. De, New Age International
23. A Text Book of Environmental Studies, Gurdeep R.Chatwal, Harish Sharma, Madhu Arora, Himalaya

SCHEME OF EXAMINATION (THEORY)

(a) Internal assessment of twenty five (25) marks per course per semester should be conducted according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2015-16.
(b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton question paper pattern.
(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory
Figures to the right indicate full marks

Time: 2.5 hours **Total marks: 75**

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

(a) Match the column (b) MCQ
(c) Give one word for (d) True and False
(e) Define the term (f) Answer in one sentence etc

MODEL QUESTION BANK SEMESTER IV

USZO401(COURSE VIII)

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

Unit 1: (10 Marks)

1. Write explanatory notes on;
    1. Lamarckism. 2. Darwinism and Neo Darwinism.
    3. Mutation Theory 4. Modern Synthetic theory.5.Weismans germplasm theory
2. Neutral theory of molecular evolution. (Some of them can be asked as short notes as well)
3. Discuss evidences in favor of organic evolution by giving examples of geographical distribution.
4. Discuss evidences in favor of organic evolution by giving examples of genetics, and molecular biology.
5. Discuss evidences in favor of organic evolution by giving examples of physiology and biochemistry.
6. Discuss brief account of Origin of eukaryotic cell.

Unit 1: (5 Marks)

1. Describe chemical evolution with Miller-Urey experiment.
2. Describe chemical evolution with Haldane and Oparin theory.
3. Write short notes on: 1. Mutation Theory 2. Modern Synthetic theory

Unit 2: (10 Marks)

2. Define the term 'population genetics'. Describe in brief the various evolutionary forces that tend to disturb genetic equilibrium and introduce changes in the gene pool of a population.
3. State Hardy Weinberg's law of equilibrium and discuss its salient features.
4. Give an account of the different factors involved in speciation.
5. Describe the different types of speciation.
6. Explain the role of geographic isolation in the development of new species.
7. Explain the role of reproductive isolation in the development of new species.
8. Discuss the pre-zygotic barriers responsible for reproductive isolation.
9. Discuss the post-zygotic barriers which lead to reproductive isolation.
10. Describe the sources of genetic variation in natural populations.
11. Explain the nature and extent of genetic variation within populations.
12. Describe the mechanisms that preserve balanced polymorphisms.
13. Describe the salient features of microevoluion.
14. Compare and contrast microevolution and macroevolution.
15. Explain the salient features of macroevolution.
16. Give an account of the different patterns of macroevolution.
17. Elaborate on the role of adaptive radiation and extinction in macroevolution.
18. What do you understand by the term natural selection? Describe the different types of natural selection with suitable examples.

19. What is megaevolution? Explain the mechanism of megaevolution using a suitable example.

Unit 2: (5 Marks)

1. Explain the term 'gene pool'. How does evolution operate via the gene pools of populations?
2. Differentiate between:
   i. Allopatric and Sympatric speciation
   ii. Biological and evolutionary species
   iii. Microevolution and macroevolution
   iv. Stabilizing selection and disruptive selection
   v. Convergent and divergent evolution
3. Explain stabilizing selection with the help of a suitable example.
4. How does the example of sickle cell allele illustrate heterozygote advantage?
5. How does frequency-dependent selection affect genetic variation within a population over time?
6. Write short notes on:
   i. Role of mutations in evolution
   ii. Role of migration in evolution
   iii. Non-random mating
   iv. Role of natural selection in evolution
   v. Genetic drift
   vi. Bottleneck effect
   vii. Founder effect
   viii. Directional evolution in peppered moth
   ix. Evolution of Antibiotic resistance in bacteria
   x. Geographic variation
   xi. Genetic polymorphism
   xii. Parapatric speciation
   xiii. Adaptive radiation
7. What is the biological species concept? What are its limitations? How does it differ from the evolutionary species concept?
8. Explain the concept of co evolution using suitable examples

Unit 3: (10 Marks)

1. Describe briefly, the steps towards preparing a research design.
2. Describe literature survey, collection of data and its analysis.
3. What is a patent and how is it obtained?
4. Write an account on application of statistics in research.

Unit 3: (5 Marks)

1. Define research. State the difference between research method and research methodology.
2. Write a note on computer application in research.
3. Describe briefly identification of research problem and formulation of research hypothesis.
4. What is abstract writing?
5. What is plagiarism?
6. What is bibliography?
7. Write a short note on ethics in animal research.
8. Write a short note on ethics in clinical research.

MODEL QUESTION BANK SEMESTER IV

USZO402(COURSE IX)

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

Unit 1: (10 marks)

1. Explain prokaryotic cell
2. Explain Eukaryotic cell
3. Give an account of cell theory
4. Describe ultrastructure of nuclear membrane
5. State chemical composition and functions of nucleolus
6. Describe nucleocytoplasmic reactions
7. Explain r RNA processing
8. Describe fluid mosaic model of plasma membrane
9. Give an account of active and passive transport
10. Describe various modifications of plasma membrane
11. Explain pinacocytosis, phagocytosis and secretion
12. Give an account of cell permeability
13. Differentiate prokaryotic and eukaryotic cell

Unit 1: (5 Marks)

1. Virus
2. Nuclear matrix
3. Number ad position of nucleus
4. Molecular organization of chromatin

5. Unit membrane concept
6. Nucleolus
7. Membrane receptors
8. Sandwich model
9. Cell coat
10. Cell recognition

Unit 2: (10 Marks)

1. Describe Ultrastructure of Endoplasmic Reticulum
2. Describe types of Endoplasmic Reticulum and add a note on their functions
3. Give an account of Ultrastructure and functions of Golgi complex
4. Explain Ultrastructure and morphology of lysosomes
5. Comment on Semiautonomous nature of mitochondria
6. Describe ultrastructure and function of mitochondria
7. Explain protein import in mitochondria
8. Explain ultrastructure of microtubules
9. Describe chemical composition and functions of microfilaments
10. Give an account of biochemical composition and functions of microtubules.

Unit 2: (5 Marks)

1. Occurrence of Endoplasmic Reticulum
2. Significance of Endoplasmic Reticulum
3. Occurrence and morphology of golgi complex
4. Polymorphism in lysosomes
5. Significance of lysosomes
6. Occurrence and morphology of lysosomes
7. Marker enzymes in mitochondria
8. Significance of mitochondria
9. Location and significance of microfilaments
10. Significance of microtubules.

Unit 3 : (10 Marks)

1. Discuss the chemical behavior of carbon and a note on variety of functional groups of biomolecules.
2. Explain the concept of micromolecules and macromolecules.
3. Describe the structure of water. Add a note on physic-chemical properties of water.
4. Define carbohydrate. Add a note on its classification.

5. What are carbohydrates? Explain the classification of carbohydrate with suitable examples.
6. Define and explain the classification of carbohydrates.
7. Explain with suitable example monosaccharide and disssacharide.
8. Discuss the properties of carbohydrates.
9. What are disaccharides? Draw the structures of maltose and sucrose.
10. What are polysaccharides? How are they classified. Write the structures of glycogen and heparin/ chitin and heparin.
11. Discuss about chemical structure of the monosaccharides/ disaccharides
12. What are amino acids? Discuss classification of amino acids based on R group.
13. Give an account of primary and secondary structure of proteins.
14. Write an account on tertiary and quarternary structure of proteins.
15. Describe the structure of saturated and unsaturated fatty acids.
16. Define essential fatty acids. Add a note on it.
17. Define lipids. Write a note on mono, di and triglcrides/ phospholipids
18. What are fatty acids? Add a note on types of fatty acids.
19. Structure and functions of water soluble vitamins
20. Structure and functions of lipid soluble vitamins

Unit 3: (5mks)

1. Write a short note on - monomers and polymers.
2. Write note on properties of carbohydrates.
3. Give an account of polysaccharides.
4. With suitable example explain glycosidic bond.
5. Explain the linkage in lactose and sucrose.
6. Give the biological importance of carbohydrates.
7. What are essential and nonessential amino acids?
8. Give an account of properties of amino acids.
9. Define and explain peptide bond with suitable example.
10. Types of proteins with suitable examples
11. Biological roles of proteins.
12. Peptide bond
13. Types of fatty acids.
14. Biological role of lipids
15. Properties of fatty acid
16. Sterol and waxes
17. Describe properties of fatty acid/lipids
18. Discuss the clinical significance of protein / carbohydrate /lipids/
19. write short note on clinical significance of lipids

20. Write a note on - isomerism in carbohydrates and amino acids?
21. Structure and functions of vitamin A/ vitamin B/ vitamin C/ vitamin D

MODEL QUESTION BANK SEMESTER IV

USZO403(COURSE X)

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

Unit-1: (10 Marks)

1) Classify the different types of eggs..
2) Briefly explain types and structure of sperms (any two animals).
3) Define cleavage Explain types of cleavages.
4) Give brief account on various types of blastulae.
5) What is gastrulation ? Explain gastrulation in frog.
6) Give an account of process of coelom formation and its types.
7) Explain various types of placentae in mammals.
8) Give an account of extra embryonic membranes.
9) Describe briefly the types of eggs on the basis of amount and distribution of yolk.
10) Describe the early development of mammalian egg upto gastrulation.
11) Give a brief note on different types of sperms.
12) Write a note on blastula and explain its types.
13) Explain the comparative process of embryo formation**.**

Unit-1: (5-Marks)

1) Draw neat labeled diagram and explain any one of the following:
   (Microlecithal, ,Alecithal, Homolecithal, Heterolecithal, Isolecithal, Telolecithal, Centrolecithal, Discoidal).
2) Explain structure of sperms of frog/ reptiles/ birds/ mammals.
3) Short note on Holoblastic cleavage. Or Meroblastic cleavage.
4) Short note on equal or unequal cleavage.
5) Short note on Discoblastula or Coeloblastula.
6) Short note on centroblastula or amphiblastula or stereoblaastula,
7) Explain the process of coelom formation in process of gastrulation.
8) Short notes on : Amnion /Chorion/Allantois/Yolk sac.
9) Explain the function of Amnion /Chorion/Allantois/Yolk sac/.
10) Short note on Yolk sac placenta or Synsesmochorial placenta/Discoidal placenta/Cotyledonary placenta/Hemo-chorial placenta/Zonary placenta/Diffuse placenta

11) Short note on Deciduous or non-deciduous placenta
12) Write the functions of placenta.
13) What are the roles of Embryonic membranes and extra embryonic membranes

Unit 2: (10 Marks)

1. Describe male reproductive system and its hormonal regulation.
2. Describe female reproductive system and its hormonal regulation.
3. Define reproduction. Explain the hormonal regulation of reproduction.
4. What is contraception? Explain different methods of contraception.
5. How is contraception different from birth control?
6. Define infertility and explain the causes of female infertility.
7. What are the causes of male infertility?
8. Explain the hormonal treatment for infertility using drugs.
9. Describe the methods of treatment of infertility.
10. Give a brief account of infertility related disorders.
11. What are sperm banks? Add a note on cryopreservation of sperms.
12. What is testicular biopsy? Explain Testicular sperm extraction (TESE), Pronuclear stage transfer (PROST).
13. What are the steps involved in Embryo transfer (ET) and / Intra-fallopian transfer (IFT)?
14. What is ART technique? Add a note on IVF (steps, success and ethical considerations).

Unit 2: (5 Marks)

1. Write a note on impact of age on reproductive stage –
    a. Menopause
    b. Andropause
2. What is amenorrhea?
3. What are IUD's? How do they work as barriers for fertilization?
4. How does sterilization act as a method of contraception?
5. Write a note on birth control.
6. What is the difference between natural and artificial methods of contraception?
7. How is T.B. a cause of female infertility?
8. What are the genetic causes of infertility?
9. Write a note on STD's as infertility related disorders?
10. Explain briefly:
    a. Impotency
    b. Surrogacy
    c. Endometriosis
    d. Idiopathic infertility

11. What are the roles of endocrine disruptions in infertility?
12. Explain the role of the following in infertility:
    a. Gonorrhea
    b. Syphilis
    c. Genital Herpes
    d. Chlamydia
13. Write a note on treatment of infertility by removal of causative environmental factors.
14. Write a note on Ethical considerations of ART.

Unit 3: (10 Marks)

1. What are the causes, effects and control measures for air pollution?
2. What are the causes, effects and control measures for water pollution?
3. What are the causes, effects and control measures for soil pollution?
4. What are the causes, effects and control measures for noise pollution?
5. Define air pollution and give an account of hazardous air pollutants.
6. Explain the causes of nutrient pollution and its control measures.
7. What is ocean littering? Explain in details the causes and control measures for ocean littering?
8. Describe the alteration of metabolism of micro-organisms due to soil pollution.
9. Explain noise pollution along with its measurement and permissible limits.
10. Give a brief account of methods to control gaseous / particulate matters.
11. What is pollution? Add notes on:
    a. Effect of air pollution on vegetation.
    b. Effect of noise pollution on animals.
12. How can the people be made aware of pollution and its effects?

Unit 3: (5 Marks)

1. Explain the effects of air pollution on human beings.
2. What are different types of pollutants that cause air pollution?
3. Write short notes on:
    a. Ozone depletion
    b. Green house gases
    c. Global warming
    d. Acid rain
    e. Sonic boom
    f. Acoustic zoning
4. Explain the effect of thermal pollution on biodiversity.
5. Write a note on solar radiation.

6. Write a note on ionizing radiation
7. How are heavy metals responsible for nutrient pollution? Cite some examples of effects of heavy metal pollution on human health.
8. How is oil spills a cause of water pollution / ocean littering?
9. How do pesticides and fertilizers contaminate water?
10. How can oil be retracted back from sea / ocean?
11. What are the effects of soil pollution on food chain?
12. How are POP's and ordinary salts responsible for nutrient pollution?
13. What are the auditory / non – auditory effects of noise pollution.
14. Why is the necessity to save drinking water?

PRACTICAL
USZOP4 (Course VIII)
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Major Question 12 marks

Q1. Study Population density by Line transect or Quadrant method and calculate biodiversity indices (any 2)

Minor Question 08 marks

Q2. Prepare a smear to show prokaryotic cell.

OR

Q2. Prepare a smear to show eukaryotic cell.

Q3. Identify and describe as per instructions 08 marks

a. Fossils
b. Speciation

Q4. From the given article prepare the bibliography/ abstract 06 marks

Q5. Power point presentation 06 marks

Q6. Viva and Journal 10 marks

AC 11/03/2016
Item No. 4.7

PRACTICAL
USZOP4 (Course IX)
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Major Question 15 marks

Q1. Study of permeability of cell through plasma membrane (Osmosis in blood cells).

OR

Q1. Measurement of cell diameter by occulometer (by using permanent slide)

Minor Question 10 marks

Q2. Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Barfoed's test, Anthrone test)

OR

Q2. Qualitative tests for proteins (Ninhydrin test, Biuret test, Millon's test, Xanthoproteic test)

OR

Q2. Qualitative test for lipids (Solubility test, Sudan III test)

OR

Q2. Study of rancidity of lipids by titrimetric method

Q3. Identify and describe as per instructions 15 marks

1. Ultra structure of cell organelles (a, b & c)
2. Clinical disorders (d & e)

Q4. Viva 05 marks

Q5. Journal 05 marks

AC 11/03/2016
Item No. 4.7

PRACTICAL
USZOP4 (Course X)
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Major Question 12 marks

Q1. Estimation of Dissolved oxygen from the given water sample
OR
Q1. Detection of Creatinine in urine
OR
Q1. Determination of blood sugar by GOD and POD method

Minor Question 08 marks

Q2. Estimation of Salinity by refractometer from the given water sample
OR
Q2. Estimation of conductivity by conductometer from the given water sample
OR
Q2. Determination of blood pressure by using spyghmomanometer
OR
Q2. Study of bleeding time and clotting time

Q3. Identifiy and describe as per instructions 15 marks

1. Permanent slides (a &b)
2. Fishery (c ,d & e)

Q4. Field Report and viva based on it. 10 marks

Q5. Journal 05 marks

University of Mumbai

Bachelor of Commerce (B.Com) Programme
Three Year Integrated Programme- Six Semesters
Course Structure

Under Choice Based Credit, Grading and Semester System

To be implemented from Academic Year- 2016-2017 Progressively

Faculty of Commerce

B.Com Programme

Under Choice Based Credit, Grading and Semester System
Course Structure

F.Y.B.Com

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***		***1A***	***Discipline Specific Elective(DSE) Courses***	
1	Accountancy and Financial Management - I	**03**	1	Accountancy and Financial Management - II	**03**
1B	***Discipline Related Elective(DRE) Courses***		***1B***	***Discipline Related Elective(DRE) Courses***	
2	Commerce - I	**03**	2	Commerce - II	**03**
3	Business Economics - I	**03**	3	Business Economics - II	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Courses (AECC)***		***2A***	***Ability Enhancement Compulsory Courses (AECC)***	
4	Business Communication - I	**03**	4	Business Communication II	**03**
5	Environmental Studies I	**03**	5	Environmental Studies II	**03**
2B	****Skill Enhancement Courses (SEC)***		***2B***	*****Skill Enhancement Courses (SEC)***	
6	Any one course from the following list of the courses	**02**	6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
7	Mathematical and Statistical Techniques - I	**03**	7	Mathematical and Statistical Techniques - II	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***		*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - I	1	Foundation Course - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

S.Y.B.Com

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***		***1A***	***Discipline Specific Elective(DSE) Courses***	
1	Accountancy and Financial Management III	**03**	1	Accountancy and Financial Management IV	**03**
2	Financial Accounting and Auditing V - Introduction to Management Accounting	**03**	2	Financial Accounting and Auditing VI - Auditing	**03**
1B	***Discipline Related Elective(DRE) Courses***		***1B***	***Discipline Related Elective(DRE) Courses***	
3	Commerce III	**03**	3	Commerce IV	**03**
4	Business Economics III	**03**	4	Business Economics IV	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	****Skill Enhancement Courses (SEC) Group A***		**2A**	*****Skill Enhancement Courses (SEC) Group A***	
5	*Any one course from the following list of the courses	**03**	5	*Any one course from the following list of the courses	**03**
2B	****Skill Enhancement Courses (SEC) Group B***		**2B**	*****Skill Enhancement Courses (SEC) Group B***	
6	Any one course from the following list of the courses	**02**	6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
7	Business Law I	**03**	7	Business Law II	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) Group A for Semester III (Any One)***		****List of Skill Enhancement Courses (SEC) Group A for Semester IV (Any One)***	
1	Advertising I	1	Advertising II
2	Field Sales Management I	2	Field Sales Management II
3	Public Relations I	3	Public Relations II
4	Mass Communication I	4	Mass Communication II
5	Travel & Tourism Management Paper I	5	Travel & Tourism Management II
6	Journalism I	6	Journalism II
7	Company Secretarial Practice I	7	Company Secretarial Practice II
8	Rural Development I	8	Rural Development II
9	Co-operation I	9	Co-operation II
10	Mercantile Shipping I	10	Mercantile Shipping II
11	Indian Economic Problem I	11	Indian Economic Problem II
12	Computer Programming I	12	Computer Programming II
13	Logistic and Supply Chain Management I	13	Logistic and Supply Chain Management I
14	Direct & Indirect Taxation I	14	Direct & Indirect Taxation II
Note: Course selected in Semester III will continue in Semester IV			

*List of Skill Enhancement Courses (SEC) Group B for Semester III (Any One)		** List of Skill Enhancement Courses (SEC) Group B for Semester IV (Any One)	
1	Foundation Course - III	1	Foundation Course - IV
2	Foundation Course in NSS - III	2	Foundation Course in NSS - IV
3	Foundation Course in NCC - III	3	Foundation Course in NCC - IV
4	Foundation Course in Physical Education - III	4	Foundation Course in Physical Education - IV
Note: Course selected in Semester III will continue in Semester IV			

T.Y.B.Com

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***		***1A***	***Discipline Specific Elective(DSE) Courses***	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**	1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**
1B	***Discipline Related Elective(DRE) Courses***		***1B***	***Discipline Related Elective(DRE) Courses***	
3	Commerce V	**03**	3	Commerce VI	**03**
4	**Any one course from the following list of the courses	**03**	4	**Any one course from the following list of the courses	**03**
5	Business Economics V	**03**	5	Business Economics VI	**03**
2	****Project Work***		***2***	****Project Work***	
6	Project Work I	**03**	6	Project Work II	**03**
	Total Credits	**20**		**Total Credits**	**20**

Note: *Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 03 credits. A project work may be undertaken in any area of discipline specific courses/ discipline related elective courses*

****List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)***		****List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)***	
Group A: Advanced Accountancy			
1	Financial Accounting and Auditing VII - Financial Accounting	1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting	2	Financial Accounting and Auditing X - Cost Accounting
Group B:Business Management			
1	Business Studies Paper I	1	Business Studies Paper III
2	Business Studies Paper II	2	Business Studies Paper IV
Group C: Banking and Finance			
1	Banking and Finance Paper I	1	Banking and Finance Paper III
2	Banking and Finance Paper II	2	Banking and Finance Paper IV
Group D: Commerce			
1	Commerce Paper I	1	Commerce Paper III
2	Commerce Paper II	2	Commerce Paper IV
Group E: Quantitative Techniques			
1	Quantitative Techniques Paper I	1	Quantitative Techniques Paper III
2	Quantitative Techniques Paper II	2	Quantitative Techniques Paper IV
Group F: Economics			
1	Economics Paper I	1	Economics Paper III
2	Economics Paper II	2	Economics Paper IV
Note: Group selected in Semester V will continue in Semester VI			

List of Discipline Related Elective(DRE) Courses for Semester V (Any One)		***List of Discipline Related Elective(DRE) Courses for Semester VI (Any One)***	
1	Trade Unionism and Industrial Relations Paper I	1	Trade Unionism and Industrial Relations. Paper II
2	Computer system & Applications Paper I	2	Computer system & Applications Paper II
3	Export Marketing Paper I	3	Export Marketing Paper II
4	Marketing Research Paper I	4	Marketing Research Paper II
5	Investment Analysis Portfolio Paper I	5	Investment Analysis Portfolio Paper II
6	Transport Management Paper I	6	Transport Management Paper II
7	Entrepreneurship& M.S.S.I. Paper I	7	Entrepreneurship& M.S.S.I. Paper II
8	International Marketing Paper I	8	International Marketing Paper II
9	Merchant Banking Paper I	9	Merchant Banking Paper II
10	Direct & Indirect Taxation Paper I	10	Direct & Indirect Taxation Paper II
11	Labour Welfare & Practice Paper I	11	Labour Welfare & Practice Paper II
12	Purchasing & Store keeping Paper I	12	Purchasing & Store keeping Paper II
13	Inventory Management & Cost Reduction Paper I	13	Inventory Management & Cost Reduction Paper II
14	Insurance Paper I	14	Insurance Paper II
15	Banking Law & Practice Paper I	15	Banking Law & Practice Paper II
16	Regional Planning Paper I	16	Regional Planning Paper II
17	Rural Marketing Paper I	17	Rural Marketing Paper II
18	Elements of Operational Research Paper I	18	Elements of Operational Research Paper II
19	Psychology of Human Behaviour at work Paper I	19	Psychology of Human Behaviour at work Paper II
Note: Course selected in Semester V will continue in Semester VI			

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses of
B.Com. Programme
First Year
Semester I and II

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year- 2016-2017)

Faculty of Commerce

B.Com. Programme

Under Choice Based Credit, Grading and Semester System
Course Structure

F.Y.B.Com.

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE)Courses***		***1A***	***Discipline Specific Elective(DSE)Courses***	
1	Accountancy and Financial Management I	**03**	1	Accountancy and Financial Management II	**03**
1B	***Discipline Related Elective(DRE)Courses***		***1B***	***Discipline Related Elective(DRE)Courses***	
2	Commerce I	**03**	2	Commerce II	**03**
3	Business Economics I	**03**	3	Business Economics II	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Courses (AECC)***		***2A***	***Ability Enhancement Compulsory Courses (AECC)***	
4	Business Communication I	**03**	4	Business Communication II	**03**
5	Environmental Studies I	**03**	5	Environmental Studies II	**03**
2B	****Skill Enhancement Courses (SEC)***		***2B***	*****Skill Enhancement Courses (SEC)***	
6	Any one course from the following list of the courses	**02**	6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
7	Mathematical and Statistical Techniques I	**03**	7	Mathematical and Statistical Techniques II	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***		*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - I	1	Foundation Course - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester I

No. of Courses	Semester I	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE)Courses***	
1	Accountancy and Financial Management I	**03**
1B	***Discipline Related Elective(DRE)Courses***	
2	Commerce I	**03**
3	Business Economics I	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Courses (AECC)***	
4	Business Communication I	**03**
5	Environmental Studies I	**03**
2B	****Skill Enhancement Courses (SEC)***	
6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
7	Mathematical and Statistical Techniques I	**03**
	Total Credits	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***	
1	Foundation Course - I
2	Foundation Course in NSS - I
3	Foundation Course in NCC - I
4	Foundation Course in Physical Education - I

Revised Syllabus of Courses of B.Com. Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)
Discipline Specific Elective(DSE) Courses

1.Accountancy and Financial Management I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Accounting standards issued by ICAI and Inventory valuation	15
2	Final Accounts	15
3	Departmental Accounts	15
4	Accounting for Hire Purchase	15
	Total	**60**

Sr. No.	Modules / Units
1	**Accounting standards issued by ICAI and Inventory valuation**
	• **Accountingstandards:** Concepts,benefits,proceduresforissueofaccountingstandardsVariousAS : **AS – 1: Disclosure of Accounting Policies** Purpose, AreasofPolicies, DisclosureofPolicies,DisclosureofChangeinPolicies, Illustrations **AS–2:Valuationof Inventories (Stock)** Meaning,Definition, Applicability,MeasurementofInventory, DisclosureinFinalAccount, ExplanationwithIllustrations. **AS – 9: Revenue Recognition** MeaningandScope, Transactionsexcluded,SaleofGoods,RenderingofServices, EffectsofUncertainties, Disclosure, Illustrations. • **Inventory Valuation** Meaning of inventories Cost for inventory valuation Inventory systems : Periodic Inventory system and Perpetual Inventory System Valuation: Meaning and importance Methods of Stock Valuation as per AS – 2 : FIFO and Weighted Average Method Computation of valuation of inventory as on balance sheet date:If inventory is taken on a date after the balance sheet or before the balance sheet
2	**Final Accounts**
	Expenditure: Capital, Revenue Receipts: Capital, Revenue Adjustment and Closing Entries Final accounts of Manufacturing concerns (Proprietary Firm)
3	**Departmental Accounts**
	Meaning Basis of Allocation of Expenses and Incomes/Receipts Inter Departmental Transfer : at Cost Price and Invoice Price Stock Reserve Departmental Trading and Profit & Loss Account and Balance Sheet
4	**Accounting for Hire Purchase**
	Meaning Calculation of interest Accounting for hire purchase transactions by asset purchase method based on full cash price Journal entries, ledger accounts and disclosure in balance sheet for hirer and vendor(excluding default, repossession and calculation of cash price)

Revised Syllabus of Courses of B.Com. Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)-
Discipline Related Elective (DRE) Courses

2.Commerce I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Business	12
2	Business Environment	11
3	Project Planning	12
4	Entrepreneurship	10
	Total	**45**

Sr. No.	Modules / Units
1	**Business**
	Introduction: Concept, Functions, Scope andSignificance of business. Traditional and Modern Concept of business. **Objectives of Business:**Steps in setting business objectives, classification of business objectives,Reconciliation of Economic and Social Objectives. **New Trends in Business:** Impact of Liberalization,Privatization and Globalization,Strategy alternatives in thechanging scenario, Restructuring and turnaround strategies
2	**Business Environment**
	Introduction: Concept and Importance of business environment, Inter-relationship between Business and Environment **Constituents of Business Environment:**Internal and External Environment, Educational Environment and its impact,International Environment – Current Trends in the World, International Trading Environment – WTO and Trading Blocs and their impact on Indian Business.
3	**Project Planning**
	Introduction: Business Planning Process; Concept and importance ofProject Planning; Project Report; feasibility Study types and its importance **Business Unit Promotion:**Concept and Stages of Business Unit Promotion, Location – Factors determining location, and Role of Government in Promotion. **Statutory Requirements in Promoting Business Unit:**Licensing and Registration procedure, Filling returns and other documents, Other important legal provisions
4	**Entrepreneurship**
	Introduction: Concept and importance ofentrepreneurship, factorsContributing to Growth ofEntrepreneurship,Entrepreneur and Manager,Entrepreneur and Intrapreneur **The Entrepreneurs:**Types of Entrepreneurs,Competencies ofan Entrepreneur,Entrepreneurship Training andDevelopment centers in India.Incentives to Entrepreneurs inIndia. **Women Entrepreneurs:** Problems and Promotion.

Elective Courses (EC)-
Discipline Related Elective (DRE) Courses

3.Business Economics I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	10
2	Demand Analysis	15
3	Supply and Production Decisions	10
4	Cost of Production	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction**
	Scope and Importance of Business Economics - basic tools- Opportunity Cost principle- Incremental and Marginal Concepts. Basic economic relations - functional relations: equations- Total, Average and Marginal relations- use of Marginal analysis in decision making, The basics of market demand, market supply and equilibrium price- shifts in the demand and supply curves and equilibrium
2	**Demand Analysis**
	Demand Function - nature of demand curve under different markets Meaning, significance, types and measurement of elasticity of demand (Price, income cross and promotional)- relationship between elasticity of demand and revenue concepts **Demand estimation and forecasting:** Meaning and significance - methods of demand estimation : survey and statistical methods (numerical illustrations on trend analysis and simple linear regression)
3	**Supply and Production Decisions**
	Production function: short run analysis with Law of Variable Proportions- Production function with two variable inputs- isoquants, ridge lines and least cost combination of inputs- Long run production function and Laws of Returns to Scale - expansion path - Economies and diseconomies of Scale and economies of scope
4	**Cost of Production**
	Cost concepts: Accounting cost and economic cost, implicit and explicit cost, social and private cost, historical cost and replacement cost, sunk cost and incremental cost -fixed and variable cost - total, average and marginal cost - Cost Output Relationship in the Short Run and Long Run (hypothetical numerical problems to be discussed) **Extensions of cost analysis:** cost reduction through experience - LAC and Learning curve - Break even analysis (with business applications)

Ability Enhancement Courses (AEC)

4. Business Communication I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Theory of Communication	10
2	Obstacles to Communication in Business World	10
3	Business Correspondence	12
4	Language and Writing Skills	13
	Total	**45**

Note:
One tutorial per batch per week in addition to number of lectures stated above (Batch size as per the University norms)

Sr. No.	Modules / Units
1	**Theory of Communication**
	Concept of Communication:Meaning, Definition, Process, Need, FeedbackEmergence of Communication as a key concept in the Corporate and Global worldImpact of technological advancements on Communication **Channels and Objectives of Communication**:**Channels-** Formal and Informal- Vertical, Horizontal, Diagonal, Grapevine **Objectives of Communication**: Information, Advice, Order and Instruction, Persuasion, Motivation, Education,Warning, and Boosting the Morale of Employees(A brief introduction to these objectives to be given) **Methods and Modes of Communication:** Methods: Verbal and Nonverbal, Characteristics of Verbal Communication Characteristics of Non-verbal Communication, Business Etiquette Modes: Telephone and SMS Communication 3 (General introduction to Telegram to be given) Facsimile Communication [Fax] Computers and E- communication Video and Satellite Conferencing
2	**Obstacles to Communication in Business World**
	Problems in Communication /Barriers to Communication: Physical/ Semantic/Language / Socio-Cultural / Psychological / Barriers, Ways to Overcome these Barriers **Listening:** Importance of Listening Skills, Cultivating good Listening Skills – 4 **Introduction to Business Ethics:** Concept and Interpretation, Importance of Business Ethics, Personal Integrity at the workplace, Business Ethics and media, Computer Ethics, Corporate Social Responsibility Teachers can adopt a case study approach and address issues such as the following so as to orient and sensitize the student community to actual business practices: Surrogate Advertising, Patents and Intellectual Property Rights, Dumping of Medical/E-waste, Human Rights Violations and Discrimination on the basis of gender, race, caste, religion, appearance and sexual orientation at the workplace Piracy, Insurance, Child Labour
3	**Business Correspondence**
	Theory of Business Letter Writing: Parts, Structure, Layouts—Full Block, Modified Block, Semi - Block Principles of Effective Letter Writing, Principles of effective Email Writing, **Personnel Correspondence:** Statement of Purpose, Job Application Letter and Resume, Letter of Acceptance of Job Offer, Letter of Resignation [Letter of Appointment, Promotion and Termination, Letter of Recommendation (to be taught but not to be tested in the examination)]

Sr. No.	Modules / Units
4	**Language and Writing Skills**
	Commercial Terms used in Business Communication **Paragraph Writing:** Developing an idea, using appropriate linking devices, etc Cohesion and Coherence, self-editing, etc [Interpretation of technical data, Composition on a given situation, a short informal report etc.] **Activities** ▪ Listening Comprehension ▪ Remedial Teaching ▪ Speaking Skills: Presenting a News Item, Dialogue and Speeches ▪ Paragraph Writing: Preparation of the first draft, Revision and Self – Editing, Rules of spelling. ▪ Reading Comprehension: Analysis of texts from the fields of Commerce and Management

Revised Syllabus of Courses of B.Com. Programme at Semester I with Effect from the Academic Year 2016-2017

Ability Enhancement Courses (AEC)

5.Environmental Studies I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Environment and Ecosystem	13
2	Natural Resources and Sustainable Development	13
3	Populations and Emerging Issues of Development	13
4	Urbanisation and Environment	13
5	Reading of Thematic Maps and Map Filling	08
	Total	**60**

Sr. No.	Modules / Units
1	**Environment and Ecosystem**
	Environment: Meaning, definition, scope and its components; concept of an ecosystem : definition, Characteristics, components and types, functioning and structure; Food Chain and Food Web- Ecological Pyramids - Man and environment relationship; Importance and scope of Environmental Studies.
2	**Natural Resources and Sustainable Development**
	Meaning and definitions ; Classification and types of resources, factors influencing resource; Resource conservation- meaning and methods- l and non-conventional resources, problems associated with and management of water, forest and energy resources- resource utilization and sustainable development
3	**Populations and Emerging Issues of Development**
	Population explosion in the world and in India and arising concerns- Demographic Transition Theory - pattern of population growth in the world and in India and associated problems - Measures taken to control population growth in India; Human population and environement- Environment and Human Health – Human Development Index – The World Happiness Index
4	**Urbanisation and Environment**
	Concept of Urbanisation– Problems of migration and urban environment- changing landuse, crowding and stress on urban resources, degradation of air and water, loss of soil cover impact on biodiversity, Urban heat islands – Emerging Smart Cities and safe cities in India - Sustainable Cities
5	**Reading of Thematic Maps and Map Filling**
	Reading of Thematic Maps(4 Lectures) Located bars, Circles, Pie charts, Isopleths, Choroplethand Flow map, Pictograms - Only reading and interpretation. Map Filling: (4 Lectures) Map filling of World (Environmentally significant features) using point, line and polygon segment. Concept and Calculation of Ecological Footprint

Skill Enhancement Courses (SEC)

6. Foundation Course - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Indian Society	05
2	Concept of Disparity- 1	10
3	Concept of Disparity-2	10
4	The Indian Constitution	10
5	Significant Aspects of Political Processes	10
	Total	**45**

Sr. No.	Modules / Units
1	**Overview of Indian Society**
	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference
2	**Concept of Disparity- 1**
	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media;Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities
3	**Concept of Disparity-2**
	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic differences
4	**The Indian Constitution**
	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution
5	**Significant Aspects of Political Processes**
	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics

Topics for Project Guidance: Growing Social Problems in India:

- *Substance abuse- impact on youth & challenges for the future*
- *HIV/AIDS- awareness, prevention, treatment and services*
- *Problems of the elderly- causes, implications and response*
- *Issue of child labour- magnitude, causes, effects and response*
- *Child abuse- effects and ways to prevent*
- *Trafficking of women- causes, effects and response*

Note:

Out of the 45 lectures allotted for 5 units for Semester I, about 15 lectures may be allotted for project guidance

Skill Enhancement Courses (SEC)

6.Foundation Course in NSS - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NSS	10
2	Concept of Society and Social Issues in India	15
3	Indian Constitution and Social Justice	10
4	Human Personality and National Integration	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to NSS**
	Introduction to National Service Scheme(NSS) Orientation and structure of National Service Scheme(NSS) National Service Scheme(NSS)- its objectives The historical perspective of National Service Scheme(NSS) National Service Scheme(NSS)- Symbol and its meaning National Service Scheme(NSS)- its hierarchy from national to college level **National Service Scheme(NSS) Regular activities** Distribution of working hours- Association between issues and programs- community project- urban rural activities, Association- modes of activity evaluation
2	**Concept of Society and Social Issues in India**
	History and philosophy of social sciences in India Concept of society- Development of Indian society - Features of Indian Society- Division of labour and cast system in India **Basic social issues in India** Degeneration of value system, Family system, Gender issues, Regional imbalance
3	**Indian Constitution and Social Justice**
	Indian Constitution Features of Indian Constitution - Provisions related to social integrity and development **Social Justice** Social Justice- the concept and its features Inclusive growth- the concept and its features
4	**Human Personality and National Integration**
	Dimensions of human personality Social Dimension of Human personality- Understanding of the socity Physical Dimension of Human personality- Physical Exercise, Yoga, etc. **National integration & Communal Harmony** National Integration- its meaning, importance and practice Communal Harmony- its meaning, importance and practice

Skill Enhancement Courses (SEC)

6.Foundation Course in NCC - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NCC, National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training, Environment Awareness and Conservation	10
4	Personality Development and Leadership	10
5	Specialized Subject: Army/ Navy/ Air	05
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to NCC, National Integration & Awareness**
	Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion. • Genesis, Aims, Objectives of NCC & NCC Song • Organisation& Training • Incentives & Benefits • Religions, Culture, Traditions and Customs of India • National Integration: Importance and Necessity • Freedom Struggle
2	**Drill: Foot Drill**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • General and Words of Command • Attention, Stand at Ease and Stand Easy, Turning and Inclining at the Halt • Sizing, Forming Up in Three Ranks and Numbering, Open and Close Order March and Dressing • Saluting at the Halt, Getting On Parade, Dismissing and Falling Out • Marching, Length of Pace and Time of Marching in Quick Time and Halt, Slow March and Halt • Turning on the March and Wheeling. • Saluting on the March. • Formation of squad and Squad Drill.
3	**Adventure Training, Environment Awareness and Conservation**
	Adventure Training **Desired outcome**: The students will overcome fear & inculcate within them the sense of adventure , sportsmanship , espirit-d-corp and develop confidence , courage , determination, diligence and quest for excellence. • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing,Scuba Diving etc **Environment Awareness and Conservation** Desired outcome: The student will be aware of the conservation of natural resources and protection of environment. • Natural Resources – Conservation and Management • Water Conservation and Rainwater Harvesting

Sr. No.	Modules / Units
4	**Personality Development and Leadership**
	Desired outcome: The student will develop an all-round personality with adequate leadership traits to deal / contribute effectively in life. • Introduction to Personality Development • Factors Influencing /Shaping Personality: Physical, Social, Physiological, Philosophical and Psychological • Self Awareness Know yourself/ Insight • Change Your Mind Set • Communication Skills: Group Discussion / Lecturettes (Public Speaking) • Leadership Traits • Types of Leadership
5	**Specialized Subject: Army Or Navy Or Air**
	<u>Army</u> **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Armed Force** • Basic organisation of Armed Forces • Organisation of Army • Badges and Ranks **B. Introduction to Infantry and weapons and equipments** • Characteristics of 7.62mm SLR Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning **C. Military history** • Biographies of renowned Generals (Carriapa / Sam Manekshaw) • Indian Army War Heroes- PVCs **D. Communication** • Types of Communications • Characteristics of Wireless Technologies (Mobile, Wi-Fi etc.) ***OR*** **<u>Navy</u>** **A. Naval orientation and service subjects** • History of the Indian Navy-Pre and Post Independence, Gallantry award winners • Organization of Navy- NHQ, Commands, Fleets, Ships and shore establishments • Types of Warships and their role • Organization of Army and Air Force- Operational and Training commands • Ranks of Officers and Sailors, Equivalent Ranks in the Three Services **B. Ship and Boat Modelling** • Principles of Ship Modelling • Maintenance and Care of tools

Sr. No.	Modules / Units
	C. Search and Rescue • SAR Organization in the Indian ocean **D. Swimming** Floating for three minutes and Free style swimming for 50 meters ***OR*** **<u>AIR</u>** **A. General Service Knowledge** • Development of Aviation • History of IAF **B. Principles of Flight** • Introduction • Laws of Motion • Glossary of Terms. **C. Airmanship** • Introduction • Airfield Layout • Rules of the Air • Circuit Procedure • ATC/RT Procedures • Aviation Medicine **D. Aero- Engines** • Introduction to Aero-engines

Revised Syllabus of Courses of B.Com. Programme at Semester I with Effect from the Academic Year 2016-2017

Skill Enhancement Courses (SEC)

6.Foundation Course in Physical Education-I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Basic Relevant concepts in Physical Education	10
2	Components of Physical Fitness	15
3	Testing Physical Fitness	10
4	Effect of Exercise on various Body System	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Basic Relevant concepts in Physical Education**
	• Dimensions and determinants of Health, Fitness & Wellness • Concept of Physical Education and its importance • Concept of Physical Fitness and its types • Concept of Physical Activity, exercise and its types & benefits
2	**Components of Physical Fitness**
	• Concept of components of Physical Fitness • Concept and components of HRPF • Concept and components of SRPF • Importance of Physical Education in developing physical fitness components.
3	**Testing Physical Fitness**
	• Tests for measuring Cardiovascular Endurance • Tests for measuring Muscular Strength& Endurance • Tests for measuring Flexibility • Tests for measuring Body Composition
4	**Effect of Exercise on various Body System**
	• Effect of exercises on Musculoskeletal system • Effect of exercises on Circulatory System • Effect of exercises on Respiratory System • Effect of exercises on Glandular System

Revised Syllabus of Courses of B.Com. Programme at Semester I with Effect from the Academic Year 2016-2017

Core Courses (CC)

7.Mathematical and Statistical Techniques I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Shares and Mutual Funds	15
2	Permutation, Combination and Linear Programming Problems	15
3	Summarization Measures	15
4	Elementary Probability Theory	15
5	Decision Theory	15
	Total	**75**

Note:

One tutorial per batch per week in addition to number of lectures stated above (Batch size as per the University norms)

Sr. No.	Modules / Units
1	**Shares and Mutual Funds**
	• **Shares:** Concept of share, face value, market value, dividend, equity shares, preferential shares, bonus shares. Simple examples. • **Mutual Funds:**Simple problems on calculation of Net income after considering entry load, dividend, change in Net Asset Value (N.A.V.) and exit load. Averaging of price under the Systematic Investment Plan (S.I.P.)
2	**Permutation, Combination and Linear Programming Problems**
	• **Permutation and Combination:** Factorial Notation, Fundamental principle of counting, Permutation as arrangement, Simple examples, combination as selection, Simple examples, Relation between ${}^{n}C_{r}$ and ${}^{n}P_{r}$ Examples on commercial application of permutation and combination • **Linear Programming Problem:**Sketching of graphs of (i) linear equation Ax + By + C= 0 (ii) linear inequalities. Mathematical Formulation of Linear Programming Problems upto 3 variables. Solution of Linear Programming Problems using graphical method up to two variables.
3	**Summarization Measures**
	• **Measures of Central Tendencies:** Definition of Average, Types of Averages: Arithmetic Mean, Median, and Mode for grouped as well as ungrouped data. Quartiles, Deciles and Percentiles. Using Ogive locate median and Quartiles. Using Histogram locate mode. Combined and Weighted mean. • **Measures of Dispersions:** Concept and idea of dispersion. Various measures Range, Quartile Deviation, Mean Deviation, Standard Deviation, Variance, Combined Variance.
4	**Elementary Probability Theory**
	• **Probability Theory:** Concept of random experiment/trial and possible outcomes; Sample Space and Discrete Sample Space; Events their types, Algebra of Events, Mutually Exclusive and Exhaustive Events, Complimentary events.Classical definition of Probability, Addition theorem (without proof), conditional probability.Independence of Events: $P(A \cap B) = P(A)P(B)$. Simple examples. • **Random Variable:** Probability distribution of a discrete random variable; Expectation and Variance of random variable, simple examples on probability distributions.
5	**Decision Theory**
	Decision making situation, Decision maker, Courses of Action, States of Nature, Pay-off and Pay-off matrix; Decision making under uncertainty, Maximin, Maximax, Minimax regret and Laplace criteria; simple examples to find optimum decision. Formulation of Payoff Matrix. Decision making under Risk, Expected Monetary Value (EMV); Decision Tree; Simple Examples based on EMV. Expected Opportunity Loss (EOL), simple examples based on EOL.

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester II

No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE)Courses***	
1	Accountancy and Financial Management II	**03**
1B	***Discipline Related Elective(DRE)Courses***	
2	Commerce II	**03**
3	Business Economics II	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Courses (AECC)***	
4	Business Communication II	**03**
5	Environmental Studies II	**03**
2B	*****Skill Enhancement Courses (SEC)***	
6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
7	Mathematical and Statistical Techniques II	**03**
	Total Credits	**20**

****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - II
2	Foundation Course in NSS - II
3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - II

Elective Courses (EC)-
Discipline Specific Elective(DSE) Courses

1.Accountancy and Financial Management II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Accounting from Incomplete Records	15
2	Consignment Accounts	15
3	Branch Accounts	15
4	Fire Insurance Claim	15
	Total	**60**

Sr. No.	Modules / Units
1	**Accounting from Incomplete Records**
	Introduction Problems on preparation of final accounts of Proprietary Trading Concern (conversion method)
2	**Consignment Accounts**
	Accounting for consignment transactions Valuation of stock Invoicing of goods at higher price(excluding overriding commission, normal/abnormal losses)
3	**Branch Accounts**
	Meaning/ Classification of branch Accounting for Dependent Branch not maintaining full books: Debtors methodStock and debtors method
4	**Fire Insurance Claim**
	Computation of Loss of Stock by Fire Ascertainment of Claim as per the Insurance Policy Exclude: Loss of Profit and Consequential Loss

Elective Courses (EC)-
Discipline Related Elective(DRE) Courses

2. Commerce II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Concept of Services	12
2	Retailing	12
3	Recent Trends in Service Sector	10
4	E-Commerce	11
	Total	**45**

Sr. No.	Modules / Units
1	**Concept of Services**
	Introduction: Meaning, Characteristics, Scope and Classification of Services – Importance of service sector in the Indian **Marketing Mix Services:** Consumer expectations, Services Mix, - Product, Place, Price, Promotion, Process of Services delivery, Physical evidence and people **Service Strategies:**Market research and Service development cycle, Managing demand and capacity, opportunities and challenges in service sector.
2	**Retailing**
	Introduction: Concept of organized and unorganized retailing , Trends in retailing, growth of organized retailing in India, Survival strategies for unorganized Retailers **Retail Format:** Store format, Non – Store format, Store Planning, design and layout **Retail Scenario:** Retail Scenario in India and Global context – Prospects and Challenges in India.Mall Management – RetailFranchising. FDI in Retailing, Careers in Retailing
3	**Recent Trends in Service Sector**
	ITES Sector: Concept and scope of BPO, KPO, LPO and ERP. **Banking and Insurance Sector:** ATM, Debit & Credit Cards, Internet Banking – Opening of Insurance sector for private players, FDI and its impact on Banking and Insurance Sector in India **Logistics:** Net working – Importance – Challenges
4	**E-Commerce**
	Introduction: Meaning, Features, Functions andScope of E-Commerce-Importance andLimitations of E-Commerce **Types of E-Commerce:**Basic ideas and Major activities of B2C,B2B, C2C. **Present status of E-Commerce in India:**Transition to E-Commerce in India, E-Transition Challenges for Indian Corporates; on-line Marketing Research.

Elective Courses (EC)-
Discipline Related Elective(DRE) Courses

3. Business Economics II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Market structure: Perfect competition and Monopoly	10
2	Pricing and Output Decisions under Imperfect Competition	15
3	Pricing Practices	10
4	Evaluating Capital Projects	10
	Total	**45**

Sr. No.	Modules / Units
1	**Market structure: Perfect competition and Monopoly**
	Perfect competition and Monopoly models as two extreme cases - profit maximisation and the competitive firm's supply curve - Short run and long run equilibrium of a firm and of industry - monopoly - Sources of monopoly power – short run and long- run equilibrium of a firm under Monopoly
2	**Pricing and Output Decisions under Imperfect Competition**
	Monopolistic competition: competitive and monopolistic elements of monopolistic competition - equilibrium of a firm under monopolistic competition, monopolistic competition verses perfect competition- excess capacity and inefficiency - debate over role of advertising (topics to be taught using case studies from real life examples) **Oligopolistic markets:** key attributes of oligopoly - Collusive and non collusive oligopoly market - Price rigidity - Cartels and price leadership models (with practical examples)
3	**Pricing Practices**
	Cost oriented pricing methods: cost – plus (full cost) pricing, marginal cost pricing, Mark up pricing, discriminating pricing, multiple – product pricing - transfer pricing (case studies on how pricing methods are used in business world)
4	**Evaluating Capital Projects**
	Meaning and importance of capital budgeting- steps in capital budgeting - +Techniques of Investment appraisal: Payback Period Method, Net Present Value Method, and Internal Rate of Return Method (with numerical examples)

Revised Syllabus of Courses of B.Com. Programme at Semester II with Effect from the Academic Year 2016-2017

Ability Enhancement Courses (AEC)

4.Business Communication II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Presentation Skills	10
2	Group Communication	15
3	Business Correspondence	10
4	Language and Writing Skills	10
	Total	**45**

Note:

One tutorial per batch per week in addition to number of lectures stated above (Batch size as per the University norms)

Sr. No.	Modules / Units
1	**Presentation Skills**
	Presentations: (to be tested in tutorials only) 4 Principles of Effective Presentation Effective use of OHP Effective use of Transparencies How to make a Power-Point Presentation
2	**Group Communication**
	Interviews: Group Discussion Preparing for an Interview, Types of Interviews – Selection, Appraisal, Grievance, Exit **Meetings:**Need and Importance of Meetings, Conduct of Meeting and Group Dynamics Role of the Chairperson, Role of the Participants, Drafting of Notice, Agenda and Resolutions **Conference:**Meaning and Importance of Conference Organizing a Conference Modern Methods: Video and Tele – Conferencing **Public Relations:** Meaning, Functions of PR Department, External and Internal Measures of PR
3	**Business Correspondence**
	Trade Letters: Order, Credit and Status Enquiry, Collection (just a brief introduction to be given) **Only following to be taught in detail:-** Letters of Inquiry, Letters of Complaints, Claims, Adjustments Sales Letters, promotional leaflets and fliers Consumer Grievance Letters, Letters under Right to Information (RTI) Act [Teachers must provide the students with theoretical constructs wherever necessary in order to create awareness. However students should not be tested on the theory.]
4	**Language and Writing Skills**
	Reports: Parts, Types, Feasibility Reports, Investigative Reports **Summarisation:** Identification of main and supporting/sub points Presenting these in a cohesive manner

Tutorial Activities:

Presentations, Group Discussion, Mock Interviews, Mock Meetings / Conferences, Book Reviews/Summarization, Reading Comprehension: Analysis of texts from the field of Literature

[Suggested Books for Book Reviews: Books from the fields of Management, Finance, and Literature Like – Sun Tzu :The Art of War, Eliyahu M. Goldratt : The Goal , Eliyahu M. Goldratt: It's Not Luck , Spencer Johnson: Who Moved My Cheese, Stephen Lundin, Ph.D, Harry Paul, John Christen: Fish, ChetanBhagat One Night At A Call Center, ChetanBhagat My Three Mistakes , ArindamChoudhary: Count Your Chickens Before They Hatch ,Stephen Covey :Seven Habits of Successful People, George Orwell: Animal Farm, Dr. Abdul Kalam: Wings of Fire]

[N.B.: The above list is only indicative and not prescriptive.]

Revised Syllabus of Courses of B.Com. Programme at Semester II with Effect from the Academic Year 2016-2017

Ability Enhancement Courses (AEC)

4.Environmental Studies II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Solid Waste Management for Sustainable Society	
2	Agriculture and Industrial Development	
3	Tourism and Environment	
4	Environmental Movements and Management	
5	Map Filling	
	Total	**60**

Sr. No.	Modules / Units
1	**Solid Waste Management for Sustainable Society**
	Classification of solid wastes – Types and Sources of Solid Waste ; Effects of Solid Waste Pollution- Health hazards, Environmental Impacts; Solid Waste Management – solid waste management in Mumbai- Schemes and initiatives run by MCGM – role of citizens in waste management in Mumbai
2	**Agriculture and Industrial Development**
	Environmental Problems Associated with Agriculture: Loss of Productivity, Land Degradation ,desertification - Uneven Food Production – Hunger, Malnutrition and Food Security – Sustainable Agricultural practices Environmental Problems Associated with Industries – pollution -Global warming, Ozone Layer Depletion , Acid rain, - Sustainable Industrial practices – Green Business and Green Consumerism, Corporate Social Responsibility
3	**Tourism and Environment**
	Tourism: Meaning, Nature, Scope and importance –Typology of tourism-classification; Tourism potentials in India and challenges before India; New Tourism Policy of India; Consequences of tourism : Positive and Negative Impacts on Economy, Culture and environment- Ecotourism
4	**Environmental Movements and Management**
	Environmental movements in India: Save Narmada Movement, Chipko Movement, Appiko Movement, Save Western Ghat and Save Jaitapur; Environmental Management: Concept, need and relevance; Concept of ISO 14000 and 16000; Concept of Carbon Bank and Carbon Credit.EIA - Environment Protection Acts – Concept and components of Geospatial Technology-Applications of GST in Environmental Management.
5	**Map Filling**
	Map filling of Konkan and Mumbai (Environmentally significant features and GST centers) using point, line and polygon segment. Concept and Calculation of Environmental Performance Index (EPI)

Skill Enhancement Courses (SEC)

6. Foundation Course - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Globalisation and Indian Society	07
2	Human Rights	10
3	Ecology	10
4	Understanding Stress and Conflict	10
5	Managing Stress and Conflict in Contemporary Society	08
	Total	**45**

Sr. No	Modules /Units
1	**Globalisation and Indian Society**
	Understanding the concepts of liberalization, privatization and globalization;Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides.
2	**Human Rights**
	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights;Human Rights constituents with special reference to Fundamental Rights stated in the Constitution
3	**Ecology**
	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life;Sustainable development- concept and components; poverty and environment
4	**Understanding Stress and Conflict**
	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict
5	**Managing Stress and Conflict in Contemporary Society**
	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation;Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in society

Skill Enhancement Courses (SEC)

6. Foundation Course in NSS - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Socio-economic Survey and Special Camp	10
2	Orientation of the College Unit and Communication Skills	15
3	Rapport with Community and Programme Planning	10
4	Government Organisations /Non-Government Organisations	10
	Total	**45**

Sr. No.	Modules / Units
1	**Socio-economic Survey and Special Camp**
	Socio economic survey Socio-economic survey- its meaning and need, Process of Socio-economic survey- design of questionnaire; data collection, data analysis and report writing **Special camping activity** Concept of camp- Identification of community problems- Importance of group living- Team building- Adoption of village- Planning for camp- pre camping, during the course of camp and post camping activities
2	**Orientation of the College Unit and Communication Skills**
	Training and orientation of the program unit in the college Leadership training – formation of need based programmmes- Concept of campus to community(C to C) activities **Communication skills and Documentation** Communication skills- the concept, Verbal, Non-Verbal communication The documentation- Activity Report Writing – basics of NSS accounting – Annual Report – Press note and preparation
3	**Rapport with Community and Programme Planning**
	Working with individual group and community Ice breaking- interaction games – conflict resolution **Program planning** Programme planning- the concept and its features, requirements for successful implementation of program- program flow charting- feedback
4	**Government Organisations /Non-Government Organisations**
	Structure of Government Organisations and Non-Government Organisations Government organisations (GO)- its meaning -Legal set up, functioning, Sources of funding Non-Government organisations (NGO)- its meaning -Legal set up, functioning, Sources of funding National Service Scheme(NSS)- Government organisations (GO) and Non-Government organisations (NGO) **Government schemes for community development** Schemes os Government welfare departments for community development- provisions & examples

Skill Enhancement Courses (SEC)

6.Foundation Course in NCC - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	05
2	Health and Hygiene	10
3	Drill with Arms	10
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	10
	Total	**45**

Sr. No.	Modules / Units
1	**Disaster Management, Social Awareness and Community Development**
	Disaster Management: **Desired outcome:** The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters • Civil Defence Organisation and Its Duties/ NDMA • Types of Emergencies/ Natural Disaster • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. • 'Avan' model of NCC **Social Awareness and Community Development:** **Desired outcome:** The student shall have an understanding about social service and its need, about NGOs and shall participate in community action programmes for betterment of the community. • Basics of Social Service, Weaker Sections of Our Society and Their Needs • Social/ Rural Development Project: MNREGA, SGSY, NSAP etc. • Contribution of Youth towards Social Welfare • Civic Responsibilities • Causes & Prevention of HIV/AIDS; Role of Youth
2	**Health and Hygiene**
	Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. • Structure and Functioning of the Human Body • Hygiene and Sanitation (Personal and Food Hygiene) • Infectious & Contagious Diseases & Their Prevention
3	**Drill with Arms**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • Attention, Stand at Ease and Stand Easy • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • Ground / Take Up Arms • Present From the Order and Vice-versa • General Salute, Salami Shastra
4	**Weapon Training**
	Desired outcome: The student shall have basic knowledge of weapons and their use and handling. • Characteristics of a Rifle / Rifle Ammunition and its Fire Power • Stripping, Assembling, Care and Cleaning and Sight Setting of .22 rifle • Stripping, Assembling, Care and Cleaning of 7.62mm SLR • Loading, Cocking and Unloading • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	Army **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Map reading** • Introduction to types of Maps and Conventional signs • Scales and Grid system • Topographical forms and technical terms • Relief, contours and Gradients • Cardinal points and Types of North • Types of bearings and use of Service Protractor • Prismatic compass and its use and GPS **B. Field Craft and Battle Craft** • Introduction • Judging distance • Description of ground • Recognition, Description and Indication of landmarks and targets ***OR*** **Navy** **A. Naval Communication** • Introduction to Naval Modern Communication, Purpose and Principles ▪ Introduction of Naval communication ▪ Duties of various communication sub-departments • Semaphore ▪ Introduction of position of letters and prosigns ▪ Reading of messages ▪ Transmission of messages **B. Seamanship** • **Anchor work** ▪ Parts of Anchor and Cable, their identification • **Rigging** ▪ Types of ropes and breaking strength- stowing, maintenance and securing of ropes ▪ Practical Bends and Hitches: Reef Knot, Half hitch, Clove Hitch, Rolling Hitch, Timber Hitch, Bow Line, Round Turn and Two half hitch and Bow line on the Bight and its basic elements and uses. ▪ Introduction to Shackles, Hooks, Blocks and Derricks, Coiling Down and Splicing of rope **C. Boat work** • Parts of Boat and Parts of an Oar • Instruction on boat Pulling- Pulling orders • Steering of boat under oars, Practical instruction on Boat Pulling, Precautions while pulling

Sr. No.	Modules / Units
	OR **Air** **A. Air frames** • Aircraft Controls • Landing Gear **B. Instruments** • Basic Flight Instruments **C. Aircraft Particulars** • Aircraft Particulars (Type specific) **D. Aero modelling** • History of Aero modelling • Materials used in Aero modelling • Type of Aero models • Flying/ Building of Aero models

Skill Enhancement Courses (SEC)

6.Foundation Course in Physical Education- II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development of Fitness	10
2	Health, Fitness and Diseases	15
3	Yoga Education	10
4	Daily Schedule of Achieving Quality of Life and Wellness	10
	Total	**60**

Sr. No.	Modules / Units
1	**Development of Fitness**
	• Benefits of physical fitness and exercise and principles of physical fitness • Calculation of fitness index level 1-4 • Waist-hip ratio Target Heart Rate, BMI and types and principles of exercise (FITT) • Methods of training – continues, Interval, circuit, Fartlek and Plyometric
2	**Health, Fitness and Diseases**
	• Definition of obesity and its management • Communicable diseases, their preventive and therapeutic aspectS • Factors responsible for communicable diseases • Preventive and therapeutic aspect of Communicable and non- communicable diseases
3	**Yoga Education**
	• Meaning and history of yoga • Ashtang yoga and types of yoga • Types of Suryanamaskar and Technique of Pranayam • Benefits of Yoga
4	**Daily Schedule of Achieving Quality of Life and Wellness**
	• Daily schedule based upon one's attitude, gender, age &occupation. • Basic – module: - Time split for rest, sleep, diet, activity & recreation. • Principles to achieve quality of life:- positive attitude, daily regular exercise, control over food habits & healthy hygienic practices.

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Core Courses (CC)

7.Mathematical and Statistical Techniques II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Functions, Derivatives and Their Applications	15
2	Interest and Annuity	15
3	Bivariate Linear Correlation and Regression	15
4	Time series and Index Numbers	15
5	Elementary Probability Distributions	15
	Total	**75**

Note:

One tutorial per batch per week in addition to number of lectures stated above (Batch size as per the University norms)

Sr. No.	Modules / Units
1	**Functions, Derivatives and Their Applications**
	Concept of real functions: Constant function, linear function, x^n,e^x,a^x,logx. Demand, Supply, Total Revenue, Average Revenue, Total cost, Average cost and Profit function. Equilibrium Point, Break-even point. **Derivative of functions:** ▪ Derivative as rate measure, Derivative of x^n,e^x,a^x,logx. ▪ Rules of derivatives: Scalar multiplication, sum, difference, product, quotient (Statements only), Simple problems. Second order derivatives. ▪ Applications: Marginal Cost, Marginal Revenue, Elasticity of Demand. Maxima and Minima for functions in Economics and Commerce. (Examination Questions on this unit should be application oriented only.)
2	**Interest and Annuity**
	Interest: Simple Interest, Compound Interest (Nominal& Effective Rate of Interest), Calculations involving upto 4 time periods. **Annuity:** Annuity Immediate and its Present value, Future value. Equated Monthly Installments (EMI) using reducing balance method & amortization of loans. Stated Annual Rate & Affective Annual Rate Perpetuity and its present value. Simple problems involving up to 4 time periods.
3	**Bivariate Linear Correlation and Regression**
	Correlation Analysis: Meaning, Types of Correlation,Determinationof Correlation: Scatter diagram, Karl Pearson's method of Correlation Coefficient (excluding Bivariate Frequency Distribution Table) and Spearman's Rank Correlation Coefficient. **Regression Analysis:** Meaning, Concept of Regression equations, Slope of the Regression Line and its interpretation. Regression Coefficients (excluding Bivariate Frequency Distribution Table), Relationship between Coefficient of Correlation and Regression Coefficients , Finding the equations of Regression lines by method of Least Squares.
4	**Time series and Index Numbers**
	Time series: Concepts and components of a time series. Representation of trend by Freehand Curve Method, Estimation of Trend using Moving Average Method and Least Squares Method (Linear Trend only). Estimation of Seasonal Component using Simple Arithmetic Mean for Additive Model only (For Trend free data only). Concept of Forecasting using Least Squares Method. **Index Numbers:** Concept and usage of Index numbers, Types of Index numbers, Aggregate and Relative Index Numbers, Lasperye's, Paasche's, Dorbisch-Bowley's, Marshall-Edgeworth and Fisher's ideal index numbers, Test of Consistency: Time Reversal Test and Factor Reversal Test. Chain Base Index Nos. Shifting of Base year. Cost of Living Index Numbers, Concept of Real Income, Concept of Wholesale Price Index Number. (Examples on missing values should not be taken)

5	**Elementary Probability Distributions**
	Probability Distributions: ▪ Discrete Probability Distribution: Binomial, Poisson (Properties and applications only, no derivations are expected) ▪ Continuous Probability distribution: Normal Distribution. (Properties and applications only, no derivations are expected)

Tutorial:

Two tutorials to be conducted on each unit i.e. 10 tutorials per semester. At the end of each semester one Tutorial assignment of 10 marks should be given.

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Reference Books

Reference Books
Accountancy and Financial Management
• *Introduction to Accountancy by T. S. Grewal, S. Chand and Company (P) Ltd., New Delhi Advance Accounts by Shukla & Grewal, S. Chand and Company (P) Ltd., New Delhi* • *Advanced Accountancy by R. L Gupta and M Radhaswamy, S. Chand and Company (P) Ltd., New Delhi* • *Modern Accountancy by Mukherjee and Hanif, Tata Mc. Grow Hill & Co. Ltd., Mumbai Financial Accounting by LesileChandwichk, Pentice Hall of India Adin Bakley (P) Ltd.* • *Financial Accounting for Management by Dr. Dinesh Harsalekar, Multi-Tech. Publishing Co. Ltd., Mumbai.* • *Financial Accounting by P. C. Tulsian, Pearson Publications, New Delhi Accounting Principles by Anthony, R.N. and Reece J.S., Richard Irwin Inc.* • *Financial Accounting by Monga, J.R. Ahuja, GirishAhujaandShehgal Ashok, Mayur Paper Back* • *Compendium of Statement & Standard of Accounting, ICAI.* • *Indian Accounting Standards, Ashish Bhattacharya, Tata Mc. Grow Hill & Co. Ltd., Mumbai Financial Accounting by Williams , Tata Mc. Grow Hill & Co. Ltd., Mumbai* • *Company Accounting Standards by ShrinivasanAnand, Taxman. Financial Accounting by V. Rajasekaran, Pearson Publications, New Delhi. Introduction to Financial Accounting by Horngren, Pearson Publications.* • *Financial Accounting by M. Mukherjee.M. Hanif. Tata McGraw Hill Education Private Ltd; New Delhi*
Commerce
• *Business Organisation Management Maheshwari, Rajendra P ,Mahajan, J.P.,International Book House* • *Business Organisation, Maheshwari, Rajendra P, Mahajan, J.P., International Book House* • *Introduction To Commerce, Vikram, Amit, Atlantic Pub* • *A Course Book On Business Environment, Cherunilam,Francis, Himalaya Pub* • *Business Environment, Cherunilam,Francis, Himalaya Pub* • *Essentials Of Business Environment, Aswathappa,K., Himalaya Pub* • *Essentials Of Business Environment, Aswathappa, Himalaya Pub* • *Strategic Management, Kapoor, Veekkas, Taxmann* • *Strategic Management, David,Fred R., Phi Leraning* • *Strategic Management, Bhutani, Kapil, Mark Pub.* • *Strategic Management, Bhutani, Kapil, Mark Pub.* • *Entrepreneurship, Hisrich, Robert D, Mc Graw Hill* • *Entrepreneurship Development, Sharma, K.C., Reegal Book Depot* • *Service Marketing, Temani, V.K., Prism Pub* • *Service Marketing, Temani, V.K., Prism Pub* • *Management Of Service Sector, Bhatia, B S, V P Pub* • *Introduction To E – Commerce, Dhawan, Nidhi, International Book House* • *Introduction To Retailing, Lusch,Robert F.,Dunne,Patrick M., Carver,James R.,Cengage Learning* • *Retailing Management, Levy Michael., Weitz Barton A,Tata Mcgraw Hill*

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Foundation Course

- *Social and Economic Problems in India, Naseem Azad, R Gupta Pub (2011)*
- *Indian Society and Culture, Vinita Padey, Rawat Pub (2016)*
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- *National Humana rights commission- disability Manual*
- *Rural, Urban Migration : Trends, challenges & Strategies, S Rajagopalan, ICFAI- 2012*
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- *Urbanisation in India: Challenges, Opportunities & the way forward, I J Ahluwalia, Ravi Kanbur, P K Mohanty, SAGE Pub (2014)*
- *The Constitution of India, P M Bakshi 2011*
- *The Problems of Linguistic States in India, Krishna Kodesia Sterling Pub*
- *Politics in India: structure, Process and Policy SubrataMitra, Rouutlege Pub*
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Foundation Course in NSS

- *National Service Scheme Manual (Revised) 2006, Government of India, Ministry of Youth Affairs and Sports, New Delhi.*
- *University of Mumbai National Service Scheme Manual 2009.*
- *Avhan Chancellor's Brigade - NSS Wing, Training camp on Disaster Preparedness Guidelines, March 2012*
- *RashtriyaSevaYojanaSankalpana - Prof.Dr.SankayChakane, Dr.Pramod\Pabrekar, Diamond Publication, Pune*
- *National Service Scheme Manual for NSS District Coordinators, National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya,*
- *Annual report of National Service Scheme (NSS) published by Dept. of Higher and Technical Education, Mantralaya,*
- *NSS Cell, Dept. of Higher and Technical Education, Mantralaya, UTKARSHA- Socio and cultural guidelines*
- *Case material as a Training Aid for Field Workers, Gurmeet Hans.*
- *Social service opportunities in hospitals, Kapil K. Krishnan, TISS*
- *New Trends in NSS, Research papers published by University of Pune*
- *ANOOGUNJ Research Journal, published by NSS Unit C. K. Thakur college*
- *Training Manual for Field Work published by RGNIYD, Chreeperumbudur*
- *Prof.Ghatole R.N. Rural Social Science and Community Development.*
- *PurushottamSheth, Dr.Shailaja Mane, National Service Scheme*
- *Joint programme of National Service Scheme, University of Mumbai & DISHA - DEEPSHIKHA Projects, Nair Hospital, 2011-12*
- *National Service Scheme in India: A Case study of Karnataka, M. B. Dishad, Trust Publications, 2001*
- *http://www.thebetterindia.com/140/national-service-scheme-nss/*
- *http://en.wikipedia.org/wiki/national-service-scheme 19=http://nss.nic.in/adminstruct*
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Foundation Course in NCC

- *Cadet's Hand book – Common subject..all wings, BY DG NCC, New Delhi.*
- *Cadet's Hand book – Specialised Subjects, Army, Navy, Air-force, BY DG NCC, New Delhi.*
- *NCC OTA Precise, BY DG NCC, New Delhi.*
- *"AVAN" Model of Disaster Mang., VinayakDalvie, Proceedings of Int. Conf. on Urban Plan. and EnvStrat& Challenges, Elphinstone College, Jan 2007.*
- *Humanistic Tradition of India,N.L.Gupta, Mohit Publication, New Delhi*
- *Social psychology, Baron & Byrne, Pearson Publication, 12th Edition self awareness know yourself / insight (110) Group & Individuals (374) Group discussion*
- *Chanakya's 7 Secrets of Leadership, Radhakrishanan Pillai and D.Shivnandhan, Jaico*
- *Social Psychology: Understanding Human Interaction, Baron, Robert A., (302/BAR/BYR),7th Edition*
- *Seven Habits of Highly Effective People., Covey , Stephen*
- *The Habit of Winning., Iyer , Prakash, Penguin , India ; 2011*
- *The Goal, Goldratt , Eliyahu, The Northriver press ; 1994*
- *Freedom Struggle, Chandra Bipin, National Book Trust 1972*
- *Freedom of Religion and The Indian Judiciary, Bachal V.M. , ShubhadaSaraswat, (362P)*
- *India 1996- A Reference Annual Govt. of India*
- *SahaSoneri Pane, Vinayak D. Savarkar*
- *Environmental Biology and Toxicology, P.D. Sharma., Rastogi Publication*
- *Environmental Science, S.C. Santra, New Central Book Agency*

Reference Books
• *National Cadet Corps (India), Lambert M. Surhone, Mariam T. Tennoe, Susan F. Henssonow, Betascript Publishing, 2011* • *National Cadet Corps, Youth in Action (Google eBook), National Cadet Corps (India), Lancer Publishers, 2003* • *Youth in Step: History of the National Cadet Corps, V. Longer, Lancer international, 1983Original from the University of Michigan* • *National Cadet Corps of India, Man Mohan Sharma, Vision Books, 1980Original from the University of Michigan* • *The National Cadet Corps Act, 1948, as Modify Up to the 1st July 1963, India, Government of India Press, 1963(Military Law)* • *Cadet Corps in India: Its Evolution and Impact, Satis Chandra Maikap, DarbariUdyog, 1979Original from the University of California* • *National Cadet Corps: 100 Years of Distinction, National Cadet Corps (Singapore), NCC* • *The NCC, Singapore, National Cadet Corps Council, National Cadet Corps Council* • *Grooming Tomorrow's Leaders: National Cadet Corps, 1917-2006, R.S. Chhettri, Lancer Publishers, 2006* • *National Civil Defence Cadet Corps, Lambert M. Surhone, Mariam T. Tennoe, Susan F. Henssonow, Betascript Publishing, 2011* • *Discovery of India, Jawaharlal Nehru* • *Health and Hygiene, Manoj. J.S., Agra University Publication* • *Yoga for Healing, Venkateswaran P.S., Bombay:- Jaico Publishing House 1989* • *Yoga Illustrated, New Delhi, Ministry of Information and Broadcasting, 1995* • *Yoga Practice, 1972, Shivnande Swami, Mumbai:- D.B. Taraporewala 1972* • *Yoga of Patanjali-1979, Yardi M.R., Bhandarkar Oriental Research Institute- 1974* • *Sustainable Development (An Alternative Paradigm), Satpathy , N., Karnavati Publications , Ahmedabad* • *Global Partners for Sustainable Development, Pachauri R.K & Srivastava L., Tata Energy Research Institute, New Delhi ; 1994, 1998* • *Ecology and the Politics of survival : Conflict over Natural Resources in India, Shiva , Vandana, Sage Publications , California , 1991*
Foundation Course in Physical Education
• *LippianCott Williams and Wilkins 2006.* • *American College of Sports Medicine, ACSM's, Guidelines for Exercise Testing and Priscription. (2013) Ninth Edition, LippianCott Williams and Wilkins.* • *American College of Sports Medicine, ACSM's Resource Manual for Guidelines for Exercise Testing and Priscription. (2006) 5th Ed., LippianCott Williams and Wilkins, 2006.* • *Beashel, P.,& Taylor, J. (1996). Advance Studies in Physical Education and Sports. U.K.: Thomas Nelson and Sons Ltd.* • *Bucher, C.A. (1995). Foundation of Physical Education (12th Ed.) USA : St. Louis,* • *C.V. Mosloy.* • *Colfter, G.R., Hamilton, K.E., Magill R.A.,& Hamilton B.J. (1986). Contemporary Physical Education. USA : Wim C. Brown Publisher.* • *Daryl S. (1994). Introduction to physical education, fitness and sports (2nd ed.). London: Mayfield publishing company.* • *Dheer, S.D.(1991). Introduction to Health Education. New Delhi : Friends Publication.* • *Dr.A.K.Uppal&Dr. G. P. Gautam (2004). Physical education and Health. Delhi: Friends publisher.* • *Dr.Gharote M. L; Teaching Methods for Yogic Practices. – 2nd Ed., KaivalyadhamSamiti, Lonavala- 2001.* • *Dr.Gharote M. L; Guideline for Yogic Practices – 2nd Ed., The Lonavala Yoga Institute (India), Lonavala-2007* • *Greenberg, Dintiman, Oakes. (2004). Physical Fitness & wellness.(3rd ed.) IL:Human kinetics.*

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- *Kansal, D.K. (2012). A Text book of Applied Measurement Evaluation and Sports Selection (3rd Ed.). New Delhi : DVS Publication.*
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- *Muller, J. P.(2000). Health, Exercise and Fitness. Delhi : Sports.*
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- *Mathematics for Economics and Finance Methods and Modelling by Martin Anthony and Norman Biggs, Cambridge University Press, Cambridge low-priced edition, 2000, Chapters 1, 2, 4, 6 to 9 & 10.*
- *Applied Calculus: By Stephen Waner and Steven Constenoble, Brooks/Cole Thomson Learning, second edition, Chapter 1 to 5.*
- *Business Mathematics By D. C. Sancheti and V. K. Kapoor, Sultan Chand & Sons, 2006, Chapter 1, 5, 7, 9 &10.*
- *Mathematics for Business Economics: By J. D. Gupta, P. K. Gupta and Man Mohan, Tata Mc- Graw Hill Publishing Co. Ltd., 1987, Chapters 9 to 11 & 16.*
- *Quantitative Methods-Part-I By S. Saha and S. Mukerji, New Central Book Agency, 1996, Chapters 7 & 12.*
- *Mathematical Basis of Life Insurance By S.P. Dixit, C.S. Modi and R.V. Joshi, Insurance Institute of India, Chapters 2: units 2.6, 2.9, 2.20 & 2.21.*
- *Securities Laws & Regulation of Financial Market : Intermediate Course Paper 8, Institute of Company Secretaries of India, Chapter 11.*
- *Investments By J.C. Francis & R.W. Taylor, Schaum's Outlines, Tata Mc-Graw Hill Edition 2000, Chapters 2,4 & section 25.1.*
- *Indian Mutual Funds Handbook : By SundarShankaran, Vision Books, 2006, Sections 1.7,1.8.1,6.5 & Annexures 1.1to 1.3.*
- *STATISTICS by Schaum Series.*
- *Operations Research by Gupta and Kapoor*
- *Operations Research by Schaum Series*
- *Fundamentals of Statistics - D. N. Elhance.*
- *Statistical Methods - S.G. Gupta (S. Chand & Co.*
- *Statistics for Management - Lovin R. Rubin D.S. (Prentice Hall of India)*
- *Statistics - Theory, Method & Applications D.S.Sancheti& V. K. Kapoor.*
- *Modern Business Statistics - (Revised}-B. Pearles& C. Sullivan –Prentice Hall of India.*
- *Business Mathematics & Statistics: B Aggarwal, Ane Book Pvt. Limited*
- *Business Mathematics: D C Sancheti& V K Kapoor, Sultan Chand & Sons*
- *Business Mathematics: A P Verma, Asian Books Pvt. :Limited.*

Question Paper Pattern
(Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses of
Bachelor of Commerce Programme
Second Year
Semester III and IV

Under Choice Based Credit, Grading and Semester System

To be implemented from Academic Year 2017-2018

Faculty of Commerce

S.Y.B.Com

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***		***1A***	***Discipline Specific Elective(DSE) Courses***	
1Aa	***Discipline Specific Elective(DSE) Courses***		***1Aa***	***Discipline Specific Elective(DSE) Courses***	
1	Accountancy and Financial Management III	**03**	1	Accountancy and Financial Management IV	**03**
1Ab	***Discipline Specific Elective(DSE) Courses***		***1Ab***	***Discipline Specific Elective(DSE) Courses***	
2	*Any one course from the following list of the courses	**03**	2	*Any one course from the following list of the courses	**03**
1B	***Discipline Related Elective(DRE) Courses***		***1B***	***Discipline Related Elective(DRE) Courses***	
3	Commerce III	**03**	3	Commerce IV	**03**
4	Business Economics III	**03**	4	Business Economics IV	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	****Skill Enhancement Courses (SEC) Group A***		**2A**	*****Skill Enhancement Courses (SEC) Group A***	
5	*Any one course from the following list of the courses	**03**	5	*Any one course from the following list of the courses	**03**
2B	****Skill Enhancement Courses (SEC) Group B***		**2B**	*****Skill Enhancement Courses (SEC) Group B***	
6	Any one course from the following list of the courses	**02**	6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
7	Business Law I	**03**	7	Business Law II	**03**
	Total Credits	**20**		**Total Credits**	**20**

1Ab *List of Discipline Specific Elective (DSE) Courses for Semester III (Any One)		***1Ab *List of Discipline Specific Elective(DSE) Courses for Semester IV (Any One)***	
1	Financial Accounting and Auditing - Introduction to Management Accounting	1	Financial Accounting and Auditing - Auditing
2	Business Management - Marketing Management	2	Business Management- Marketing Management
3	Banking & Finance- Introduction to Banking in India	3	Banking & Finance- Introduction to Banking in India
4	Commerce- International Business Relations	4	Commerce- International Business Relations

*List of Skill Enhancement Courses (SEC) Group A for Semester III (Any One)		*List of Skill Enhancement Courses (SEC) Group A for Semester IV (Any One)	
1	Advertising I	1	Advertising II
2	Field Sales Management I	2	Field Sales Management II
3	Public Relations I	3	Public Relations II
4	Mass Communication I	4	Mass Communication II
5	Travel & Tourism Management Paper I	5	Travel & Tourism Management II
6	Journalism I	6	Journalism II
7	Company Secretarial Practice I	7	Company Secretarial Practice II
8	Rural Development I	8	Rural Development II
9	Co-operation I	9	Co-operation II
10	Mercantile Shipping I	10	Mercantile Shipping II
11	Indian Economic Problem I	11	Indian Economic Problem II
12	Computer Programming I	12	Computer Programming II
13	Logistic and Supply Chain Management I	13	Logistic and Supply Chain Management I
14	Economic System I	14	Economic System II
Note: Course selected in Semester III will continue in Semester IV			

*List of Skill Enhancement Courses (SEC) Group B for Semester III (Any One)		** List of Skill Enhancement Courses (SEC) Group B for Semester IV (Any One)	
1	Foundation Course- Contemporary Issues - III	1	Foundation Course- Contemporary Issues - IV
2	Foundation Course in NSS - III	2	Foundation Course in NSS - IV
3	Foundation Course in NCC - III	3	Foundation Course in NCC - IV
4	Foundation Course in Physical Education - III	4	Foundation Course in Physical Education - IV
Note: Course selected in Semester III will continue in Semester IV			

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester III

No. of Courses	Semester III	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***	
1Aa	***Discipline Specific Elective(DSE) Courses***	
1	Accountancy and Financial Management III	**03**
1Ab	***Discipline Specific Elective(DSE) Courses***	
2	*Any one course from the following list of the courses	**03**
1B	***Discipline Related Elective(DRE) Courses***	
3	Commerce III	**03**
4	Business Economics III	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	****Skill Enhancement Courses (SEC)*** ***Group A***	
5	*Any one course from the following list of the courses	**03**
2B	****Skill Enhancement Courses (SEC)*** ***Group B***	
6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
7	Business Law I	**03**
	Total Credits	**20**

1Ab *List of Discipline Specific Elective (DSE) Courses for Semester III (Any One)	
1	Financial Accounting and Auditing - Introduction to Management Accounting
2	Business Management - Marketing Management
3	Banking & Finance- Introduction to Banking in India
4	Commerce- International Business Relations

List of Skill Enhancement Courses (SEC) Group A for Semester III (Any One)	
1	Advertising I
2	Field Sales Management I
3	Public Relations I
4	Mass Communication I
5	Travel & Tourism Management Paper I
6	Journalism I
7	Company Secretarial Practice I
8	Rural Development I
9	Co-operation I
10	Mercantile Shipping I
11	Indian Economic Problem I
12	Computer Programming I
13	Logistic and Supply Chain Management I
14	Economic System I
Note: Course selected in Semester III will continue in Semester IV	

** List of Skill Enhancement Courses (SEC) Group B	
1	Foundation Course – Contemporary Issues- III
2	Foundation Course in NSS - III
3	Foundation Course in NCC - III
4	Foundation Course in Physical Education - III
Note: Course selected in Semester III will continue in Semester IV	

Revised Syllabus of Courses of B.Com. Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)
Discipline Specific Elective (DSE) Courses

1Aa. Accountancy and Financial Management III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Partnership Final Accounts based on Adjustment of Admission or Retirement/Death of a Partner during the year	15
2	Piecemeal Distribution of Cash	15
3	Amalgamation of Firms	15
4	Conversion / Sale of a Partnership Firm into a Ltd. Company	15
	Total	**60**

Sr. No.	Modules / Units
1	**Partnership Final Accounts based on Adjustment of Admission or Retirement/Death of a Partner during the year**
	i) Simple final accounts questions to demonstrate the effect on final Accounts when a partner is admitted during the year or when partner Retires / dies during the year. ii) Allocation of gross profit prior to and after admission / retirement / death when stock on the date of admission / retirement is not given and apportionment of other expenses based on time / Sales/other given basis. iii) Ascertainment of gross profit prior to and after admission/retirement/death when stock on the date of admission/retirement is given and apportionment of other expenses based on time / Sales / other given basis Excluding Questions where admission / retirement / death takes place in the same year.
2	**Piecemeal Distribution of Cash**
	i) Excess Capital Method only ii) Asset taken over by a partner iii) Treatment of past profits or past losses in the Balance sheet iv) Contingent liabilities / Realization expenses / amount kept aside for expenses and adjustment of actual v) Treatment of secured liabilities vi) Treatment of preferential liabilities like Govt. dues / labour dues etc. Excluding : Insolvency of partner and Maximum Loss Method
3	**Amalgamation of Firms**
	i) Realization method only ii) Calculation of purchase consideration iii) Journal / ledger accounts of old firms iv) Preparing Balance sheet of new firm v) Adjustment of goodwill in the new firm vi) Realignement of capitals in the new firm by current accounts / cash or a combination thereof Excluding Common transactions between the amalgamating firms
4	**Conversion / Sale of a Partnership Firm into a Ltd. Company**
	(i) Realisation method only (ii) Calculation of New Purchase consideration, Journal / Ledger Accounts of old firms. Preparing Balance sheet of new company

Reference Text :

1. Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.
2. Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.
3. R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi
4. Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Revised Syllabus of Courses of B.Com. Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)
Discipline Specific Elective (DSE) Courses

1Ab. Financial Accounting and Auditing – Introduction to Management Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Management Accounting	10
2	Ratio Analysis and Interpretation	15
3	Working Capital Management	10
4	Capital Budgeting	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Management Accounting**
	A. Introduction to Management Accounting – Meaning, Nature, Scope, Functions, Decision Making Process, Financial Accounting V/s Management Accounting B. Analaysis and Interpretation of Financial Statements i) Study of Balance sheet and Income statement / Revenue statements in vertical form suitable for analysis ii) Relationship between items in Balance Sheet and Revenue statement iii) Tools of analysis of Financial Statements (i) Trend analysis (ii) Comparative Statement (iii) Common Size Statement **Note :** (i) Problems based on trend analysis (ii) Short Problems on Comparative and Common sized statements
2	**Ratio Analysis and Interpretation**
	(Based on Vertical Form of Financial statements) – Meaning, classification, Du Point Chart, advantages and Limitations) **A. Balance Sheet Ratios :** i) Current Ratio ii) Liquid Ratio iii) Stock Working Capital Ratio iv) Proprietary Ratio v) Debt Equity Ratio vi) Capital Gearing Ratio **B. Revenue Statement Ratio:** i) Gross Profit Ratio ii) Expenses Ratio iii) Operating Ratio iv) Net Profit Ratio v) Net Operating Profit Ratio vi) Stock Turnover Ratio **A. Combined Ratio :** i) Return on capital employed (Including Long Term Borrowings) ii) Return on proprietor's Fund (Shareholders Fund and Preference Capital) iii) Return on Equity Capital iv) Dividend Payout Ratio v) Debt Service Ratio vi) Debtors Turnover vii) Creditors Turnover (Practical Question on Ratio Analysis)
3	**Working Capital Management : (Practical Questions)**
	A. Concept, Nature of Working Capital , Planning of Working Capital B. Estimation / Projection of Working Capital Requirement in case of Trading and Manufacturing Organization C. Operating Cycle

Sr. No.	Modules / Units
4	**Capital Budgeting**
	A. Introduction: B. The classification of capital budgeting projects C. Capital budgeting process D. Capital budgeting techniques - **Payback Period, Accounting Rate of Return, Net Present Value, The Profitability Index, Discounted Payback. (Excluding calculation of cash flow)**

Reference Text :

1. Cost and Management Accounting - Colinn Dury 7th Edition
2. Cost and Management Accounting- Dbarshi Bhattacharyya pearson Publications 2013 edition
3. Management Accounting - M.Y.Khan
4. Management Accounting - I.M.pandey

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions C) Sub Questions to be asked 12 and to be answered any 10 D) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	C) Theory questions D) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Elective Courses (EC)
Discipline Specific Elective (DSE) Courses

1Ab. Business Management-Marketing Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Marketing Management and Marketing Environment	10
2	Understanding Competition and Strategic Marketing	15
3	Product	10
4	Pricing	10
	Total	**45**

Sr. No.	Modules / Units
1	**Marketing Management and Marketing Environment**
	• Marketing management : Definition, need and importance of marketing management • Functions of Marketing Management • Micro and Macro Environment with specific reference to India • Emerging Marketing opportunities in India – Marketing at the bottom of the pyramid, growing middle class • International marketing environment
2	**Understanding Competition and Strategic Marketing**
	• Marketing strategy : Definition and Features • Steps in strategic marketing planning process • SWOT Analysis • Michael Porter's Five Forces Model • Analyzing competition
3	**Product**
	• Definition, Product Levels – Customer Value Hierarchy • Product Classification : Based on durability and tangibility, consumer goods classification and industrial goods classification • Product Life Cycle : Stages and features of each stage • Product Positioning : Meaning and Importance • Steps in Product Positioning
4	**Pricing**
	• Meaning and objective of Pricing • Factors affecting pricing decisions • Methods of pricing : Mark-up pricing, Target-return Pricing, Perceived-value Pricing, Value Pricing, Going-Rate Pricing and Auction Pricing • Steps in Pricing

Reference Books:

1. Philip Kotler (2003). Marketing Management : Eleventh Edition. New Delhi : Pearson Education
2. V. S. Ramaswani and S Namakumari (2002). Marketing : Planning, Implementation and Control (3rd Edition) New Delhi, Macmillan India
3. Michael Porter – Competitive Advantage
4. Theodore Levitt – Marketing Management
5. Fundamentals of Marketing – William Stanton
6. Customer Driven Services Management (1999) Response Books

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions E) Sub Questions to be asked 12 and to be answered any 10 F) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	E) Theory questions F) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses

3. Commerce –III

(Management: Functions and Challenges)

Course Objectives:

- **To make the learners aware about conceptual knowledge and evolution of Management.**
- **To familiarize the learners with the functions in Management.**

Sr. No.	Modules	No. of Lectures
1	Introduction To Management	11
2	Planning & Decision Making	10
3	Organising	12
4	Directing And Controlling	12
	Total	**45**

Sr. No.	Modules
1	**Introduction To Management (11)**
	• **Management**- Concept, Nature, Functions, Managerial Skills & Competencies • **Evolution of Management Thoughts** Classical Approach: Scientific Management – F.W.Taylor'sContribution Classical Organisation Theory: HenriFayol's Principles Neo Classical: Human Relations Approach – EltonMayo'sHawthorne experiments • **Modern Management Approach**-PeterDrucker's Dimensions of Management, Indian Management Thoughts: Origin & Significance of Indian Ethos to Management.
2	**Planning & Decision Making (10)**
	• **Planning** - Steps, Importance, Components, Coordination – Importance • **M.B.O** -Process, Advantages, Management By Exception- Advantages; Management Information System- Concept, Components • **Decision Making** - Techniques, Essentials of a Sound Decision Making, Impact of Technology on Decision Making.
3	**Organising (12)**
	• **Organising**-Steps, Organisation Structures – Features of Line & Staff Organisation, Matrix Organisation , Virtual Organisation, Formalv/s Informal Organisation. • **Departmentation** -Meaning -Bases,Span of Management- Factors Influencing Span of Management, Tall and Flat Organisation. • **Delegation of Authority**- Process, Barriers to Delegation, Principles of Effective Delegation. Decentralisation:Factors Influencing Decentralisation, Centralization v/s Decentralisation
4	**Directing And Controlling (12)**
	• **Motivation** – Concept, Importance, Influencing factors. Importance of Communication, Barriers to effective Communication • **Leadership-** Concept,Functions, Styles, Qualities of a good leader. • **Controlling** – Concept, Steps, Essentials of good control system, Techniques of Controlling -PERT, CPM, Budgetary Control, Management Audit.

SEMESTER – III REFERENCE BOOKS:

REFERENCES
1. Management Today Principles& Practice- Gene Burton, ManabThakur, Tata McGraw-Hill,Publishing Co.Ltd. 2. Management – JamesA.F.Stoner, Prentice Hall, Inc .U.S.A. 3. Management : Global Prospective –Heinz Weihrich& Harold Koontz, Tata McGraw- Hill, Publishing Co.Ltd. 4. Essential of Database Management Systems -AlexisLeon ,MathewsLeon Vijay Nicole, Imprints Pvt Ltd. 5. Management –Task ,Resp, Practices – PetaDruche "willian Heinemann LTD.

PAPER PATTERN

COMMERCE PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six**

Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses

4.Business Economics III

Modules at a Glance

Sr. No.	Modules	No.of Lectures
1	Overview of Macroeconomics	10
2	Basic concepts of Keynesian Economics	10
3	Post Keynesian developments in Macro economics	10
4	Money, prices and Inflation	15
	Total	**45**

BUSINESS ECONOMICS III

ELEMENTS OF MACROECONOMICS

Preamble

An overall approach to macroeconomics is to examine the economy as a whole. This course is an introduction to the basic analytical tools of macro economics to evaluate macro economic conditions such as inflation, unemployment and growth. It is designed to make system of overall economy understandable and relevant. The aim is to provide a clear explanation of many aspects of aggregate economic variables to inspire a consistent way of thinking about key macroeconomic phenomena. It intends to familiarize the commerce students with basic concepts of macroeconomics and with certain common features of economic occurrence in the real world.

Sr. No.	Modules / Units
1	**INTRODUCTION**
	• **Macroeconomics:** Meaning, Scope and Importance. • **Circular flow of aggregate income and expenditure** and its Importance- closed and open economy models • **The Measurement of National Product:** Meaning and Importance of National Income Accounting- conventional and Green GNP and NNP concepts -National Income and Economic Welfare. • **Trade Cycles:** Features and Phases • **Classical Macro economics : Say's law of Markets** - Features, Implications and Criticism
2	**BASIC CONCEPTS OF KEYNESIAN ECONOMICS**
	• **The Principle of Effective Demand:** Aggregate Demand and Aggregate Supply • **Consumption Function:** Properties, Assumptions and Implications • **Investment function and Marginal Efficiency of capital** • **Investment Multiplier effect on Income and Output:** Assumptions, Working, Leakages, Criticism and Importance - paradox of thrift • **Relevance of Keynesian theory tools to the developing countries** **Liquidity Preference Theory of Interest**
3	**POST KEYNESIAN DEVELOPMENTS IN MACRO ECONOMICS**
	• **The IS-LM model** of integration of commodity and money markets • **Inflation and unemployment** : Philips curve • **Stagflation** : meaning, causes, and consequences • **Supply side economics**
4	**MONEY, PRICES AND INFLATION**
	• **Money Supply:** Determinants of Money Supply - Factors influencing Velocity of Circulation of Money • **Demand for Money :** Classical and Keynesian approaches and Keynes' liquidity preference theory of interest - Friedman's restatement of Demand for money • **Money and prices** : Quantity theory of money - Fisher's equation of exchange - Cambridge cash balance approach • **Inflation :** Demand Pull Inflation and Cost Push Inflation - Effects of Inflation- Nature of inflation in a developing economy - policy measures to curb inflation- monetary policy and inflation targeting

Reference Books
Ackley.G (1976), Macro Economic Theory and Policy, Macmillan Publishing Co. New York
Ahuja. H.L., Modern Economics — S.Chand Company Ltd. New Delhi.
Blanchard Olivier (2000), Macro Economics, Englewood Elitt, Prentice Hall
Bouman John, Principles of Macro Economics
Dornbush , Rudiger, Fisher Stanley and Startz, Richards Macroeconomics, Nineth edition 2004 Tata-Mac Graw Hill, New Delhi.
Dwivedi, D.N. (2001), Macro Economics: Theory and Policy, Tata-Mac Graw Hill, New Delhi.
Friedman Hilton (1953) Essays in Positive Economics, University of Chicago Press, London.
Gregory .N. Mankiw, Macroeconomics, Fifth Edition (2002) New York:Worth Publishers
Jhingan, M.L., Principles of Economics — Vrinda Publications (P) Ltd.
Shapiro, E (1996), Macro-Economic Analysis , Galgotia Publication, New Delhi.
Vaish .M.C. (2010) Macro Economic Theory 14th edition, Vikas Publishing House(P)Ltd

QUESTION PAPER PATTERN

Business Economics Semester III

Maximum Marks: 100 Marks

Time: 3 Hours

Note: 1) Attempt all Questions

2) All Questions carry equal marks

3) Attempt any two questions out of three in each of question 2, 3, 4 & 5

Question No	Particulars	Marks
Q-1	**Objective Questions:** A) Conceptual questions (Any Five out of Eight) (Two from each module) B) Multiple Choice Questions (10 questions at least two from each Module)	**20Marks** 10 Marks 10 Marks
Q-2 (from Module I)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-3 (from Module II)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-4 (from Module III)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-5 (from Module IV)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Advertising - I

Course Objective:

1. **To highlight the role of advertising for the success of brands and its importance within the marketing function of a company.**
2. **It aims to orient learners towards the practical aspects and techniques of advertising.**
3. **It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising**

Sr. No.	Modules	No. of Lectures
1	Introduction to Advertising	12
2	Advertising Agency	11
3	Economic & Social Aspects of Advertising	11
4	Brand Building and Spécial Purpose Advertising	11
	Total	**45**

Sr. No.	Modules
1	**Introduction to Advertising**
	• **Integrated Marketing Communications** (IMC)- Concept, Features, Elements, Role of advertising in IMC • **Advertising:** Concept, Features, Evolution of Advertising, Active Participants, Benefits of advertising to Business firms and consumers. • **Classification of advertising**: Geographic, Media, Target audience and Functions.
2	**Advertising Agency**
	• **Ad Agency:** Features, Structure and services offered, Types of advertising agencies , Agency selection criteria • **Agency and Client:** Maintaining Agency–Client relationship, Reasons and ways of avoiding Client Turnover, Creative Pitch, Agency compensation • **Careers in advertising**: Skills required for a career in advertising, Various Career Options, Freelancing Career Options - Graphics, Animation, Modeling, Dubbing.
3	**Economic & Social Aspects of Advertising**
	• **Economic Aspects:** Effect of advertising on consumer demand, monopoly and competition, Price. • **Social aspects:** Ethical and social issues in advertising, positive and negative influence of advertising on Indian values and culture. • **Pro Bono/Social advertising:** Pro Bono Advertising**,** Social Advertising by Indian Government through Directorate of Advertising and Visual Publicity (DAVP), Self-Regulatory body- Role of ASCI (Advertising Standard Council of India)
4	**Brand Building and Special Purpose Advertising**
	• **Brand Building:** The Communication Process, AIDA Model, Role of advertising in developing Brand Image and Brand Equity, and managing Brand Crises. • **Special purpose advertising**: Rural advertising, Political advertising-, Advocacy advertising, Corporate Image advertising, Green Advertising – Features of all the above special purpose advertising. • **Trends in Advertising:** Media, Ad spends, Ad Agencies, Execution of advertisements

Reference Books
Advertising
1. Advertising and Promotion : An Integrated Marketing Communications Perspective George Belch and Michael Belch, 2015, 10th Edition, McGraw Hill Education 2. Contemporary Advertising, 2017, 15th Edition, William Arens, Michael Weigold and Christian Arens, Hill Higher Education 3. Strategic Brand Management – Kevin Lane Keller, 4th Edition, 2013 – Pearson Education Limited 4. Kleppner's Advertising Procedure – Ron Lane and Karen King, 18th edition, 2011 – Pearson a. Education Limited 5. Advertising: Planning and Implementation, 2006 – Raghuvir Singh, Sangeeta Sharma –Prentice Hall 6. Advertising Management, 5th Edition, 2002 – Batra, Myers and Aaker – Pearson Education 7. Advertising Principles and Practice, 2012 - Ruchi Gupta – S.Chand Publishing 8. Brand Equity & Advertising- Advertising's role in building strong brands, 2013- David A. Aker, Alexander L. Biel, Psychology Press 9. Brand Positioning – Strategies for Competitive Advantage, Subroto Sengupta, 2005, Tata McGraw Hill Publication. 10. The Advertising Association Handbook - J. J. D. Bullmore, M. J. Waterson, 1983 - Holt Rinehart & Winston 11. Integrated Advertising, Promotion, and Marketing Communications, Kenneth E. Clow and Donald E. Baack, 5th Edition, 2012 – Pearson Education Limited 12. Kotler Philip and Eduardo Roberto, Social Marketing, Strategies for Changing Public Behaviour, 1989, The Free Press, New York. 13. Confessions of an Advertising Man, David Ogilvy, 2012, Southbank Publishing 14. Advertising, 10th Edition, 2010 - Sandra Moriarty, Nancy D Mitchell, William D. Wells, Pearson

PAPER PATTERN

ADVERTISING PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six** 20

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Field Sales Management – I

Course Objective:

1. **To understand the concept of field sales management.**
2. **To Make Learners aware about practical applications of sales management.**

Sr. No.	Modules	No. of Lectures
1	Field Sales Management	11
2	Sales Organisation	11
3	Sales Policies	11
4	Sales Force Management	12
	Total	**45**

Sr. No.	Modules
1	**Field Sales Management**
	• Introduction to Sales Management – Meaning & Concept – Nature, Objectives of Salesmanship, Function of Sales Management, Sales Management as a career option. • Field Sales Management – Introduction, Concept of Personal Selling & Advertising, Difference between selling and Marketing, Difference between Advertising & Personal Selling , Changing face of Personal Selling. • Sales Manager – Qualities & Qualification of Sales Manager – Essentials for a Successful Sales Manager – Duties & Responsibilities of a Sales Manager.
2	**Sales Organisation**
	• Meaning, Nature, Characteristics of a Sales Organization, Need & Objectives of Sales Organization. • Structure of Sales Organization, Types of Sales Organizations and factors affecting structure of Sales Organization. • Centralization & Decentralization of Sales Organization, Merits and Demerits.
3	**Sales Policies**
	• Product Policies – Branding , Promotional Policies – Promotional Measure • Pricing Policies – Methods of Pricing, Factors, Strategies • Place / Distribution Policies – Channels of Distribution-Types (Consumer & Industrial Goods) , Factors affecting selection of channel of distribution
4	**Sales Force Management**
	• Recruitment and Selection of Salesforce – Concept, Sources of Recruitment Steps in selection process, Training of Salesforce -Methods • Compensating & Motivating the Sales Team -Methods of Compensation, Monetary and Non-Monetary tools of Motivation. • Evaluating Sales Force Performance, Functions, Sales records, Reporting, Performance Appraisal of Sales Force.

Reference Books
Field Sales Management
1. Philip Kotler – Marketing Management, 11th ed. Pearson Publication. 2. Porter, Michel E. Competitive Strategy, New York: The Free Press, 1980. 3. Tirodkar, Field Sales Management, Vani Publication, Pune. 4. Richard R Still, Edward W. Candiff, Sales Management. 5. M.D.Pestonjee, Motivation & Job Satisfaction. 6. Tom Reilly, Value Added Selling 7. Helen Woodruffe, Services Marketing, Macmillan Publication. 8. V.S.Ramaswamy, S.Namakumari, Marketing Management, Global Prospective – Indian Concept, Macmillan Publication

PAPER PATTERN

FIELD SALES MANAGEMENT PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six** 20

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Company Secretarial Practice - I

Course Objective:

- **To provide the learners an insight about Company Secretarial Practices.**
- **To make the learners understand the role of Company Secretary towards Company's statutory provisions, rules and regulations.**
- **To make the learners understand the various aspects of Company Management, meetings and reports.**

Sr. No.	Modules	No. of Lectures
1	Introduction to Company	12
2	Company Secretary Practices	12
3	Company Documentation and Formation	12
4	Secretarial Correspondence	10
	Total	**45**

Sr. No.	Modules
1	**Introduction to Company**
	• **Introduction to Company** – Features, Types -As per Company's Act, 2013. • **Company Secretary** – Qualities, Qualifications, Appointment procedure, Resignation & Removal. • **Role of Company Secretary**–Rights, Responsibilities, Liabilities of Company Secretary, Career options of Company Secretary.
2	**Company Secretary Services**
	• **Advisory Services** – Role of Company Secretary as an advisor to Chairman, Secretary as an liaison officer between the (a) Company and Stock Exchange (b) Company and Depository Participants (c) Company and Register of Companies (ROC). • **Representation Services of Company Secretary at different forums**- Company Law Board, Consumer Forum, SEBI, Arbitration & conciliation services, Cyber Law compliance, Secretarial Standards – Advantages, Secretarial Standards by ICSI, Secretarial Standards -1- 10. • **Secretarial Audit** – Procedure and Stages, Need and Importance, Scope.
3	**Company Documentation and Formation**
	• **Memorandum of Association (MOA)** - Clauses, Alteration of MOA, Ultra Vires. Articles of Association (AOA) – Contents, Prospectus – Statement in Lieu of Prospectus, Contents, Misleading Prospectus. • **Company Formation** –Stages,Secretarial Duties at each stage in public company and private company. • **Conversion & Reconversion of Private and Public Company** – Secretarial Procedure.
4	**Secretarial Correspondence**
	• **Correspondence**– Shareholders, Debenture Holders, Registrar of Companies, Stock Exchange & penalties thereon • **Correspondence** with SEBI, Company Law Board and penalties thereon, Role of technology in Secretarial Correspondence • **Specimens**– Letter to shareholders - Rights Issue, Bonus Issue, Letter toROC-Alteration of MOA/AoA, Letter to Stock Exchange –Listing of shares, Letters to Government- Reconversion/Conversion, Letter to Bank – Overdraft Facility

COMPANY SECRETARIAL PRACTICE

REFERENCES

Readings:

1. M. C.Bhandari : Guide to Company Law Procedure; Wadhwa& Company, Agra&Nagpur
2. K. V.Shanbhogue : Company Law Practice; BharatLaw House, New Delhi – 34
3. M. L.Sharma : Company Procedures and Register of Companies , Tax Publishers, Delhi
4. A. M.Chakborti, B. P.Bhargava : Company Notices, Meetings and Resolutions, Taxmann, New Delhi
5. A.Ramaiya : Guide to the Companies Act, Wadhwa& Company, Nagpur
6. R.Suryanarayanan : Company Notices, Meetings and Resolutions, Kamal Law House, Kolkatta
7. D. K. Jain : E- Filling of Forms & returns
8. Taxmann : E-Company forms
9. V.K.Gaba : Depository Participants (Law & Practice)
10. ICSI Publications : Meetings
11. B. K.Sengupta : Company Law
12. D. K. Jain : Company Law Procedures

References:

1. M. C.Bhandari R.D.Makheeja : Guide to Memorandum, Articles and Incorporation of Companies ; Wadhwa& Company, Agra&Nagpur
2. Taxman : Company Law, Digest

Journals:

1. Chartered Secretary : ICSI Publication
2. Student Company Secretary : ICSI Publication
3. Company Law Journal : L.M.Sharma, Post Box No. 2693, New Delhi – 110005.
4. Corporate Law Adviser : Corporate Law Advisers, Post Bag No. 3, VasantVihar, New Delhi

PAPER PATTERN

COMPANY SECRETRIAL PRACTICE - PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six** 20

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Computer Programming Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Hardware	15
2	Software	15
3	Introduction To C Programming	15
4	C – Decision / Loop Statements	15
5	Laboratory Training	15
	Total	**75**

Sr. No.	Modules / Units
1	**UNIT – I : HARDWARE**
	Evolution of Computers – Generations, Types of Computers, Computer System, Characteristics, Basic Components of a Digital Computer – Control Unit, ALU, Input / Output, Functions and Memory, Memory Addressing Capability of a CPU, Binary number system, Binary addition (1's complement, 2's Complement), Binary to decimal and Decimal to Binary Conversion, Octal Number, Hexadecimal System, World length of a computer, processing speed of a computer.
2	**UNIT – II : SOFTWARE**
	Software and its Need, Types of Software – System Software, Application software, System Software – Operating System, Utility Program, Algorithms, Flow Charts – Symbols, Rules for making Flow chart, Programming languages, Assemblers, Compilers and Interpreter, Computer Applications in Business.
3	**UNIT – III : INTRODUCTION TO C PROGRAMMING**
	Structure of C program, Keywords, identifies, constants, variables, data types, type modifier, type conversion, types of operator and expressions, Input and Output functions in C (print(), sancf(), getchar(), putchar(), gets(), puts()). Storage class specifiers Header files(stdio.h,math.j,conop.j)
4	**UNIT – IV : C – DECISION / LOOP STATEMENTS**
	Decision Statement – if-else statement, break, continue, goto, switch() case and nested if statement. Loop control statements – for(), while(), do-while loop() and nested loops.
5	**LABORATORY TRAINING**
	Lab 1 : Writing algorithms and drawing flowcharts (Input-process-output). Lab 2 : Writing algorithms and drawing flowcharts (Input-decision-process-output). Lab 3 : Writing algorithms and drawing flowcharts (Simple Loops). Lab 4 : Loading a C editor program-Entering and compiling a simple C-program. Lab 5 : C-program to input name-and sales & then print name and commission. Lab 6 : C-program to compute commission, discount etc using if() condition. Lab 7 : Computing income tax based on given criterion. Lab 8 : Printing numbers and summing number using loops. Lab 9 : Printing interest and depreciation tables.

QUESTION PAPER PATTERN

Maximum Marks : 75
Questions to be set : 05
Duration : $2\frac{1}{2}$ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particulars	Marks
Q. 1.	**Objective Questions** A. Sub Questions to be asked 10 and to be solved any 08 B. Sub Questions to be asked 10 and to be solved any 07 (* Multiple choice / True or False / Match the columns)	15 Marks
Q. 2. Q. 2.	Full Length Question **OR** Full Length Question	15 Marks 15 Marks
Q. 3. Q.3.	Full Length Question **OR** Full Length Question	15 Marks 15 Marks
Q. 4. Q. 4.	Full Length Question **OR** Full Length Question	15 Marks 15 Marks
Q. 5. Q. 5.	Full Length Question **OR** Short Notes To be asked 05 To be answered 03	15 Marks 15 Marks

Note : Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

2 Ability Enhancement Courses (AEC)
*2B * Skill Enhancement Courses (SEC) Group B*

6. Foundation Course- Contemporary Issues- III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Human Rights Provisions, Violations and Redressal	12
2	Dealing With Environmental Concerns	11
3	Science and Technology I	11
4	Soft Skills for Effective Interpersonal Communication	11
	Total	**45**

Sr. No.	Modules / Units
1	**Human Rights Violations and Redressal**
	A. Scheduled Castes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **B.** Scheduled tribes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **C.** Women- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **D.** Children- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **E.** People with Disabilities, Minorities, and the Elderly population- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(4 Lectures)**
2	**Dealing With Environmental Concerns**
	A. Concept of Disaster and general effects of Disasters on human life- physical, psychological, economic and social effects. **(3 Lectures)** **B.** Some locally relevant case studies of environmental disasters. **(2 Lectures)** **C.** Dealing with Disasters - Factors to be considered in Prevention, Mitigation (Relief and Rehabilitation) and disaster Preparedness. **(3 Lectures)** **D.** Human Rights issues in addressing disasters- issues related to compensation, equitable and fair distribution of relief and humanitarian approach to resettlement and rehabilitation. **(3 Lectures)**
3	**Science and Technology – I**
	A. **Development of Science**- the ancient cultures, the Classical era, the Middle Ages, the Renaissance, the Age of Reason and Enlightenment. **(3 Lectures)** **B.** **Nature of science**- its principles and characteristics; Science as empirical, practical, theoretical, validated knowledge. **(2 Lectures)** **C.** **Science and Superstition**- the role of science in exploding myths, blind beliefs and prejudices; Science and scientific temper- scientific temper as a fundamental duty of the Indian citizen. **(3 Lectures)** **D.** **Science in everyday life**- technology, its meaning and role in development; Interrelation and distinction between science and technology. **(3 Lectures)**
4	**Soft Skills for Effective Interpersonal Communication**
	Part A **(4 Lectures)** I) Effective Listening - Importance and Features. II) Verbal and Non-Verbal Communication; Public-Speaking and Presentation Skills. III) Barriers to Effective Communication; Importance of Self-Awareness and Body Language. **Part B** **(4 Lectures)** I) Formal and Informal Communication - Purpose and Types. II) Writing Formal Applications, Statement of Purpose (SOP) and Resume. III) Preparing for Group Discussions, Interviews and Presentations. **Part C** **(3 Lectures)** I) Leadership Skills and Self-Improvement - Characteristics of Effective Leadership. II) Styles of Leadership and Team-Building.

References

1. Asthana, D. K., and Asthana, Meera, *Environmental Problems and Solutions*, S. Chand, New Delhi, 2012.
2. Bajpai, Asha, *Child Rights in India*, Oxford University Press, New Delhi, 2010.
3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination,* Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.
8. Murthy, D. B. N., *Disaster Management: Text and Case Studies*, Deep and Deep Publications, New Delhi, 2013.
9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.

ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.

iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.

iv. Students can work in groups of not more than 8 per topic.

v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75 **DURATION: 150 MINUTES**

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	**i.** Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. **ii.** Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester **iii.** In all 8 Questions will be asked out of which 5 have to be attempted.	**a)** Total marks: 15 **b)** For 1 A, there will be 3 marks for each sub-question. **c)** For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)

6. Foundation Course in NSS - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Value System & Gender sensitivity	12
2	Disaster preparedness & Disaster management	10
3	Health, hygiene & Diseases	13
4	Environment & Energy conservation	10
	Total	**45**

Sr. No.	Modules / Units
1	**Value System & Gender sensitivity**
	UNIT - I – Value System Meaning of value, Types of values- human values and social responsibilities- Indian value system- the concepts and its features **UNIT - II - Gender sensitivity and woman empowerment** Concept of gender- causes behind gender related problems- measures Meaning of woman empowerment- schemes for woman empowerment in India
2	**Disaster preparedness & Disaster management**
	UNIT - I - Basics of Disaster preparedness Disaster- its meaning and types Disaster preparedness- its meaning and methods **UNIT - II - Disaster management** Disaster management- concept- disaster cycle - role of technology in disaster response- role of as first responder – the study of 'Avhan' Model
3	**Health, hygiene & Diseases**
	UNIT - I - Health and hygiene Concept of complete health and maintenance of hygiene **UNIT - II - Diseases and disorders- preventive campaigning** Diseases and disorders- preventive campaigning in Malaria, Tuberculosis, Dengue, Cancer, HIV/AIDS, Diabetes
4	**Environment & Energy conservation**
	UNIT - I Environment and Environment enrichment program Environment- meaning, features , issues, conservation of natural resources and sustainability in environment **UNIT - II Energy and Energy conservation program** Energy- the concept, features- conventional and non- conventional energy Energy conservation- the meaning and importance

2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)

6. Foundation Course in NCC - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training and Environment Awareness and Conservation	05
4	Personality Development and Leadership	10
5	Specialized subject (ARMY)	10
	Total	**45**

Sr. No.	Modules / Units
1	**National Integration & Awareness**
	Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion. The students shall enrich themselves about the history of our beloved country and will look forward for the solutions based on strengths to the challenges to the country for its development. • Freedom Struggle and nationalist movement in India. • National interests, Objectives, Threats and Opportunities. • Problems/ Challenges of National Integration. • Unity in Diversity
2	**Drill: Foot Drill**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • Side pace, pace forward and to the rear • Turning on the march and whiling • Saluting on the march • Marking time, forward march and halt in quick time • Changing step • Formation of squad and squad drill
3	**Adventure Training, Environment Awareness and Conservation**
3A	**Adventure Training**
	Desired outcome: The students will overcome fear & inculcate within them the sense of adventure, sportsmanship, espirit-d-corp and develop confidence, courage, determination, diligence and quest for excellence. • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing, Scuba Diving etc.
3B	**Environment Awareness and Conservation**
	Desired outcome: The student will be made aware of the modern techniques of waste management and pollution control. • Waste management • Pollution control, water, Air, Noise and Soil
4	**Personality Development and Leadership**
	Desired outcome: The student will inculcate officer like qualities with desired ability to take right decisions. • Time management • Effect of Leadership with historical examples • Interview Skills • Conflict Motives- Resolution

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	<u>Army</u> **Desired outcome:** It will acquaint, expose & provide knowledge about Army/ Navy/ Air force and to acquire information about expanse of Armed Forces ,service subjects and important battles **A. Armed Force** • Task and Role of Fighting Arms • Modes of Entry to Army • Honors and Awards **B. Introduction to Infantry and weapons and equipments** • Characteristics of 5.56mm INSAS Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning • Organization of Infantry Battalion. **C. Military history** • Study of battles of Indo-Pak War 1965,1971 and Kargil • War Movies **D. Communication** • Characteristics of Walkie-Talkies • Basic RT Procedure • Latest trends and Development (Multi Media, Video Conferencing, IT) ***OR*** **<u>Navy</u>** **A. Naval orientation and service subjects** • Organization of Ship- Introduction on Onboard Organization • Naval Customs and Traditions • Mode of Entry into Indian Navy • Branches of the Navy and their functions • Naval Campaign (Battle of Atlantic, Pearl Harbour, Falkland War/Fleet Review/ PFR/ IFR)s **B. Ship and Boat Modelling** • Types of Models • Introduction of Ship Model- Competition Types of Model Prepare in NSC and RDC • Care and handling of power-tools used- maintenance and purpose of tools

Sr. No.	Modules / Units
	C. Search and Rescue • Role of Indian Coast Guard related to SAR **D. Swimming** • Floating and Breathing Techniques- Precautions while Swimming ***OR*** **<u>AIR</u>** **A. General Service Knowledge** • Organization Of Air Force • Branches of the IAF. **B. Principles of Flight** • Venturi Effect • Aerofoil • Forces on an Aircraft • Lift and Drag **C. Airmanship** • ATC/RT Procedures • Aviation Medicine **D. Aero- Engines** • Types of Engines • Piston Engines • Jet Engines • Turboprop Engines

2 Ability Enhancement Courses (AEC)
*2B * Skill Enhancement Courses (SEC) Group B*

6.Foundation Course in Physical Education Paper-III

Modules at a Glance

Sr. No.	Modules	No of Lectures
1	Overview of Nutrition	10
2	Evaluation of Health, Fitness and Wellness	10
3	Prevention and Care of Exercise Injuries	10
4	Sports Training	15
	Total	**45**

Sr. No.	Modules / Units
1	**Overview of Nutrition**
	• Introduction to nutrition & its principles • Role of Nutrition in promotion of health • Dietary Guidelines for Good Health • Regulation of water in body and factors influencing body temperature.
2	**Evaluation ofHealth, Fitness and Wellness**
	• Meaning & Concept of holistic health • Evaluating Personal health-basic parameters • Evaluating Fitness Activities – Walking & Jogging • Myths & mis-conceptions of Personal fitness
3	**Prevention and Care of Exercise Injuries**
	• Types of Exercise Injuries • First Aid- Importance & application in Exercise Injuries • Management of Soft tissues injuries • Management of bone injuries
4	**Sports Training**
	• Definition, aims & objectives of Sports training • Importance of Sports training • Principles of Sports training • Drug abuse & its effects

R._____: The Scheme of Examination:

The performance of the learners shall be evaluated in two components: Internal Assessment with 25% marks by way of continuous evaluation and by Semester End Examination with 75% marks by conducting the theory examination.

INTERNAL ASSESSMENT:- It is defined as the assessment of the learners on the basis of continuous evaluation as envisaged in the credit based system by way of participation of learners in various academic and correlated activities in the given semester of the programme.

A) Internal Assessment – 25% 25 Marks

Sr. No.	Particulars		Marks
1	A project to be prepared by an individual learner or a group of learners in not more than five learners in a group. It is to be evaluated by the teacher concerned.		20 Marks
	Hard Copy of the project*	10 Marks	
	Presentation	05 Marks	
	Viva/Interaction	05 Marks	
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities.		05 Marks

The marks of the internal assessment should not be disclosed to the students till the results of the corresponding semester is declared.

SEMESTER END EXAMINATION:- It is defined as the examination of the learners on the basis of performance in the semester end theory / written examinations.

B) Semester End Examinations – 75% 75 Marks

The assessment of **Part 'A' i.e. Internal Assessment and Part 'B' i.e. Semester End Examination** as mentioned above for the Semesters I to IV shall be processed by the Colleges / Institutions of their learners and issue the grade cards to them after the conversion of marks into grade as per the procedure.

INTERNAL ASSESSMENT (PRACTICUM)
(25 Marks)

SEMESTER –III

(***Continuous Evaluation during practical sessions conducted for 27 hours)***

a. A learner willing to participate in inter-collegiate/ inter university competitions of any game and sports conducted by the University of Mumbai will be evaluated for 15 marks on the basis of his attendance, sincerity and performance during the training / practice / coaching sessions / camps conducted by the college/University for at least 10 days. It is expected that the colleges should organize training / practice / coaching sessions / camps of various games and sports as per the choice of the learner. However, due to unavailability of the same in his / her college if a learner participates in the training / practice / coaching sessions / camps organized by other organizations or clubs of sports and games, may be considered for evaluation for 15 marks on the basis of the proofs of attendance and participation submitted by a learner.

b. A learner will be taught the following yogic practices by conducting practicals for at least 10 sessions (one hour each) and will be assessed by the concern teacher for marks out of **10** on the basis of his attendance, sincerity and performance.

- **Yogic Practices :-** Shirshasana, Sarvangasana, Matsyasana, Halasana,Bhujangasana, Shalbhasana, Dhanurasana, Ardhamatsendrasana, Pashchimotanasana, Mayurasana, Shavasana,Yoga Mudra & Uddiyan Bandh, Nauli, Kapalbhati, Ujjayyi Pranayam, Bhastrika, Omkar and Dhyana.

  (Note:- The above yoga practical sessions should be conducted in a such way that every learner must realize its effects as well as should make it as a part of his/her life style).

2 Ability Enhancement Courses (AEC)
*2B * Skill Enhancement Courses (SEC) Group B*

7. Business Law - I

Course Objective:

- To provide a conceptual study about the framework of Indian Business Laws.
- To orient students about the legal aspects of business
- To familiarize the students with case law studies related to Business Laws of Semester III and IV.

Sr. No.	Modules	No. of Lectures
1	Indian Contract Act – 1872 Part -I	12
2	Indian Contract Act – 1872 Part -II	12
3	Special Contracts	12
4	The Sale Of Goods Act - 1930	12
5	The Negotiable Instruments (Ammended) Act 2015	12
	Total	**60**

Sr. No.	Modules
1	**Indian Contract Act – 1872 Part –I**
	• Contract – Definition of Contract and Agreement, Essentials of Valid Contract, Classification of Contracts. • Offer and Acceptance – Rules of valid offer and acceptance, Counter offer, standing or open offer, distinguish between offer and invitation to offer. Concept of Communication and Revocation of offer and acceptance (sec. 3,5) • Capacity to Contract (S. 10-12) – Minor, Unsound Mind, Disqualified Persons. • Consideration (S. 2 & 25) – Concept and Importance of consideration, Legal rules of Consideration, Exceptions to the Rule, 'No Consideration No Contract'(Ss. 25) Unlawful Consideration (S 23)
2	**Indian Contract Act – 1872 Part –II**
	• Consent (Ss.13, 14-18, 39.53, 55, 66)-Agreements in which consent is not free - Coercion, Undue Influence, Misrepresentation Fraud, Mistake. • Void Agreements (S. 24-30) – Concept, Void Agreements under Indian Contract Act. • Contingent Contract (S. 31), Quasi Contract (S.68-72), Concept of E-Contract& Legal Issues in formation and discharge of E- Contract. Concept of Performance of Contract (S 37) • Modes of Discharge of Contract, Remedies on breach of Contract.(73-75)
3	**Special Contracts**
	• Law of Indemnity & Guarantee (Ss. 124-125, Ss. 126-129, 132-147) – Concept, Essentials elements of Indemnity and Guarantee, Contract of Indemnity vs. Guarantee, Modes of Discharge of Surety. • Law of Bailment (S. 148, 152-154, 162, 172, 178, 178A, 179) – Concept, Essentials of Bailment, Kinds of Bailment, Rights and Duties of Bailor and Bailee • Law of Pledge – Concept, Essentials of valid Pledge, Lien - concept, Difference between Pledge and Lien, Rights of Pawnor & Pawnee.(Ss.173, 174, 177) • Law of Agency (Ss. 182-185, 201-209) – Concept, Modes of creation of Agency, Modes of termination of Agency, Rights& Duties of Principal and Agent.

4	**The Sale Of Goods Act - 1930**
	• Contract of Sale (S.2) – Concept, Essentials elements of contract of sale, Distinction between Sale and Agreement to sell (S.4) Distinguish between Sale and Hire Purchase Agreement, Types of Goods. Effects of destruction of Goods (Ss. 6,7.8), • Conditions & Warranties (Ss. 11-25 & 62, 63) – Concept, Distinguish between Conditions and Warranties, Implied Conditions & Warranties, Concept of Doctrine of Caveat Emptor –Exceptions. • Property – Concept , Rules of transfer of property (Ss. 18-26) • Unpaid Seller (Ss. 45-54, 55 & 56)- Concept, Rights of an unpaid seller, Remedies for Breach of contract of Sale (Ss. 55-61),Auction sale – Concept, Legal Provisions. (S. 64)
5	**The Negotiable Instruments (Ammended) Act 2015**
	• Negotiable Instruments – Concept (S13), Characteristics, Classification of Negotiable Instruments (Ss. 11, 12, 17-20, 42, 43, 104,134,135) Maturity of Instruments. • Promissory Note and Bill of Exchange (Ss. 4,5, 108-116)- Concept, Essentials of Promissory Note, Bill of Exchange (Ss. 4,5), Essential features of promissory note and Bill of exchange, Kinds Promissory note and Bill of exchange, Cheque (S.6)– Concept, Types & Crossing of Cheque, Distinguish between Bill of Exchange & Cheque, Dishonour of Cheque – Concept & Penalties (Ss. 138, 139,142) • Miscellaneous Provisions (S. 8-10, 22, 99-102, 118-122, 134-137) –Parties to Negotiable instruments Holder, Holder in due course, Rights & Privileges of Holder in due course, Payment in due course, Noting & Protest (99-104A)

SEMESTER – III REFERENCE BOOKS:

REFERENCES
1. Law of Contract: Avatar Singh, Eastern Book Company. 2. Merchantile Law: by M.C.Kucchal. 3. Business Law : N.D.Kapoor 4. The Law of Contract: An Outline by Dr. Nilima Chandiramani, Avinash Publications. 5. Law of Sale of Goods and Partnership: A Concise Study by Dr. Nilima Chandiramani, Shroff Publishers. 6. The Sale of Goods Act: P. Ramanatha Aiyar, University Book Agency. 7. The Negotiable Instruments Act: Bhashyam &Adiga, Bharat Law House. 8. The Negotiable Instruments Act: Avatar Singh, Eastern Book Company 9. Khergamvala on the Negotiable Instruments (Amendment)Act,2015,Lexis Nexis

PAPER PATTERN

S.Y.B.COM

SEMESTER III &IV

BUSINESS LAW PAPER I & II

(100 Marks Paper Per Semester)

1. Question paper to have Five Questions
(One from Each Module) 20 Marks Each

2. All Questions to be Compulsory.

3. Each Question to have Four Sub Questions of Ten Marks Each
(Students to answer any Two out of Four)

Question Paper Pattern
(Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions G) Sub Questions to be asked 12 and to be answered any 10 H) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	G) Theory questions H) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester IV

No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***	
1Aa	***Discipline Specific Elective(DSE) Courses***	
1	Accountancy and Financial Management IV	**03**
1Ab	***Discipline Specific Elective(DSE) Courses***	
2	*Any one course from the following list of the courses	**03**
1B	***Discipline Related Elective(DRE) Courses***	
3	Commerce IV	**03**
4	Business Economics IV	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	****Skill Enhancement Courses (SEC) Group A***	
5	*Any one course from the following list of the courses	**03**
2B	****Skill Enhancement Courses (SEC) Group B***	
6	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
7	Business Law II	**03**
	Total Credits	**20**

1Ab *List of Discipline Specific Elective (DSE) Courses for Semester IV (Any One)	
1	Financial Accounting and Auditing - Auditing
2	Business Management- Marketing Management
3	Banking & Finance- Introduction to Banking in India
4	Commerce- International Business Relations

List of Skill Enhancement Courses (SEC) Group A for Semester IV (Any One)	
1	Advertising II
2	Field Sales Management II
3	Public Relations II
4	Mass Communication II
5	Travel & Tourism Management II
6	Journalism II
7	Company Secretarial Practice II
8	Rural Development II
9	Co-operation II
10	Mercantile Shipping II
11	Indian Economic Problem II
12	Computer Programming II
13	Logistic and Supply Chain Management I
14	Economic System II
Note: Course selected in Semester III will continue in Semester IV	

** List of Skill Enhancement Courses (SEC) Group B	
1	Foundation Course- Contemporary Issues - IV
2	Foundation Course in NSS - IV
3	Foundation Course in NCC - IV
4	Foundation Course in Physical Education - IV
Note: Course selected in Semester III will continue in Semester IV	

Elective Courses (EC)
Discipline Specific Elective (DSE) Courses

1Aa. Accountancy and Financial Management IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Company Accounts	15
2	Redemption of Preference Shares	15
3	Redemption of Debentures	15
4	Ascertainment and Treatment of Profit Prior to Incorporation	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Company Accounts**
	Introduction of basic terms: Types of companies, nature and formation of companies, Shares, Debentures, Share Capital, Reserves and surplus, types of assets and liabilities, dividen, format of Balance Sheet (Only theory) Issue of shares: Different modes IPO, Private Placements, Preferential, Rights, ESO, SWEAT and ESCROW account, Issue of shares at par, premium and discount, Under subscription and Over subscription of shares, forfeiture and reissue of forfeited shares, issue of shares for consideration other than cash. (Only theory) Issue of Debentures: types of Debentures, Issue of debentures at par, premium and discount, Issue of Debentures with consideration of Redemption ,Issue of debentures for cash receivable in instalments or at a time Issue of debentures for consideration other than cash. (Only theory)
2	**Redemption of Preference Shares**
	Provision of the Companies Act for redemption of Preference Shares (Sec 55 of the Companies Act, 2013), Companies (Share and Debentures) Rules. Methods of Redemption of fully paid up Preference Shares as per Companies Act, 2013: The proceed of a fresh issue of shares, the capitalisation of undistributed profits and a combination of both, calculation of minimum fresh issue to provide the fund for redemption, (Question on entries and/or Balance Sheet) Note: Companies governed by Section 133 of the Companies Act, 2013 and comply with the accounting standards prescribed for them. Hence, the balance in security premium account not to be utilised for premium payable on redemption of preference shares.
3	**Redemption of Debentures**
	Introduction : Provisions of Section 71 (1) and (4) of the Companies Act, 2013, Creation and investment of DRR including The Companies (Share Capital and Debentures) Rules, 2014, the methods of writing-off discount/loss on issue of debentures; Terms of issue of debentures Methods of redemption of debentures: By payment in lumpsum and by payment in instalments (excluding from by purchase in open market), Conversion. (Question on entries. ledgers and/or Balance Sheet and /or redemption of preference shares)
4	**Ascertainment and Treatment of Profit Prior to Incorporation**
	(i) Principles for ascertainment Preparation of separate combined, columnar Profit and Loss A/c including different basis of allocation of expenses and income

Note: The Law and Standards in force on 1st April immediately preceding the commencement of Academic year will be applicable for ensuing Examinations

Reference Text :

1. Introduction to Accountancy T.S. Grewal S. Chand and Co. (P) Ltd., New Delhi
2. Advanced Accounts Shukla and Grewal S. Chand and Co. (P) Ltd., New Delhi
3. Advanced accountancy R.L. Gupta and M. Radhaswamy S. Chand and Co. (P) Ltd., New Delhi
4. Modern Accountancy Mukerjee and Hanif Tata Mc. Grow Hill and Co. Ltd., Mumbai
5. Financial Accountancy LesileChandWichkPretice Hall of India AdinBakley (P) Ltd.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions I) Sub Questions to be asked 12 and to be answered any 10 J) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	I) Theory questions J) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Elective Courses (EC)
Discipline Specific Elective (DSE) Courses

1Ab. Financial Accounting and Auditing VI – Auditing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Auditing	10
2	Audit Planning, Procedures and Documentation	10
3	Auditing Techniques and Internal Audit Introduction	15
4	Auditing Techniques : Vouching & Verification	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Auditing**
	A. Basics – Financial Statements, Users of Information, Definition of Auditing, Objectives of Auditing, Inherent limitations of Audit, Difference between Accounting and Auditing, Investigation and Auditing. B. Errors & Frauds – Definitions, Reasons and Circumstances, Types of Error, Types of frauds, Risk of fraud and Error in Audit, Auditors Duties and Responsibilities in case of fraud. C. Principles of Audit, Materiality, True and Fair view D. Types of Audit – Meaning, Advantages, Disadvantages of Balance sheet Audit, Interim Audit, Continuous Audit, Concurrent Audit and Annual Audit, Statutory Audit
2	**Audit Planning, Procedures and Documentation**
	A. Audit Planning – Meaning, Objectives, Factors to be considered, Sources of obtaining information, Discussion with Client, Overall Audit Approach B. Audit Program – Meaning, Factors, Advantages and Disadvantages, Overcoming Disadvantages, Methods of Work, Instruction before commencing Work, Overall Audit Approach. C. Audit Working Papers – Meaning, importance, Factors determining Form and Contents, Main Functions / Importance, Features, Contents of Permanent Audit File, Temporary Audit File, Ownership, Custody, Access of Other Parties to Audit Working Papers, Auditors Lien on Working Papers, Auditors Lien on Client's Books.
3	**Auditing Techniques and Internal Audit Introduction**
	A. Test Check – Test Checking Vs Routing Checking, test Check meaning, features, factors to be considered, when Test Checks can be used, advantages, disadvantages, precautions. B. Audit Sampling – Audit Sampling, meaning, purpose, factors in determining sample size – Sampling Risk, Tolerable Error and expected error, methods of selecting Sample Items Evaluation of Sample Results auditors Liability in conducting audit based on Sample C. Internal Control – Meaning and purpose, review of internal control, advantages, auditors duties, review of internal control, Inherent Limitations of Internal control, internal control samples for sales and debtors, purchases and creditors, wages and salaries. Internal Checks Vs Internal Control, Internal Checks Vs Test Checks. D. Internal Audit : Meaning, basic principles of establishing Internal audit, objectives, evaluation of internal Audit by statutory auditor, usefulness of Internal Audit, Internal Audit Vs External Audit, Internal Checks Vs Internal Audit

Sr. No.	Modules / Units
4	**Auditing Techniques : Vouching & Verification**
	A. Audit of Income : Cash Sales, Sales on Approval, Consignment Sales, Sales Returns Recovery of Bad Debts written off, Rental Receipts, Interest and Dividends Received Royalties Received B. Audit of Expenditure : Purchases, Purchase Returns, Salaries and Wages, Rent, Insurance Premium, Telephone expense Postage and Courier, Petty Cash Expenses, Travelling Commission Advertisement, Interest Expense C. Audit of Assets Book Debts / Debtors, Stocks – Auditors General Duties; Patterns, Dies and Loose Tools, Spare Parts, Empties and Containers Quoted Investments and Unquoted Investment Trade Marks / Copyrights Patents Know-How Plant and Machinery Land and Buildings Furniture and Fixtures D. Audit of Liabilities : Outstanding Expenses, Bills Payable Secured loans Unsecured Loans, Contingent Liabilities

Note: The Law and Standards in force on 1st April immediately preceding the commencement of Academic year will be applicable for ensuing Examinations

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions K) Sub Questions to be asked 12 and to be answered any 10 L) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	K) Theory questions L) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Revised Syllabus of Courses of B.Com. Programme at Semester IV with Effect from the Academic Year 2017-2018

Elective Courses (EC)
Discipline Specific Elective (DSE) Courses

1Ab. Business Management-Marketing Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Distribution	10
2	Promotion	15
3	Understanding Buyer Behaviour	10
4	Marketing of services and Rural Marketing	10
	Total	**45**

Sr. No.	Modules / Units
1	**Distribution**
	• Types of middlemen • Factors affecting channel by middlemen • Functions performed by middlemen • Logistics : Meaning and components • E-marketing : Meaning, merits and demerits of e-marketing • Online retailing – successful online retailers in India and abroad
2	**Promotion**
	• Elements of promotion mix • Objectives of promotion and marketing communication • Factors affecting promotion mix decisions • Steps in designing a marketing communication program • Role of Social Media in marketing communication
3	**Understanding Buyer Behaviour**
	• Comparing consumer markets (individuals and households) with organizational buyers (Industrial / Business houses) • Factors affecting consumer behaviour • Steps in consumer purchase decision process (with respect to high involvement and low involvement products) • Factors affecting organizational buyer behaviour • Steps in the organizational purchase decision process (with respect to different buying situations)
4	**Marketing of services and Rural Marketing**
	• Services : definition and features • Marketing mix for services marketing • Managing service quality and productivity • Rural market scenario in India • Factors contributing to the growth of rural markets in India • Challenge of Rural Marketing • Strategies to cope with the challenges of rural marketing.

Reference Books:

1. Philip Kotler (2003). Marketing Management : Eleventh Edition. New Delhi : Pearson Education
2. V. S. Ramaswani and S Namakumari (2002). Marketing : Planning, Implementation and Control (3rd Edition) New Delhi, Macmillan India
3. Michael Porter – Competitive Advantage
4. Theodore Levitt – Marketing Management
5. Fundamentals of Marketing – William Stanton
6. Customer Driven Services Management (1999) Response Books

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions M) Sub Questions to be asked 12 and to be answered any 10 N) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	M) Theory questions N) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses

3. Commerce – IV
(Management: Production & Finance)

Course Objectives: -

1. To acquaint the learners with the basic concepts of Production Management, Inventory Management &Quality Management.
2. To provide basic knowledge about Indian Financial Systems.
3. To update the learners with the recent trends in Finance.

Sr. No.	Modules	No. of Lectures
1	Production & Inventory Management	11
2	Quality Management	10
3	Indian Financial System	12
4	Recent Trends In Finance	12
	Total	**45**

Sr. No.	Modules
1	**Production & Inventory Management**
	• **Production Management**: Objectives, Scope Production Planning &Control : Steps, Importance • **Production Systems**: Concept, Types - Continuous and Intermittent. Productivity: Concept, Factors Influencing Productivity, Measures for improving Productivity. • **Inventory Management**- Objectives, Inventory Control- Techniques. Scientific Inventory Control System - Importance
2	**Quality Management**
	• Introduction to Quality: Dimensions of Quality, Cost of Quality: Types – Internal Failure Cost, External Failure Cost, Appraisal Cost, Prevention Cost, Quality Circle: Features. • Quality Management Tools: TQM – Importance, Six Sigma – Process, ISO 9000 – Certification Procedure, Kaizen – Process • Service Quality Management: Importance, SERVQUAL Model,Measures to improve service quality.
3	**Indian Financial System**
	• Indian Financial Market: Structure, Primary Market – IPO Procedure Dematerialisation: Process, Role of Depositories : NSDL and CDSL • SEBI: Functions of SEBI, Investors protection measures of SEBI. Stock Exchange – Functions, Speculators. • Credit Rating: Advantages, Credit Rating Agencies in India - CRISIL, CARE, and ICRA.
4	**Recent Trends In Finance**
	• Mutual Funds- Advantages and Limitations, Types, Factors responsible for growth of mutual funds – Systematic Investment Plan. • Commodity Market: Categories, Derivatives Market: Types, Participants, Types of Derivative Instruments. • Start-up Ventures –Concept, Sources of Funding, Micro Finance – Importance, Role of Self Help Groups.

SEMESTER – IV REFERENCE BOOKS:

REFERENCES
1. Production and Operations Management –ProfL.C.Jhamb, Event Publishing House.
2. Production Planning & Control- ProfL.C.Jhamb, Event Publishing House
3. Production & Operation Management (Text & Cases)- K.Ashwathappa&G.Sudeshana Reddy, Himalaya Publication.
4. Launching New Ventues : An EnterpreneurialApproach-KathleenR.Allen, Cengage Learning
5. Essentials of Inventory Management-MaxMuller,Amacon Publishes
6. Indian Financial System—BharathiPathiak, Pearson Publication
7. Financial Institutions and Markets : Structure Growth& Innovations – L.M.Bhole , Jitendra Mahakad, Tata McGraw Hill.
8.The IndianFinancial System and Financial Market Operator-VasantDesai, Himalaya Publishing
9. Indian Financial System – M.Y.Khan, Tata McGraw –Hill
10.Production and Operations Management –Anandkumar Sharma, Anmol Publication
11. Mutual Funds in India: Emerging Issues-NaliniPravaTripathy, Excel Books New Delhi.
12. Start up Stand up: A step by stepguide to Growing your Business,NandiniVaidyanathan, Jaico Publishing House,Mumbai
13. A Trades Guide to Indian Commodities Market-Vijay L. Bhambwani, Network 18 Publication Ltd.

PAPER PATTERN

COMMERCE PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six**

Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses

4. Business Economics IV
Foundation of Public Finance

Modules at a Glance

Sr. No.	Modules	No.of Lectures
1	Introduction to Public Finance	10
2	Public revenue	10
3	Public Expenditure and Debt	10
4	Fiscal Management and Financial Administration	15
	Total	**45**

Business Economics IV

Foundation of Public Finance

Preamble

Public Finance Issues are central to economic and Political discourse worldwide, as one of the primary functions of government is to generate resources from its people to spend money for improving the lives of its people. The primary objective of this course is to provide students with the tools to understand the underlying concepts and practical tradeoffs entailed in Public finance policy alternatives.

It is strongly recommended to analyze Union budget of ongoing financial year in the class room.

Sr. no	Modules / Units
1	**The Role Of Government In An Economy**
	• **Meaning and Scope of Public finance**. • **Major fiscal functions** : allocation function, distribution function & stabilization function • **Principle of Maximum Social Advantage:** Dalton and Musgrave Views - the Principle in Practice, Limitations. • **Relation between Efficiency, Markets and Governments** • **The concept of Public Goods and the role of Government**
2	**Public Revenue**
	• **Sources of Public Revenue :**tax and non-tax revenues • Objectives of taxation - Canons of taxation - Types of taxes : direct and indirect - Tax Base and Rates of taxation : proportional, progressive and regressive taxation • **Shifting of tax burden:** Impact and incidence of taxation - Processes- factors influencing incidence of taxation • **Economic Effects of taxation:** on Income and Wealth, Consumption, Savings, Investments and Production. • **Redistributive and Anti – Inflationary nature of taxation** and their implications •
3	**Public Expenditure And Public Debt**
	• **Public Expenditure:** Canons - classification - economic effects of public spending - on production, consumption, distribution, employment and stabilization - Theories of Public Expenditure: Wagner's Hypothesis and Wiseman Peacock Hypothesis - Causes for Public Expenditure Growth. • **Significance of Public Expenditure:** Social security contributions- Low Income Support and Social Insurance Programmes. • **Public Debt :**Classification - Burden of Debt Finance : Internal and External- Public Debt and Fiscal Solvency
4	**Fiscal Management and Financial Administration**
	• **Fiscal Policy:** Meaning, Objectives, constituents and Limitations. • **Contra cyclical Fiscal Policy and Discretionary Fiscal Policy :**Principles of Sound and Functional Finance • **Budget-** Meaning objectives and types - Structure of Union budget - Deficit concepts-Fiscal Responsibility and Budget Management Act. • **Intergovernmental Fiscal Relations:** fiscal federalism and fiscal decentralization **-** central-state financial relations **-** 14th Finance Commission recommendations

	Reference Books
	Ahuja H.L. : Modern Economics, 19th edition, 2015, S.Chand&co Pvt Ltd, New Delhi
	Bhatia H.L.: Public Finance. Vikas Publishing House Pvt. Ltd.
	David N. Hyman : Public Finance A Contemporary Application of theory of policy, Krishna Offset, Delhi
	Hoiughton E.W.(1998) : Public Finance, Penguin, Baltimore
	Hajela T.N: Public Finance – Ane Books Pvt.Ltd
	Jha, R (1998) : Modern Public Economics, Route Ledge, London
	Musgrave, R.A and P.B. Musgrave (1976) : Public Finance in Theory and Practice, Tata McGraw Hill, Kogakusha, Tokyo
	Mithani, D.M (1998) : Modern Public Finance, Himalaya Publishing House, Mumbai

QUESTION PAPER PATTERN

Business Economics Semester IV

Maximum Marks: 100 Marks

Time: 3 Hours

Note: 1) Attempt all Questions

2) Attempt any two out of three questions from each of question no. 2, 3, 4 & 5

Question No	Particulars	Marks
Q-1	**Objective Questions:** A) Conceptual questions (Any Five out of Eight) (Two from each module) B) Multiple Choice questions (10 questions - at least two from each Module)	**20Marks** 10 Marks 10 Marks
Q-2 (from Module I)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-3 (from Module II)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-4 (from Module III)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-5 (from Module IV)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Advertising - II

Course Objective:

1. To highlight the role of advertising for the success of brands and its importance within the marketing function of a company.
2. It aims to orient learners towards the practical aspects and techniques of advertising.
3. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising

Sr. No.	Modules	No. of Lectures
1	Media in Advertising	11
2	Planning Advertising Campaign	11
3	Execution and Evaluation of Advertising	11
4	Fundamentals of Creativity in Advertising	12
	Total	**45**

Sr. No.	Modules
1	**Media in Advertising**
	• **Traditional Media:** Print, Broadcasting, Out-Of-Home advertising and films - advantages and limitations of all the above traditional media • **New Age Media:** Digital Media / Internet Advertising – Forms, Significance and Limitations • **Media Research**: Concept, Importance, Tool for regulation - ABC and Doordarshan Code
2	**Planning Advertising Campaigns**
	• **Advertising Campaign**: Concept, Advertising Campaign Planning -Steps Determining advertising objectives - DAGMAR model • **Advertising Budgets**: Factors determining advertising budgets, methods of setting advertising budgets, Media Objectives - Reach, Frequency and GRPs • **Media Planning**: Concept, Process, Factors considered while selecting media, Media Scheduling Strategies
3	**Fundamentals of Creativity in Advertising**
	• **Creativity**: Concept and Importance, Creative Process, Concept of Créative Brief, Techniques of Visualization • **Creative aspects:** Buying Motives - Types, Selling Points- Features, Appeals – Types, Concept of Unique Selling Preposition (USP) • **Creativity through Endorsements:** Endorsers – Types, Celebrity Endorsements – Advantages and Limitations, High Involvement and Low Involvement Products
4	**Execution and Evaluation of Advertising**
	• **Preparing print ads:** Essentials of Copywriting, Copy – Elements, Types, Layout- Principles, Illustration - Importance. • **Creating broadcast ads:** Execution Styles, Jingles and Music – Importance, Concept of Storyboard • **Evaluation:** Advertising copy, Pre-testing and Post-testing of Advertisements – Methods and Objectives

Reference Books
Advertising
15. Advertising and Promotion : An Integrated Marketing Communications Perspective George Belch and Michael Belch, 2015, 10th Edition, McGraw Hill Education 16. Contemporary Advertising, 2017, 15th Edition, William Arens, Michael Weigold and Christian Arens, Hill Higher Education 17. Strategic Brand Management – Kevin Lane Keller, 4th Edition, 2013 – Pearson Education Limited 18. Kleppner's Advertising Procedure – Ron Lane and Karen King, 18th edition, 2011 – Pearson a. Education Limited 19. Advertising: Planning and Implementation, 2006 – Raghuvir Singh, Sangeeta Sharma –Prentice Hall 20. Advertising Management, 5th Edition, 2002 – Batra, Myers and Aaker – Pearson Education 21. Advertising Principles and Practice, 2012 - Ruchi Gupta – S.Chand Publishing 22. Brand Equity & Advertising- Advertising's role in building strong brands, 2013- David A. Aker, Alexander L. Biel, Psychology Press 23. Brand Positioning – Strategies for Competitive Advantage, Subroto Sengupta, 2005, Tata McGraw Hill Publication. 24. The Advertising Association Handbook - J. J. D. Bullmore, M. J. Waterson, 1983 - Holt Rinehart & Winston 25. Integrated Advertising, Promotion, and Marketing Communications, Kenneth E. Clow and Donald E. Baack, 5th Edition, 2012 – Pearson Education Limited 26. Kotler Philip and Eduardo Roberto, Social Marketing, Strategies for Changing Public Behaviour, 1989, The Free Press, New York. 27. Confessions of an Advertising Man, David Ogilvy, 2012, Southbank Publishing 28. Advertising, 10th Edition, 2010 - Sandra Moriarty, Nancy D Mitchell, William D. Wells, Pearson

PAPER PATTERN

ADVERTISING PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six** 20

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Field Sales Management - II

Course Objective:

4. **This course will prepare learners to understand the concept of Field Sales Management and Sales Organization.**

5. **To make learners understand various sales policies and learn the various aspects of sales force management**

Sr. No.	Modules	No. of Lectures
1	Sales Planning & Forecasting I	11
2	Sales Planning & Forecasting II	11
3	Sales Budget & Control	11
4	Recent Issues In Sales Management	12
	Total	**45**

Sr. No.	Modules
1	**SALES PLANNING & FORECASTING I** **11**
	• Sales Plan – Steps in developing an effective Sales Plan. • Planning Function of Sales Management – Sales Call Planning, Setting Quantitative Performance Standards. • Sales Forecasting – Meaning, Objectives & Factors affecting Sales Forecasting. • Sales Forecasting Techniques (Qualitative & Quantitative)
2	**SALES PLANNING & FORECASTING II** **11**
	• Concept of Sales Territory, Reasons for establishing sales territories • Salesman's Report & its types • Concept of Quotas & Targets, Reasons for fixing targets. • Methods of fixing Quotas & Targets
3	**SALES BUDGET & CONTROL** **11**
	• Meaning of Sales Budget, Objectives of Sales Budget, Procedure to prepare Sales Budget. • Sales Control – Concept and steps in Control Process Sales Analysis & Marketing Cost Analysis Sales Audit - Concept, Importance of Sales Audit, • Procedure of Conducting Sales Audit
4	**RECENT ISSUES IN SALES MANAGEMENT** **12**
	• Ethical & Legal issues in Sales Management • Use of Technology in Sales Management (Telemarketing, E-Marketing, M-Marketing, Digitalization) • Relationship Selling Process & Consumer Education (Value Added Selling) • Challenges in Sales Management.

Reference Books
Field Sales Management - II
1. Philip Kotler – Marketing Management, 11th ed. Pearson Publication. **2. Porter, Michel E. Competitive Strategy, New York: The Free Press, 1980.** **3. Richard R Still, Edward W. Candiff, Sales Management.** **4. M.D.Pestonjee, Motivation & Job Satisfaction.** **5. Tom Reilly, Value Added Selling** **6. Helen Woodruffe, Services Marketing, Macmillan Publication.** **7. V.S.Ramaswamy, S.Namakumari, Marketing Management, Global Prospective –Indian Concept, Macmillan Publication**

PAPER PATTERN

FIELD SALES MANAGEMENT PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six** 20

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Company Secretarial Practice - II

Sr. No.	Modules	No. of Lectures
1	Management of Companies	11
2	Company Meetings	11
3	Dematerialisation and Online Trading	11
4	Reports and Winding Up	12
	Total	**45**

Sr. No.	Modules
1	**Management of Companies**
	• Directors – Appointment, Duties, Role, Directors Report, Director Identification Number (DIN). • Types of Directors , Role of CEO, Non- Executive Directors, Independent Director • Auditor- Appointment, Duties, Rights & Powers, Audit report.
2	**Company Meetings**
	• Types of Company meeting, Secretarial Duties – Before, During and after company meeting – Annual General Meeting, Extra-Ordinary General Meeting, Board Meeting. • Notices, agenda, Chairman, Quorum& Proxy – Concept and Statutory Provisions • Motion, Resolution, Minutes – Concept, Types Voting, Minutes – Concept, Methods.
3	**Dematerialisation and Online Trading**
	• Dematerialisation – Need and Importance, Secretarial Duties, Procedures, Participants. • Online Trading – Concept, Advantages & Disadvantages, Bombay Stock Exchange Online Trading (BOLT), BOSS. • Listing of securities – Procedure, Advantages, Secretarial Duties, Scrips – Types.
4	**Reports and Winding Up**
	• Company Reports – Types, Secretarial Duties with regard to payment of dividend, Interest, Charges & penalties. • Winding up of a Company – Procedure,& Statutory Provisions, Secretarial role in winding up. • Specimen – Notice & Agenda of Annual General Meeting, Notice & Agenda of Board Meeting prior to Annual General Meeting, Resolution for appointment of Company Secretary, Special Resolution for alteration of Memorandum of Association, Minutes of Board Meeting prior to Annual General Meeting, Minutes of Annual General Meeting.

COMPANY SECRETARIAL PRACTICE

REFERENCES

Readings:

13. M. C.Bhandari : Guide to Company Law Procedure; Wadhwa& Company, Agra&Nagpur
14. K. V.Shanbhogue : Company Law Practice; BharatLaw House, New Delhi – 34
15. M. L.Sharma : Company Procedures and Register of Companies , Tax Publishers, Delhi
16. A. M.Chakborti, B. P.Bhargava : Company Notices, Meetings and Resolutions, Taxmann, New Delhi
17. A.Ramaiya : Guide to the Companies Act, Wadhwa & Company, Nagpur
18. R.Suryanarayanan : Company Notices, Meetings and Resolutions, Kamal Law House, Kolkatta
19. D. K. Jain : E- Filling of Forms & returns
20. Taxmann : E-Company forms
21. V.K.Gaba : Depository Participants (Law & Practice)
22. ICSI Publications : Meetings
23. B. K.Sengupta : Company Law
24. D. K. Jain : Company Law Procedures

References:

3. M. C.Bhandari R.D.Makheeja : Guide to Memorandum, Articles and Incorporation of Companies ; Wadhwa& Company, Agra&Nagpur
4. Taxman : Company Law, Digest

Journals:

5. Chartered Secretary : ICSI Publication
6. Student Company Secretary : ICSI Publication
7. Company Law Journal : L.M.Sharma, Post Box No. 2693, New Delhi – 110005.
8. Corporate Law Adviser : Corporate Law Advisers, Post Bag No. 3, VasantVihar, New Delhi

PAPER PATTERN

COMPANY SECRETRIAL PRACTICE - PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six** 20

Revised Syllabus of Courses of B.Com. Programme at Semester IV with Effect from the Academic Year 2017-2018

2 Ability Enhancement Courses (AEC)
*2A * Skill Enhancement Courses (SEC) Group A*

5. Computer Programming Paper II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Computer Communication Systems	15
2	Principles Of DBMS	15
3	Case Study Of DBMS Using MS-ACCESS	15
4	MS-ACCESS QUERIES	15
5	Laboratory Training	15
	Total	**75**

Sr. No.	Modules / Units
1	**UNIT – I :Computer Communication Systems**
	The Internet, internet connections, ISO's Open system interconnection reference model, The TCP/IP stack, E-mail, Internet addresses, Internet Protocol, SMTP, MIME POP, IMAP, Domain Name system, Telnet, FTP, WWW, Browsers, HTML, http, JAVA,. Intranet, Intranet Services and their advantages. Extranets. Search Engine and Web Crawlers
2	**UNIT – II :Principles Of DBMS**
	What is a database, Relational databases (Relation, Attribute, Instance, Relationship, Join), Database capabilities (Data definition, data manipulation, Access as an RDBMs)
3	**UNIT – III : CASE STUDY OF DBMS USING MS-ACCESS**
	MS-Office workspace basics, Exploring the Office menu, Working with ribbon, Opening an access database Exploring database objects, Creating database, Changing views. Printing database objects. Saving and closing database file. Working with datasheets, Moving among records, Updating records, adding records to a table, Finding records, sorting records, Filtering records, Using the PIVOT chart View, Saving and closing tables. Adding a table to a database, Adding fields to a table, adding a Lookup field, setting a Primary key, Using the input mask wizard. Saving design changes, Importing data (From Excel).
4	**UNIT – IV : MS-ACCESS QUERIES**
	What is a Query, Creating a query, working with queries, saving and running a query, creating calculated fields, using aggregate functions, Understanding query properties, Joining Tables. What is a Form, Using the form tool, Creating a form with form wizard, Working in design view, Changing the form layout, Using calculated controls, Working with records on a Form. What is a report tool, Printing report, saving a report, designing a report, changing report layout, creating mailing labels.

QUESTION PAPER PATTERN

Maximum Marks : 75
Questions to be set : 05
Duration : $2\frac{1}{2}$ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particulars	Marks
Q. 1.	Objective Questions A. Attempt any eight sub-questions from the following : (True / False) any 08 B. Attempt any seven sub-questions from the following : (Multiple Choice)any 07	15 Marks
Q. 2.	A. Attempt any one sub-question from a, b (Unit – I) B. Attempt any one sub-question from c, d (Unit – I)	16 Marks
Q. 3.	A. Attempt any one sub-question from a, b (Unit – II) B. Attempt any one sub-question from c, d (Unit – II)	14 Marks
Q. 4.	A. Attempt any one sub-question from a, b (Unit – III) B. Attempt any one sub-question from c, d (Unit – III)	16 Marks
Q. 5.	A. Attempt any one sub-question from a, b (Unit – IV) B. Attempt any one sub-question from c, d (unit IV)	14 Marks

2 Ability Enhancement Courses (AEC)
*2B * Skill Enhancement Courses (SEC) Group B*

6. Foundation Course- Contemporary Issues- IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Significant, Contemporary Rights of Citizens	12
2	Approaches to understanding Ecology	11
3	Science and Technology –II	11
4	Introduction to Competitive Exams	11
	Total	**45**

Sr. No.	Modules / Units
1	**Significant, Contemporary Rights of Citizens**
	A. Rights of Consumers-Violations of consumer rights and important provisions of the Consumer Protection Act, 2016; Other important laws to protect consumers; Consumer courts and consumer movements. **(3 Lectures)** **B. Right to Information**- Genesis and relation with transparency and accountability; important provisions of the Right to Information Act, 2005; some success stories. **(3 Lectures)** **C. Protection of Citizens'/Public Interest**-Public Interest Litigation, need and procedure to file a PIL; some landmark cases. **(3 Lectures)** **D. Citizens' Charters, Public Service Guarantee Acts. (3 Lectures)**
2	**Approaches to understanding Ecology**
	A. Understanding approaches to ecology- Anthropocentrism, Biocentrism and Eco centrism, Ecofeminism and Deep Ecology. **(3 Lectures)** **B. Environmental Principles-1**: the sustainability principle; the polluter pays principle; the precautionary principle. **(4 Lectures)** **C. Environmental Principles-2**: the equity principle; human rights principles; the participation principle. **(4 Lectures)**
3	**Science and Technology –II**
	Part A:Some Significant Modern Technologies, Features and Applications (7 Lectures) **i. Laser Technology**- Light Amplification by Stimulated Emission of Radiation; use of laser in remote sensing, GIS/GPS mapping, medical use. **ii. Satellite Technology**- various uses in satellite navigation systems, GPS, and imprecise climate and weather analyses. **iii. Information and Communication Technology**- convergence of various technologies like satellite, computer and digital in the information revolution of today's society. **iv. Biotechnology and Genetic engineering**- applied biology and uses in medicine, pharmaceuticals and agriculture; genetically modified plant, animal and human life. **v. Nanotechnology**- definition: the study, control and application of phenomena and materials at length scales below 100 nm; uses in medicine, military intelligence and consumer products. **Part B:Issues of Control, Access and Misuse of Technology. (4 Lectures)**

Sr. No.	Modules / Units
4	**Introduction to Competitive Exams**
	Part A. Basic information on Competitive Examinations- the pattern, eligibility criteria and local centres: **i.** Examinations conducted for entry into professional courses - Graduate Record Examinations (GRE), Graduate Management Admission Test GMAT), Common Admission Test (CAT) and Scholastic Aptitude Test (SAT). **ii.** Examinations conducted for entry into jobs by Union Public Service Commission, Staff Selection Commission (SSC), State Public Service Commissions, Banking and Insurance sectors, and the National and State Eligibility Tests (NET / SET) for entry into teaching profession. **Part B. Soft skills required for competitive examinations- (7 Lectures)** **i.** Information on areas tested: Quantitative Ability, Data Interpretation, Verbal Ability and Logical Reasoning, Creativity and Lateral Thinking **ii.** Motivation: Concept, Theories and Types of Motivation **iii.** Goal-Setting: Types of Goals, SMART Goals, Stephen Covey's concept of human endowment **iv.** Time Management: Effective Strategies for Time Management **v.** Writing Skills: Paragraph Writing, Report Writing, Filing an application under the RTI Act, Consumer Grievance Letter.

References

1. Asthana, D. K., and Asthana, Meera, *Environmental Problems and Solutions*, S. Chand, New Delhi, 2012.
2. Bajpai, Asha, *Child Rights in India*, Oxford University Press, New Delhi, 2010.
3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination,* Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
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9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.

ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.

iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.

iv. Students can work in groups of not more than 8 per topic.

v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75 **DURATION: 150 MINUTES**

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	**i.** Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. **ii.** Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester **iii.** In all 8 Questions will be asked out of which 5 have to be attempted.	**a)** Total marks: 15 **b)** For 1 A, there will be 3 marks for each sub-question. **c)** For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)

6. Foundation Course in NSS - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Entrepreneurship Development	10
2	Rural Resource Mobilization	10
3	Ideal village & stake of GOS and NGO	13
4	Institutional Social Responsibility and modes of Awareness	12
	Total	**45**

Sr. No.	Modules / Units
1	**Entrepreneurship Development**
	UNIT - I Entrepreneurship development Entrepreneurship development- its meaning and schemes Government and self-employment schemes for Entrepreneurship development **UNIT - II - Cottage Industry** Cottage Industry- its meaning, its role in development process Marketing of cottage products and outlets
2	**Rural Resource Mobilization**
	UNIT - I - Rural resource mobilization- A case study of eco-village, eco-tourism, agro-tourism **UNIT - II - Micro financing with special reference to self-help groups**
3	**Ideal village & stake of GOS and NGO**
	UNIT - I - Ideal village Ideal village- the concept Gandhian Concept of Ideal village Case studies on Ideal village **UNIT - II - Government Organisations(GOs) and Non-Government Organisations (NGOs)** The concept and functioning
4	**Institutional Social Responsibility and modes of Awareness**
	UNIT - I - Institutional Social Responsibilities Concept and functioning- case study of adapted village **UNIT - II - Modes of awareness through fine Arts Skills** Basics of performing Arts as tool for social awareness, street play, creative dance, patriotic song, folk songs and folk dance. Rangoli, posters, flip charts, placards, etc.

2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)

6. Foundation Course in NCC - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	05
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	10
	Total	**45**

Sr. No.	Modules / Units
1	**Disaster Management, Social Awareness and Community Development**
	Disaster Management: **Desired outcome:** The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters • Fire Services & Fire fighting • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. **Social Awareness and Community Development:** **Desired outcome:** The student shall have an understanding about social evils and shall inculcate sense of whistle blowing against such evils and ways to eradicate such evils. • NGOs: Role & Contribution • Drug Abuse & Trafficking • Corruption • Social Evil viz. Dowry/ Female Foeticide/Child Abuse & trafficking etc. • Traffic Control Org. & Anti drunken Driving
2	**Health and Hygiene**
	Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. • Hygiene and Sanitation (Personal and Food Hygiene) • Basics of Home Nursing & First-Aid in common medical emergencies • Wound & Fractures
3	**Drill with Arms**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, and turnout, and develop the quality of immediate and implicit obedience of orders, with good reflexes. • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • General Salute, Salami Shastra • Squad Drill • Short/Long tail from the order and vice-versa • Examine Arms
4	**Weapon Training**
	Desired outcome: The student shall have basic knowledge of weapons and their use and handling. • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Theory of Group and Snap Shooting • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	Army **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Map reading** • Setting a Map, finding North and own position • Map to ground, Ground to Map • Point to Point March **B. Field Craft and Battle Craft** • Observation, Camouflage and Concealment • Field Signals • Types of Knots and Lashing **C. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)** ***OR*** **Navy** **A. Naval Communication** • Semaphore ▪ Phonetic Alphabets ▪ Radio Telephony Procedure ▪ Wearing of National Flag, Ensign and Admiral's Flag. **B. Seamanship** • **Anchor work** ▪ Types of Anchor, Purpose and Holding ground • **Boat work** ▪ Demonstrate Rigging a whaler and enterprise boat- Parts of Sail and Sailing Terms ▪ Instructions in Enterprise Class Board including theory of Sailing, Elementary Sailing Tools ▪ Types of Power Boats Used in the Navy and their uses, Knowledge of Anchoring, Securing and Towing a Boat C. **Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)**

Sr. No.	Modules / Units
	OR **Air** **A. Air frames** • Fuselage • Main and Tail Plain **B. Instruments** • Introduction to RADAR **C. Aero modelling** • Flying/ Building of Aero models **D. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)**

2 Ability Enhancement Courses (AEC)
*2B * Skill Enhancement Courses (SEC) Group B*

6.Foundation Course in Physical Education Paper-IV

Modules at a Glance

Sr. No.	Modules	No of Lectures
1	Stress Management	10
2	Awards, Scholarship & Government Schemes	10
3	Yoga Education	10
4	Exercise Scheduling/Prescription	15
	Total	**45**

Sr. No.	Modules / Units
1	**Stress Management**
	• Meaning & concept of Stress • Causes of Stress • Managing Stress • Coping Strategies
2	**Awards, Scholarship & Government Schemes**
	• State & National level Sports Awards • State Sports Policy & Scholarship Schemes • National Sports Policy & Scholarship Schemes • Prominent Sports Personalities
3	**Yoga Education**
	• Differences between Yogic Exercises & non- Yogic exercises • Contribution of Yoga to Sports • Principles of Asanas&Bandha • Misconceptions about Yoga
4	**Exercise Scheduling/Prescription**
	• Daily Routine Prescription. • Understanding Activity level & Calorie requirement. • Adherence & Motivation for exercise. • Impact of Lifestyle on Health

R._____: The Scheme of Examination:

The performance of the learners shall be evaluated in two components: Internal Assessment with 25% marks by way of continuous evaluation and by Semester End Examination with 75% marks by conducting the theory examination.

INTERNAL ASSESSMENT:- It is defined as the assessment of the learners on the basis of continuous evaluation as envisaged in the credit based system by way of participation of learners in various academic and correlated activities in the given semester of the programme.

A) Internal Assessment – 25% 25 Marks

Sr. No.	Particulars		Marks
1	A project to be prepared by an individual learner or a group of learners in not more than five learners in a group. It is to be evaluated by the teacher concerned.		20 Marks
	Hard Copy of the project*	10 Marks	
	Presentation	05 Marks	
	Viva/Interaction	05 Marks	
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities.		05 Marks

The marks of the internal assessment should not be disclosed to the students till the results of the corresponding semester is declared.

SEMESTER END EXAMINATION:- It is defined as the examination of the learners on the basis of performance in the semester end theory / written examinations.

B) Semester End Examinations – 75% 75 Marks

The assessment of **Part 'A' i.e. Internal Assessment and Part 'B' i.e. Semester End Examination** as mentioned above for the Semesters I to IV shall be processed by the Colleges / Institutions of their learners and issue the grade cards to them after the conversion of marks into grade as per the procedure.

INTERNAL ASSESSMENT (PRACTICUM)
(25 Marks)

SEMESTER –III

(*Continuous Evaluation during practical sessions conducted for 27 hours)*

a) A learner willing to participate in inter-collegiate/ inter university competitions of any game and sports conducted by the University of Mumbai will be evaluated for 15 marks on the basis of his attendance, sincerity and performance during the training / practice / coaching sessions / camps conducted by the college/University for at least 10 days. It is expected that the colleges should organize training / practice / coaching sessions / camps of various games and sports as per the choice of the learner. However, due to unavailability of the same in his / her college if a learner participates in the training / practice / coaching sessions / camps organized by other organizations or clubs of sports and games, may be considered for evaluation for 15 marks on the basis of the proofs of attendance and participation submitted by a learner.

b) A learner will be practically taught different exercises including Suryanamaskara for developing their Motor Performance Components by conducting practical sessions for at least 10 hours (one hour each) and will be assessed by the concern teacher for **marks out of 10** on the basis of his attendance, sincerity and performance.

Question Paper Pattern

Maximum Marks: 75
Questions to be Set: 05
Duration: 2 ½ Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10and to be answeredany 08 B) Sub Questions to be asked 10and to be answered any 07 (*Multiple choice / True or False / Match the columns/ fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question OR Short Notes To be asked 05 To be answered 03	15 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

➢ Standard of Passing the Examination

- A learner shall have to obtain a minimum of 40 % marks in aggregate to qualify the each course where the course consists of internal assessment and semester end examination.
- A learner shall obtain a minimum of 40 % marks(i.e. **10** out of **25**) in the internal assessment and obtain a minimum of 40 % marks (i.e. **30** out of **75**) in semester end

Reference Books

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4. American College of Sports Medicine, ACSM's, Guidelines for Exercise Testing and Prescription. (2013) Ninth Edition,:LippianCott Williams and Wilkins.
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14. Dr. Gharote M. L(2007); Guideline for Yogic Practices – 2nd Ed., The Lonavala Yoga Institute (India), Lonavala.
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21. Muller, J. P.(2000). Health, Exercise and Fitness. Delhi : Sports.
22. Murgesh N. (1990)– Anatomy, Physiology and Health Education, Sathya, Chinnalapatti,.
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24. Nieman, D.C.(1986). Fitness and Sports Medicine : Health Related Approach London: Mayfield Publishing Co.
25. Nimbalkar. Sadashiv(2004), Yoga for Health and Peace.- 6th Ed., Yoga VidyaNiketan, Mumbai.,.
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27. Pandey ,&Gangopadhyay.(1995). Health Education for school children. New Delhi : Friends Publication.
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29. Sharma, O.P. (1998). History of Physical Education. Delhi: KhelSahityaKendra.Werner.
30. W.K., Hoeger. (2007). Fitness and Wellness. (8th ed.). Wadsworth, Cengage Learning.
31. जोशी, विजया(१९९५)–व्यायामाचे शरीरक्रीया शास्त्र, अमितब्रदर्स, नागपूर,
32. वाखारकर,दि.गो.(१९९२)– शरीरविज्ञान व आरोग्य शास्त्र, क्रीडातंत्र, पुणे,

Core Courses (CC)

7. Business Law II

Sr. No.	Modules	No. of Lectures
1	Indian Companies Act – 2013 Par T –I	12
2	Indian Companies Act – 2013, Par T –II	12
3	Indian Partnership Act – 1932	12
4	Consumer Protection Act, 1986 & Competition Act 2002	12
5	Intellectual Property Rights	12
	Total	**60**

Sr. No.	Modules
1	**Indian Companies Act – 2013 Par T –I**
	• Company –Concept, Features, Role of Promoters (S. 2(69) S. 92), Duties and liabilities of the Promoter Effects of Pre-Incorporation contracts, Consequences of non-registration, and Lifting of Corporate Veil. • Classification of Companies Distinction between Private Company and Public Company, Advantages and disadvantages of Private company and Public Company. –Common Procedure for Incorporation of Company, • Memorandum of Association (MOA) & Article of Association(AOA) – Concept , Clauses of MOA, AOA- Contents, Doctrine of constructive notice, Doctrine of Ultra Vires, Doctrine of Indoor Management. • Prospectus – Concept, Kinds, Contents, Private Placement
2	**Indian Companies Act – 2013, Par T –II**
	• Member of a Company –Concept, Who can become a member, Modes of acquiring membership, Cessation of membership, Right & Liabilities of Members. • Director – Qualifications& Disqualification, Classification, Director Identification Number (DIN), Legal Position of Directors. • Meetings – Types, Legal Provisions of Statutory Meeting, Annual General Meeting, Extra-Ordinary Meeting, Board Meeting.
3	**Indian Partnership Act – 1932**
	• Partnership – Concept, Essentials, True Test of Partnership, Partnership Deed, Types of Partnership, Rights and Duties of Partners, Distinguish between Partnership & Hindu Undivided Family (HUF). • Dissolution – Concept, Modes of Dissolution, Consequences of Dissolution. • Limited Liability Partnership (LLP) 2008 – Concept, Characteristics, Advantages & Disadvantages, Procedure for Incorporation. • Extent of L.L.P.- Conversion of LLP, Mutual rights & duties of partners, Winding up of LLP, Distinction between LLP and Partnership.
4	**Consumer Protection Act, 1986 & Competition Act 2002**
	• Consumer Protection Act – Concept , Objects, Reasons for enacting the Consumer Protection Act, Definition of Consumer, Consumer Dispute, Complaint, Complainant, Defect, Deficiency, Consumer Dispute, Unfair Trade Practices, Goods and Services. • Consumer Protection Councils & Redressal Agencies – District, State & National. • Competition Act 2002 – Concept, Salient Features, Objectives & Advantages. • Abuse of Dominant Position, Competition Commission of India, Anti-Competition Agreements,

Sr. No.	Modules
5	**INTELLECTUAL PROPERTY RIGHTS 12**
	• Intellectual Property Right (IPR) – Concept, Nature, Introduction & background of IPR in India. • IPR relating to Patents – Concepts of Invention and discovery, Comparison (S2 (j)), Concept of Patents, General principles applicable to working of patented inventions, Term of Patent. Infringement of Patent Rights & Remedies. (Ss. 104-115) • IPR relating to Copyrights- Concept of Copyright (Ss. 14, 16, 54,) Concept of author and authorised acts, (S.2) Ownership of Copy right (S.17) Duration or term of Copy right. (S. 22-27), Original work and fair use, Rights of Copyright holder, Infringement of Copyrights & Remedies. (Ss. 51, 52) • IPR relating to Trademarks –Concept, Functions of Trade Mark, types, trademarks that cannot be registered, Registration of Trade Marks and rights of the proprietor of Trade Marks. Procedure for registration of Trade Marks., Infringement of Trademarks & Remedies.

SEMESTER – IV REFERENCE BOOKS:

REFERENCES
1. Guide to the Companies Act,2013 by A Ramaiya , Lexis Nexis. 2. Company Law by G.K.Kapoor. 3. Company Law by N.D.Kapoor. 4. Company Law by P.C. Tulsian. 5. Law and practice of Intellectual Property in India by Dr.Vikas Vashishth,Bharat Law House. 6. Law of Partnership along with Limited Liability Partnership by Avatar Singh , Eastern Book Company. 7. Laws Relating to Intellectual Property, Universal Law Publishing Co. Dr. B.L.Wadhera 8. Consumer Protection Law and Practice by Dr.V.K.Agarwal, Bharat Law House. 9. Competition Law by Avatar Singh, Eastern Book Company 10. Competition Law in India by T. Ramappa, Oxford University Press. 11. Intellectual Property Rights by Narayan. 12. Laws Relating to Intellectual Property, Universal Law Publishing Co. Dr. B.L.Wadhera

PAPER PATTERN
S.Y.B.COM
SEMESTER III &IV

BUSINESS LAW PAPER I & II

(100 Marks Paper Per Semester)

1. Question paper to have Five Questions
(One from Each Module) 20 Marks Each

2. All Questions to be Compulsory.

3. Each Question to have Four Sub Questions of Ten Marks Each
(Students to answer any Two out of Four)

Question Paper Pattern
(Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions C) Sub Questions to be asked 12 and to be answered any 10 D) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-6 Q-6	C) Theory questions D) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions O) Sub Questions to be asked 12 and to be answered any 10 P) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	O) Theory questions P) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

UNIVERSITY OF MUMBAI

No. UG/21 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty is invited to this office Circular No.UG/105 of 2016-17, dated 25th October, 2016 relating to syllabus of Bachelor of Commerce (B.Com.) degree course.

They are informed that the recommendations made by the Board of Studies in Commerce at its meeting held on 28th February, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.48 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.Com. (Sem. V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
14th June, 2018

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.48/05/05/2018

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No. UG/21 -A of 2018 MUMBAI-400 032 14th June, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Commerce & Management,
2) The Chairman, Board of Studies in Commerce,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
6) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses of
Bachelor of Commerce Programme
at
Third Year
Semester V and VI

Under Choice Based Credit, Grading and Semester System

To be implemented from Academic Year 2018-2019

Faculty of Commerce

Bachelor of Commerce (B.Com) Programme

Under Choice Based Credit, Grading and Semester System

T.Y.B.Com

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***		***1A***	***Discipline Specific Elective(DSE) Courses***	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**	1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**
1B	***Discipline Related Elective(DRE) Courses***		***1B***	***Discipline Related Elective(DRE) Courses***	
3	Commerce V	**03**	3	Commerce VI	**03**
4	Business Economics V	**03**	4	Business Economics VI	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
5 & 6	**Any two courses from the following list of the courses	**03+03**	5 & 6	**Any two courses from the following list of the courses	**03+03**
	Total Credits	**20**		**Total Credits**	**20**

List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)		***List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)***	
Group A: Advanced Accountancy			
1	Financial Accounting and Auditing VII - Financial Accounting	1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting	2	Financial Accounting and Auditing X - Cost Accounting
Group B: Business Management			
1	Business Management Paper - I	1	Business Management Paper - III
2	Business Management Paper - II	2	Business Management Paper - IV
Group C: Banking and Finance			
1	Banking and Finance Paper - I	1	Banking and Finance Paper - III
2	Banking and Finance Paper - II	2	Banking and Finance Paper - IV
Group D: Commerce			
1	Commerce Paper - I	1	Commerce Paper - III
2	Commerce Paper - II	2	Commerce Paper - IV
Group E: Quantitative Techniques			
1	Quantitative Techniques Paper - I	1	Quantitative Techniques Paper - III
2	Quantitative Techniques Paper - II	2	Quantitative Techniques Paper - IV
Group F: Economics			
1	Economics Paper - I	1	Economics Paper - III
2	Economics Paper - II	2	Economics Paper - IV
Note: Group selected in Semester V will continue in Semester VI			

List of Ability Enhancement Courses (AEC) for Semester V (Any Two)		***List of Ability Enhancement Courses (AEC) for Semester VI (Any Two)***	
1	Trade Unionism and Industrial Relations Paper - I	1	Trade Unionism and Industrial Relations. Paper - II
2	Computer systems & Applications Paper -I	2	Computer systems & Applications Paper - II
3	Export Marketing Paper - I	3	Export Marketing Paper - II
4	Marketing Research Paper - I	4	Marketing Research Paper - II
5	Investment Analysis and Portfolio Management Paper - I	5	Investment Analysis and Portfolio Management Paper - II
6	Transport Management Paper - I	6	Transport Management Paper - II
7	Entrepreneurship& M.S.S.I. Paper - I	7	Entrepreneurship& M.S.S.I. Paper - II
8	International Marketing Paper - I	8	International Marketing Paper - II
9	Merchant Banking Paper - I	9	Merchant Banking Paper - II
10	Direct & Indirect Taxation Paper - I	10	Direct & Indirect Taxation Paper - II
11	Labour Welfare & Practice Paper - I	11	Labour Welfare & Practice Paper - II
12	Purchasing & Store keeping Paper - I	12	Purchasing & Store keeping Paper - II
13	Insurance Paper - I	13	Insurance Paper - II
14	Banking Law & Practice Paper - I	14	Banking Law & Practice Paper - II
15	Regional Planning Paper - I	15	Regional Planning Paper - II
16	Rural Marketing Paper - I	16	Rural Marketing Paper - II
17	Elements of Operational Research Paper- I	17	Elements of Operational Research Paper - II
18	Psychology of Human Behaviour at work Paper - I	18	Psychology of Human Behaviour at work Paper - II
Note: Course selected in Semester V will continue in Semester VI			

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester V

No. of Courses	Semester V	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**
1B	***Discipline Related Elective(DRE) Courses***	
3	Commerce V	**03**
4	Business Economics V	**03**
2	***Ability Enhancement Courses (AEC)***	
5 & 6	**Any two courses from the following list of the courses	**03+03**
	Total Credits	**20**

****List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)***	
Group A: Advanced Accountancy	
1	Financial Accounting and Auditing VII - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting
Group B: Business Management	
1	Business Management Paper - I
2	Business Management Paper - II
Group C: Banking and Finance	
1	Banking and Finance Paper - I
2	Banking and Finance Paper - II
Group D: Commerce	
1	Commerce Paper - I
2	Commerce Paper - II
Group E: Quantitative Techniques	
1	Quantitative Techniques Paper - I
2	Quantitative Techniques Paper - II
Group F: Economics	
1	Economics Paper - I
2	Economics Paper - II

List of Ability Enhancement Courses (AEC) for Semester V (Any Two)	
1	Trade Unionism and Industrial Relations Paper - I
2	Computer systems & Applications Paper -I
3	Export Marketing Paper - I
4	Marketing Research Paper - I
5	Investment Analysis and Portfolio Management Paper - I
6	Transport Management Paper - I
7	Entrepreneurship& M.S.S.I. Paper - I
8	International Marketing Paper - I
9	Merchant Banking Paper - I
10	Direct & Indirect Taxation Paper - I
11	Labour Welfare & Practice Paper - I
12	Purchasing & Store keeping Paper - I
13	Insurance Paper - I
14	Banking Law & Practice Paper - I
15	Regional Planning Paper - I
16	Rural Marketing Paper - I
17	Elements of Operational Research Paper- I
18	Psychology of Human Behaviour at work Paper - I

Revised Syllabus of Courses of B.Com. Programme at Semester V with Effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

1. Financial Accounting and Auditing VII - Financial Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Preparation of Final Accounts of Companies	15
2	Internal Reconstruction	15
3	Buy Back of Shares	10
4	Investment Accounting (w.r.t. Accounting Standard- 13)	12
5	Ethical Behaviour and Implications for Accountants	08
	Total	**60**

Sr. No.	Modules / Units
1	**Preparation of Final Accounts of Companies**
	Relevant provisions of Companies Act related to preparation of Final Account (excluding cash flow statement) Preparation of financial statements as per Companies Act. (excluding cash flow statement) AS 1 in relation to final accounts of companies (disclosure of accounting policies) Adjustment for – 1. Closing Stock 2. Depreciation 3. Outstanding expenses and income 4. Prepaid expenses and Pre received income 5. Proposed Dividend and Unclaimed Dividend 6. Provision for Tax and Advance Tax 7. Bill of exchange (Endorsement, Honour, Dishonour) 8. Capital Expenditure included in Revenue expenditure and vice versa eg- purchase of furniture included in purchases 9. Unrecorded Sales and Purchases 10. Good sold on sale or return basis 11. Managerial remuneration on Net Profit before tax 12. Transfer to Reserves 13. Bad debt and Provision for bad debts 14. Calls in Arrears 15. Loss by fire (Partly and fully insured goods) 16. Goods distributed as free samples. 17. Any other adjustments as per the prevailing accounting standard.
2	**Internal Reconstruction**
	Need for reconstruction and company law provisions Distinction between internal and external reconstructions. Methods including alteration of share capital, variation of shareholder rights, sub division, consolidation, surrender and reissue / cancellation, reduction of share capital with relevant legal provisions and accounting treatment for same.
3	**Buy Back of Shares**
	Company Law / Legal provisions (including related restrictions, power, transfer to capital redemption reserve account and prohibitions) Compliance of conditions including sources, maximum limits and debt equity ratio. Cancellation of Shares Bought back(Excluding Buy Back of minority shareholding)

Sr. No.	Modules / Units
4	**Investment Accounting (w.r.t. Accounting Standard- 13)**
	For shares (variable income bearing securities) For debentures/Preference. shares (fixed income bearing securities) Accounting for transactions of purchase and sale of investments with ex and cum interest prices and finding cost of investment sold and carrying cost as per weighted average method (Excl. brokerage). Columnar format for investment account.
5	**Ethical Behaviour and Implications for Accountants**
	Introduction, Meaning of ethical behavior Financial Reports – What is the link between law, corporate governance, corporate social responsibility and ethics? What does the accounting profession mean by the ethical behavior? Implications of ethical values for the principles versus rule based approaches to accounting standards The principal based approach and ethics The accounting standard setting process and ethics The IFAC Code of Ethics for Professional Accountants Ethics in the accounting work environment – A research report Implications of unethical behavior for financial reports Company Codes of Ethics The increasing role of whistle – Blowing Why should student learn ethics?

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

2. Financial Accounting and Auditing Paper-VIII: Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Cost Accounting	10
2	Material Cost	10
3	Labour Cost	10
4	Overheads	10
5	Classification of Costs and Cost Sheet	10
6	Reconciliation of cost and financial accounts	10
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Cost Accounting**
	(a) Objectives and scope of Cost Accounting (b) Cost centres and Cost units (c) Cost classification for stock valuation, Profit measurement, Decision making and control (d) Coding systems (e) Elements of Cost (f) Cost behaviour pattern, Separating the components of semi- variable costs
2	**Material Cost**
	(i) Procurement procedures—Store procedures and documentation in respect of receipts and issue of stock, Stock verification (ii) Inventory control —Techniques of fixing of minimum, maximum and reorder levels, Economic Order Quantity, ABC classification; Stocktaking and perpetual inventory (iii) Inventory accounting **Note-** Simple practical problems based on Calculation of EOQ, Raw Material Turnover ratio, Preparation of stock ledger and Valuation of Inventories, based on FIFO and Weighted average cost.
3	**Labour Cost**
	(i) Attendance and payroll procedures, Overview of statutory requirements, Overtime, Idle time and Incentives (ii) Labour turnover (iii) Utilisation of labour, Direct and indirect labour, Charging of labour cost, Identifying labour hours with work orders or batches or capital jobs (iv) Efficiency rating procedures (v) Remuneration systems and incentive schemes. **Note**-Simple practical problems based on Preparation of labour cost statement Remuneration and incentive systems based on Piece work plan, Haley Premium Plan, Rowan system, Gantt's Task
4	**Overheads**
	Functional analysis — Factory, Administration, Selling and Distribution Behavioural analysis — Fixed, Variable, Semi-variable cost Note-Simple practical problems on Departmentalization and apportionment of primary overheads, Computation of overhead rates including Machine overhead rates Basic concepts of treatment of over/under absorption of overheads- Direct Labour method and Prime Cost method
5	**Classification** of Costs and Cost Sheet
	Classification of costs, Cost of Sales, Cost Centre, Cost Unit, Profit Centre and Investment Centre Cost Sheet, Total Costs and Unit Costs, Different Costs for different purpose **Note**- Simple practical problems on preparation of cost sheet
6	**Reconciliation** of cost and financial accounts
	Practical problems based on Reconciliation of cost and Financial accounts.

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

1. Business Management Paper-III: Management and Organization Development

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Planning	15
3	Organizing as a Managerial Function	15
4	Staffing	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction**
	• Management – Definition and Characteristics • Management – as Science, art and profession – Levels of management and management skills • Development of Management Thought – Scientific Approach Administrative School, Behaviour School, Systems Approach and Contingency Approach. Evolution of Indian management thoughts and their relevance in the current era. • Functions of Management in a typical business organisation
2	**Planning**
	• Planning, forecasting, decision making and problem solving • Nature, characteristics, merits and limitations of planning. • Classification and components of plans • Essentials of a good plan and planning process • Management by objectives (MBO) – Importance and relevance
3	**Organizing as a Managerial Function**
	• Definition and Principles • Departmentalisation • Formal organisations – Functional, SBU, Matrix, Committees • Informal organisations – Relevance and Importance • Authority, responsibility, accountability and span of control • Organizational hierarchy – charts • Delegation of authority and decentralization • Emergence of virtual organisation – merits and limitations
4	**Staffing**
	• Importance of human resource in organisations • Estimation of human resource requirements • Human Asset Accounting • Job Analysis • Recruitment and selection • Training and Development • Performance Appraisal

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

2. Business Management Paper-V: Financial Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Financial Management	11
2	Study of Financial Statements	11
3	Ratio Analysis	12
4	Sources of Finance and Cash Flow Analysis	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Financial Management**
	• Definition, nature and functions of financial management • Objectives of financial management • Importance of financial management and limitations. • Preparation of financial Statements adhering to current statutory requirements.
2	**Study of Financial Statements**
	• Objectives of financial statement analysis and interpretation • Steps involved in the analysis of financial statements • Comparative Statements • Common Size Statements • Trend Analysis
3	**Ratio Analysis**
	• Ratio Analysis – Meaning and objectives and Classification of Ratios- Traditional classification, functional classification and classification from the point of view of users • Balance Sheet Ratios- Current Ratio, Liquid Ratio, Proprietary Ratio, Stock-Working Capital Ratio, Capital Gearing Ratio, Debt Equity Ratio • Revenue Statement Ratios - Gross Profit Ratio, Operating Ratio, Expense Ratios, Net Profit Ratio, Stock Turnover Ratio. • Combined Ratios - Return on Capital Employed, Return on Proprietors' Funds, Return on Equity Share Capital, Debtors' Turnover Ratio (Debtors' Velocity), Earning Per Share, Dividend Payout Ratio, Price Earning Ratio • Importance and limitations of Accounting Ratios
4	**Sources of Finance and Cash Flow Analysis**
	• Classification of sources of finance with reference to period , ownership and source of generation • Internal and external financing including choice of financial instruments • Cash Flow Statement – Meaning and Classification • Uses of Cash Flow statement • Preparation of Cash Flow Statement – Direct and Indirect

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group C: Banking and Finance

1. Banking and Finance Paper - I: Central Banking

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Indian Financial System	15
2	Financial Markets in India	15
3	Commodity Market	15
4	Derivatives Market	15
	Total	**60**

Sr. No.	Modules / Units
1	**Indian Financial System**
	A) Introduction, Meaning, Functions of financial system, Indian financial system from financial neutrality to financial activism and from financial volatility to financial stability, Role of Government in financial development, Overview of Phases of Indian financial system since independence (State Domination – 1947-1990, Financial sector reforms 1991 till Financial Sector Legislative Reforms Commission 2013), Monitoring framework for financial conglomerates. **B)** Structure of Indian Financial System – Banking & Non-Banking Financial Institutions, Organized and Unorganized Financial Markets, Financial Assets/Instruments, Fund based & Fee Based Financial Services.
2	**Financial Markets in India**
	A) Indian Money Market – Meaning, Features, Functions, Importance, Defects, Participants, Components of Organized and Unorganized markets and Reforms **B)** Indian Capital Market - Meaning, Features, Functions, Importance, Participants, Instruments, Reforms in Primary and Secondary Market. **C)** Indian Stock Market - Meaning and functions of Stock Exchange- NSE and BSE. **D)** Equity Market – Primary Market, IPO, Book Building, Role of Merchant Bankers, ASBA , Green Shoe Option, Issue of Bonus shares, Right Shares, Sweat Equity shares, ESOP. **E)** Indian Debt Market –Market Instruments, Listing, Primary and Secondary Segments
3	**Commodity Market**
	• Introduction to commodities market - Meaning History & origin, Types of commodities traded, • Structure of commodities market in India, • Participants in commodities market, Trading in commodities in India(cash & derivative segment), • Commodity exchanges in India & abroad • Reasons for investing in commodities.
4	**Derivatives Market**
	• Introduction to Derivatives market- Meaning, History & origin, • Elements of a derivative contract, • Factors driving growth of derivatives market, • Types of derivatives, Types of underlying assets, Participants in derivatives market, Advantages & disadvantages of trading in derivatives market, • Current volumes of derivative trade in India, • Difference between Forwards & Futures

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group C: Banking and Finance

2. Banking and Finance Paper - II: Financial Reporting Analysis

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Final Accounts of Banking Company	16
2	Final Accounts of Insurance Company	12
3	Preparation of Final Accounts of Companies	12
4	Cash Flow Analysis & Ethical Behavior and implications for accountants	12
5	Introduction to IFRS	08
	Total	**60**

Sr. No.	Modules / Units
1	**Final Accounts of Banking Company**
	Legal provision in Banking Regulation Act, 1949 relating to Accounts. Statutory reserves including Cash Reserve and Statutory Liquidity Ratio. Bill purchase and discounted, rebate of bill discounted. Final Accounts in prescribed form Non – performing assets and Income from non – performing assets. Classification of Advances, standard, sub – standard, doubtful and provisioning requirement.
2	**Final Accounts of Insurance Company**
	(a) Preparation and presentation of Corporate Final Accounts for Insurance Companies (b) Final Accounts in accordance with Insurance Legislation. (c) Study of Accounting Policies from Annual Reports of Listed Insurance Companies
3	**Preparation of Final Accounts of Companies**
	Relevant provisions of Companies Act related to preparation of Final Account (excluding cash flow statement) Preparation of financial statements as per Companies Act. (excluding cash flow statement) AS 1 in relation to final accounts of companies (disclosure of accounting policies) Adjustment for – 1. Closing Stock 2. Depreciation 3. Outstanding expenses and income 4. Prepaid expenses and Pre received income 5. Proposed Dividend and Unclaimed Dividend 6. Provision for Tax and Advance Tax 7. Bill of exchange (Endorsement, Honour, Dishonour) 8. Capital Expenditure included in Revenue expenditure and vice versa eg- purchase of furniture included in purchases 9. Unrecorded Sales and Purchases 10. Good sold on sale or return basis 11. Managerial remuneration on Net Profit before tax 12. Transfer to Reserves 13. Bad debt and Provision for bad debts 14. Calls in Arrears 15. Loss by fire (Partly and fully insured goods) 16. Goods distributed as free samples. Any other adjustments as per the prevailing accounting standard.

Sr. No.	Modules / Units
4	**Cash Flow Analysis as per AS 3 (Indirect Method Only)** **Ethical Behaviour and implications for accountants**
	Introduction, Meaning of ethical behavior Financial Reports – What is the link between law, corporate governance, corporate social responsibility and ethics? What does the accounting profession mean by the ethical behavior? Implications of ethical values for the principles versus rule based approaches to accounting standards The principal based approach and ethics The accounting standard setting process and ethics The IFAC Code of Ethics for Professional Accountants Ethics in the accounting work environment – A research report Implications of unethical behavior for financial reports Company Codes of Ethics The increasing role of whistle – Blowing Why should student learn ethics?
5	**Introduction to IFRS**
	IFRS 1- First time Adoption of International Financial Reporting Statements Objective, Scope, Definitions, First IFRS financial statements, Recognition and measurement, Comparative information, Explanation of transition to IFRS, Reconciliations, Interim financial reports, Designation of financial assets or financial liabilities, Use of fair value as deemed cost, Use of deemed cost, Exceptions to retrospective application of other IFRS, Exemptions for business combination, Exemptions from other IFRS and Presentation and Disclosure. **IFRS2**- Share Based Payment – Objective, Scope, Definitions, Recognition, Equity settled share based payment transactions, Transactions in which services are received, Treatment of vesting conditions, Expected Vesting Period, Determining the fair value of equity instruments granted, Modifications of terms and conditions, Cancellation, Cash settled share based payment transactions, Share based payment transactions in which the terms of the arrangement provide the counterparty with a choice of settlement, Share based payment transactions in which the terms of the arrangement provide the entity with a choice of settlement, Share based payment transactions among group entities (2009 Amendments) Disclosure.

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group D: Commerce

1. Commerce Paper - I: Management of Service Industry

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Service Industry	15
2	Tourism and Hospitality Industry	15
3	Transport Industry	15
4	Health Care Industry	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Service Industry**
	Services-Concept- characteristics –classification-significance- importance of relationship marketing in services- technology and its impact on service industry- role of service industry in economic development- career opportunitie
2	**Tourism and Hospitality Industry**
	Tourism Industry- significance- challenges- types of Tourism products-Present scenario of travel and tourism in India- Future prospects- Government's Tourism policy- Role /functions of Indian Tourism Development Corporation and Maharashtra Tourism Development Corporation Hospitality Industry- characteristics- classification Restaurants- classification and types of consumers in a restaurant
3	**Transport Industry**
	Role of transport in economic development- types of transport (road, rail, air & ocean)- merits, demerits & recent trends in each mode
4	**Health Care Industry**
	Features- types of health care services- major inputs of health care industry- role of Corporates & Government in health care sector- emerging trends in health care industry

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group D: Commerce

2. Commerce Paper - II: Commercial Administration

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction and Orientation to Commercial Administration	15
2	Office Layout and Equipments	15
3	Office Communication	15
4	Information Management and Records	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction and Orientation to Commercial Administration**
	Commercial Administration: Meaning, nature and importance of Commercial Administration in business activity- role and functions of a commercial office- administrative structure of a commercial office- abilities, skills and attributes of office manager.
2	**Office Layout and Equipments**
	Office layout- Meaning, importance and types of office layout (enclosed or cellular/modular/ virtual etc.)- factors determining office layout- ergonomics with respect to comfort, health & safety **Office equipments**- various types of office equipments-functions of office equipments- types and uses of various office stationery-Role of IT in office administration
3	**Office Communication**
	Communication: Various channels of office communication- factors affecting selection of communication channels communication flows(upward/downward/vertical/horizontal/diagonal/grapevine)- barriers to effective communication- methods for intra firm communication- role of front office in communication with external stakeholders
4	**Information Management and Records**
	Information Management: Meaning and characteristics of information management- types of records to be maintained- characteristics of effective record management system- methods of classification of records-methods and procedures for managing inactive files- duties of record management Department.

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

3. Commerce - V
Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing	12
2	Marketing Decisions I	11
3	Marketing Decisions	11
4	Key Marketing Dimensions	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Marketing**
	• Marketing, Concept, Features, Importance, Functions, Evolution, Strategic v/s Traditional Marketing • Marketing Research - Concept, Features, Process Marketing Information System-Concept, Components Data Mining- Concept, Importance • Consumer Behaviour- Concept, ,Factors influencing Consumer Behaviour Market Segmentation- Concept, Benefits, Bases of market segmentation Customer Relationship Management- Concept , Techniques Market Targeting- Concept, Five patterns of Target market Selection
2	**Marketing Decisions I**
	• Marketing Mix- Concept, Product- Product Decision Areas Product Life Cycle- Concept, Managing stages of PLC Branding- Concept , Components Brand Equity- Concept , Factors influencing Brand Equity • Packaging- Concept , Essentials of a good package Product Positioning- Concept, Strategies of Product Positioning Service Positioning- Importance & Challenges • Pricing- Concept, Objectives, Factors influencing Pricing, Pricing Strategies
3	**Marketing Decisions**
	• Physical Distribution- Concept, Factors influencing Physical Distribution, Marketing Channels (Traditional & Contemporary Channels) Supply Chain Management-Concept, Components of SCM • Promotion- Concept, Importance, Elements of Promotion mix Integrated Marketing Communication (IMC)- Concept, Scope ,Importance • Sales Management- Concept, Components, Emerging trends in selling Personal Selling- Concept , Process of personal selling, Skill Sets required for Effective Selling
4	**Key Marketing Dimensions**
	• Marketing Ethics: Concept, Unethical practices in marketing, General role of consumer organizations Competitive Strategies for Market Leader, Market Challenger, Market Follower and Market Nicher Marketing Ethics: • Rural Marketing- Concept, Features of Indian Rural Market, Strategies for Effective Rural Marketing Digital Marketing-Concept, trends in Digital Marketing Green Marketing- concept, importance • Challenges faced by Marketing Managers in 21st Century Careers in Marketing – Skill sets required for effective marketing Factors contributing to Success of brands in India with suitable examples, Reasons for failure of brands in India with suitable examples.

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

4. Business Economics - V

Macro Economic Aspects of India

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Macro Economic overview of India	15
2	Agriculture During Post Reform Period	10
3	The Industry And Service Sector During Post Reform Period	10
4	Banking and Financial Market	10
	Total	**45**

Sr. No.	Modules / Units
1	**Macro Economic overview of India**
	• **Overview of New Economic Policy-1991, -** Role of Social Infrastructure with reference to education, health and family welfare. • **Sustainable Development Goals and Policy measures:** Make in India, Invest in India, and Skill Development and Training Programmes**.** • **Foreign Investment Policy Measures in India –** Foreign Investment Promotion Board**,** FDI- MNCs and their role.
2	**Agriculture During Post Reform Period**
	• **National Agricultural Policy 2000:** Objectives, Features and Implications • **Agricultural pricing and agricultural finance** • **Agricultural Marketing Development-**Agricultural Market infrastructure - Market information- Marketing training- Enabling environments-Recent developments
3	**The Industry And Service Sector During Post Reform Period**
	• **Policy Measures- Competition Act 2003,** Disinvestment Policy, Micro, Small and Medium Enterprises [MSME sector] since 2007**.** • **Industrial Pollution in India: Meaning**, Types, Effects and Control. • **Service Sector:** Recent trends, role and growth in Healthcare and Tourism Industry
4	**Banking and Financial Market**
	• **Banking Sector-** Recent trends, issues and challenges in Banking and Insurance Industry • **Money Market –** Structure, Limitations and Reforms. • **Capital Market –** Structure, Growth and Reforms**.**

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Trade Unionism	12
2	Functions of Trade Unions	12
3	Leadership ideology, Recognition, Registration and administration of trade union	11
4	ILO- Objectives, Principles and Organs	10
	Total	**45**

Sr. No.	Modules / Units
1	**Trade Unionism**
	Meaning, Scope, Significance and Objectives, Structure of trade unions in India. New Role of Trade Union in the context of globalization
2	**Functions of Trade Unions**
	• Functions of trade unions with respect to: i) Wages ii) Labour welfare iii) Training and education iv) Social security) Awareness of social responsibility vi) Environmental awareness. • Problems of trade unions, Industrial dispute – causes of industrial disputes
3	**Leadership ideology, Recognition, Registration and administration of trade union**
	• Impact of recession and globalization on trade unions in India. • Problems of employees and need of trade unions in Information and Communication Industry.
4	**ILO- Objectives, Principles and Organs**
	ILO- Objectives, principles and organs. Impact of ILO on Indian trade union movement. • Workers participation in management – concept, pre-requisites, forms & levels of participation, benefit of workers Participation in Management • Women's participation in trade union activities.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

2. Computer Systems and Applications Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Data Communication, Networking and Internet	18
2	Database and MySQL	09
3	Database and MySQL	09
4	Spread Sheet	09
	Total	**45**

Sr. No.	Modules / Units
1	**Data Communication, Networking and Internet**
	a) Data Communication Component, Data representation, Distributed processing. (Concepts only) **b)** Network Basics and Infrastructure • Definition, Types (LAN, MAN, WAN) Advantages. • Network Structures – Server Based, Client server, Peer to Peer. • Topologies – Star, Bus, Ring. • Network Media, Wired – Twisted Pair, Co-axial, Fiber Optic and Wireless – Radio and Infrared. • Network Hardware: Hubs, Bridges, Switches, Routers. • Network Protocols – TCP/IP, OSI Model. **c)** Internet • Definition, Types of connections, sharing internet connection, Hot Spots. • Services on net- WWW, Email-Blogs. • IP addresses, Domain names, URLs, Hyperlinks, Web Browsers • Searching Directories, Search engines, Boolean search (AND, OR, NOT), Advanced search, Meta Search Engines. • Email – POP/SMTP accounts in Email, Different parts of an Email address. Receiving and sending emails with attachments by scanning attachments for viruses. • Cyber Crime, Hacking, Sniffing, Spoofing
2	**Database and MySQL**
	a) Introduction : To Databases, Relational and Non-relational database system MySQL as a Non-procedural Language. View of data. **b) MySQL Basics :**Statements (Schema Statements, Data statements, Transaction statements), names (table & column names), data types (Char, Varchar, Text, Mediumtext, Longtext, Smallint, Bigint, Boolean, Decimal, Float, Double, Date, Date Time, Timestamp, Year, Time), Creating Database, inserting data, Updating data, Deleting data, expressions, built-in-functions – lower, upper, reverse length, Itrim, rtrim, trim, left, right, mid, concat, now, time, date, curdate, day, month, year, dayname, monthname, abs, pow, mod, round, sqrt missing data(NULL and NOT NULL DEFAULT values) CREATE,USE, ALTER (Add, Remove, Change columns), RENAME, SHOW, DESCRIBE (CREATE TABLE, COLUMNS, STATUS and DATABASES only) and DROP (TABLE, COLUMN, DATABASES statements), PRIMARY KEY FOREIGN KEY (One and more columns) Simple Validity checking using CONSTRAINTS.
3	**Database and MySQL**
	a) MySQL Simple queries : TheSELECT statement (From, Where, Group By, Having, Order By, Distinct, Filtering Data by using conditions. Simple and complex conditions using logical, arithmetic and relational operators (=, !,=, <, >, <>, AND, OR, NOT, LIKE) Aggregate Funtions – count, sum, avg, max, min. **b) Multi-table queries:**Simple joins (INNER JOIN), SQL considerations for multi table queries(table aliases, qualified column names,all column selections self joins). **c) Nested Queries (Only up to two levels) :**Using sub queries, sub query search conditions, sub queries & joins, nested sub queries, correlated sub queries, sub queries in the HAVING clause. Simple Transaction illustrating START, COMMIT, and ROLLBACK.

Sr. No.	Modules / Units
4	**Spread Sheet**
	a) Creating and Navigating worksheets and adding information to worksheets • Types of data, entering different types of data such as texts, numbers, dates, functions. • Quick way to add data Auto complete, Autocorrect, Auto fill, Auto fit. Undo and Redo. • Moving data, contiguous and non contiguous selections, Selecting with keyboard. Cut-Copy, Paste. Adding and moving columns or rows. Inserting columns and rows. • Find and replace values. Spell check. • Formatting cells, Numbers, Date, Times, Font, Colors, Borders, Fills. **b) Multiple Spreadsheets** • Adding, removing, hiding and renaming worksheets. • Add headers/Footers to a Workbook. Page breaks, preview. • Creating formulas, inserting functions, cell references, Absolute, Relative (within a worksheet, other worksheets and other workbooks). **c) Functions** • Financial functions: FV, PV, PMT, PPMT, IPMT, NPER, RATE • Mathematical and statistical functions. ROUND, ROUNDDOWN, ROUNDUP, CEILING, FLOOR, INT, MAX, MIN, MOD, SQRT, ABS, SUM, COUNT, AVERAGE **d) Data Analysis** • Sorting, Subtotal. • Pivot Tables- Building Pivot Tables, Pivot Table regions, Rearranging Pivot Table.

Note :

a) Theory 03 lectures per week.

b) Practical batch size 20-25, 01 practical = 03 theory lectures per week.

c) 10 Practical's are to be completed in each semester.

Semester V

Topic	Number of Practical's
Word processing	01
Spread sheet	03
MySQL	06

Minimum 6 practical's are to be recorded in the journal in the Semester V
[Minimum 4 on SQL, 2 on MS-Excel)

❖ **Scheme of Examination**

Type	Marks	Duration
Theory	75	2 ½ hours
Practical	20	1 hour per batch of 10
Active Participation and Class conduct	05	---

- **Practical Examination Pattern- Semester V**

Sr. No.	Topic	Marks
01	MySQL	07
02	Spread Sheet	03
03	Journal	05
04	Viva	05

  - Practical examination to be conducted 2 to 3 weeks before the theory examination. Marks out of 25 to be submitted to the University before commencement of theory examination.
  - Software Requirement :
    MS-Excel 2010, VB 6.0
  - Hardware
    For a batch of 120 students minimum 10 computers with appropriate hardware and software installed on each computer. During practical hours maximum two student may share one computer.
  - For in house computing facility fee of rupees 750/- be charged for each student per Semester in the existing fee structure against head of computer fee/computer practical.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

3. Export Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Export Marketing	12
2	Global Framework for Export Marketing	11
3	India's Foreign Trade Policy	11
4	Export Incentives and Assistance	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Export Marketing**
	a) Concept and features of Export Marketing; Importance of Exports for a Nation and a Firm; Distinction between Domestic Marketing and Export Marketing b) Factors influencing Export Marketing; Risks involved in Export Marketing; Problems of India's Export Sector c) Major merchandise/commodities exports of India (since 2015); Services exports of India (since 2015); Region-wise India's Export Trade (since 2015)
2	**Global Framework for Export Marketing**
	a) Trade barriers; Types of Tariff Barriers and Non-Tariff barriers; Distinction between Tariff and Non-Tariff barriers b) Major Economic Groupings of the World; Positive and Negative Impact of Regional Economic Groupings; Agreements of World Trade Organisation (WTO) c) Need for Overseas Market Research; Market Selection Process, Determinants of Foreign Market Selection
3	**India's Foreign Trade Policy**
	a) Foreign Trade Policy (FTP) 2015-20 - Highlights and Implications, Export Trade facilitations and ease of doing business as per the new FTP b) Role of Directorate General of Foreign Trade (DGFT), Negative list of Exports, Deemed Exports c) Benefits to Status Holders & Towns of Excellence; Common benefits for EHTP, BTP and STP; Benefits enjoyed by (IIAs) Integrated Industrial Areas(SEZ), EOU, AEZ
4	**Export Incentives and Assistance**
	a. Financial Incentives available to Indian Exporters - Marketing Development Assistance (MDA), Market Access Initiative (MAI), Assistance to States for Infrastructure Development for Exports (ASIDE), Industrial Raw Material Assistance Centre(IRMAC), b. Institutional Assistance to Indian Exporters - Federation of Indian Export Organisations (FIEO), India Trade Promotion Organisation (ITPO), The Federation of Indian Chambers of Commerce and Industry (FICCI), Export Promotion Councils (EPCs) & Commodity Boards (CBs), Indian Institute of Foreign Trade (IIFT), Indian Institute of Packaging (IIP) c. Schemes - Export Promotion Capital Goods (EPCG) Scheme, Duty Exemption and Remission Schemes, Export Advance Authorisation Scheme; Duty Drawback (DBK); IGST Refund for Exporters

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

4. Marketing Research Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing Research	12
2	Planning Research	11
3	Data Collection	11
4	Data Processing, Analysis, Reporting	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Marketing Research**
	a. Marketing Research- Definition, features, functions, significance of Marketing Research in marketing decision making, limitations of Marketing Research b. Steps in Marketing Research, Ethics in Marketing Research, Career options in Marketing Research, Qualities of a good Marketing Research professional c. Marketing Information System- Definition, components, essentials of a good MIS, Concept of Decision Support System- Components , importance Data Mining- concept, importance
2	**Planning Research**
	a. Research Design- concept, importance, types Hypothesis- concept, types, importance b. Questionnaire- concept, types of questions, steps in the preparation of questionnaire, essentials of a good questionnaire c. Sampling- concept, terms in sampling, techniques of sampling, essentials of good sampling
3	**Data Collection**
	a. Primary data-concept, merits, demerits, methods b. Secondary data- concept, merits, demerits, sources c. Qualitative and Quantitative research- concept, features, Qualitative v/s Quantitative research Integrating technology in data collection, methods- (online surveys, hand held devices, text messages, social networking), importance
4	**Data Processing, Analysis, Reporting**
	a. Stages in Data processing Editing- meaning, objectives, types Coding- meaning, guidelines Classification- meaning, methods Tabulation- meaning, methods b. Data Analysis & Interpretation Data Analysis- meaning, steps, use of statistical tools (SPSS, SAS, MS EXCEL, MINITAB) Data Interpretation- meaning, importance, stages c. Report Writing- concept, types, contents, essentials, use of visual aids in research report

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

5. Investment Analysis and Portfolio Management Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Portfolio Management – An Introduction	09
2	Portfolio Analysis and Selection	12
3	Portfolio Revision and Evaluation	12
4	Bond Valuation	12
	Total	**45**

Sr. No.	Modules / Units
1	**Portfolio Management – An Introduction**
	A) Investment - Meaning, Characteristics, Objectives, Investment V/s Speculation, Investment V/s Gambling and Types of Investors **B)** Portfolio Management – Meaning, Evolution, Phases, Role of Portfolio Managers, Advantages of Portfolio Management. **C)** Investment Environment in India and factors conducive for investment in India.
2	**Portfolio Analysis and Selection**
	A) Portfolio Analysis – Meaning and its Components, Calculation of Expected Return and Risk, Calculation of Covariance, Risk – Return Trade off. **B)** Portfolio Selection – Meaning, Feasible Set of Portfolios, Efficient Set of Portfolios, Selection of Optimal Portfolio, Markowitz Model, Limitations of Markowitz Model, Measuring Security Return and Portfolio Return and Risk under Single Index Model and Multi Index Model.
3	**Portfolio Revision and Evaluation**
	A) Portfolio Revision – Meaning, Need, Constraints and Strategies. **B)** Portfolio Evaluation – Meaning, Need, Measuring Returns (Sharpe, Treynor and Jensen Ratios) and Decomposition of Performance.
4	**Bond Valuation**
	A) Bond Valuation – Meaning, Measuring Bond Returns – Yield to Maturity, Yield to call and Bond Pricing. Bond Pricing Theorems, Bond Risks and Bond Duration. (Practical Problems on YTM and Bond Duration.)

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

6. Transport Management Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Transportation Network	11
2	Factors Influencing transport development	11
3	Transportation Planning and Production Management	11
4	Multi Modal Transport System in India	12
	Total	**45**

Sr. No.	Modules / Units
1	**Transportation Network**
	Definition of transport, Characteristics of transport, various mode of transport network- Air, Surface and Water; public transport and its importance, Element of Transport – way, unit of carriage, motive power, Terminal
2	**Factors Influencing transport development**
	Factors Influencing transport development: Physical, Economic, Political and Strategic, Concept of connectivity and accessibility, Transport organisation: terminal facilities for different modes, Transport Demand: Direction, Volume and Frequency
3	**Transportation Planning and Production Management**
	Classification of roads, types of parking, problems due to parking, nature of traffic problem in cities, traffic and environment - Pollution under control certificate agency, cost structure of different transport modes, discriminatory pricing
4	**Multi Modal Transport System in India**
	Intermodal systems – road/rail/sea; sea/air; road/air; road/rail, sea/rail, sea/road – Inland Container Depot (ICD) & Container Freight Station (CFS) Terminals, Roll-on/Roll-Off Service, Planning of multi modal transport system for Indian cities- Metro Rails, Light Rail Transit (LRT), Sub-Urban Trains, Ring Rail and Monorails, Bus Rapid Transit Systems.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

7. Entrepreneurship and Management of Small Scale Industries Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Entrepreneurship	11
2	Entrepreneurial Development	11
3	Entrepreneurial Project Development	11
4	Specialized Focus Areas in Entrepreneurship	12
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Entrepreneurship**
	Unit-1:- • Meaning, Features, Need and Significance, Concept of Entrepreneur and Entrepreneurship • Importance, Significance and Growth of Entrepreneurial activity • Classification and Types of Entrepreneurs • Functions of an Entrepreneur **Unit-2:** • Characteristics, Qualities and Competencies of a Successful Entrepreneur – Examples of Successful Indian Entrepreneurs. • Entrepreneurship as a Career - Creating Self-employment through Entrepreneurship • Scope of Entrepreneurship • Meaning, Features, Significance, Concept of Promoters - Types of Promoters **Unit-3:-** • Incentives and Subsidies to Entrepreneurs in India • Meaning, Features, Significance, Concept and Qualities of Intrapreneur – Meaning and • Concept of Intrapreneurship • Measures to Promote Intrapreneurship • Differentiating the Role of: Entrepreneurs and Businessman - Entrepreneurs and Managers - Entrepreneurs and Employees
2	**Entrepreneurial Development**
	Unit-1:- • Meaning, Significance and Concept of Entrepreneurial Development in India • Factors influencing Entrepreneurial Development – Pull and Push Factors • Barriers to Entrepreneurship • Managing the Problems faced by Entrepreneurs - Measures/Suggestions to Overcome Barriers to Entrepreneurship, Start up India-Make in India. **Unit-2:-** • Meaning, Concept and Inter-Linkage between: Innovation and Invention - Innovation and Entrepreneurship • Factors influencing Entrepreneurial Development and Motivation • Role of Psychological, Social and Cultural factors in Entrepreneurial Development • Theories of Entrepreneurship - Contribution of David McClelland and Joseph Schumpeter **Unit-3:-** • Need and Significance of Entrepreneurial Education and Training • Meaning,Concept & Areas of Entrepreneurship Development Programme (EDP) • Role of Entrepreneurial Development Programme (EDP) and Training Centers in India • Role of Entrepreneurial Development Institutes in India such as MSME-DI Mumbai, EDI Ahmedabad, MITCON, MCED, NIESBUD toward Entrepreneurial Development in India

Sr. No.	Modules / Units
3	**Entrepreneurial Project Development**
	Unit-1:- • Steps in Setting-up of an Entrepreneurial Venture • Idea Generation – Sources and Methods • Identification and Classification of Ideas • Meaning and Concept of Environment Scanning, SWOT Analysis and SWOT Matrix **Unit-2:-** • Meaning and Concept of Project Formulation • Meaning, Concept and Importance of Project Planning - Preparation of Project (Business) Plan -Points to be considered in Project Planning • Components of an ideal Business Plan: Market Plan, Financial Plan, Operational Plan, and HR Plan • Meaning and Concept of Project Report - Significance of Project Report - Contents of Project Report **Unit-3:-** • Meaning, Significance and Concept of Project Appraisal • Aspects and Methods of Project Appraisal: Economic Oriented Appraisal, Financial Appraisal, Market Oriented Appraisal, Technological Feasibility, Managerial Competency • Meaning, Concept, Significance and Importance of Feasibility Study • Types and Different Areas of Feasibility Study
4	**Specialized Focus Areas in Entrepreneurship**
	Unit-1:- • Meaning, Features, Concept, Role and Importance of Women Entrepreneurs • Problems faced by Women Entrepreneurs and Need for Promotion and Assistance • Measures/Suggestions to Overcome the Problems faced by Women Entrepreneurs • Agencies Supporting and Promoting Women Entrepreneurs- Stand up India. **Unit-2:-** • Meaning, Features, Concept, Role and Importance of Rural Entrepreneurs • Problems faced by Rural Entrepreneurs and Need for Promotion and Assistance • Measures/Suggestions to Overcome the Problems faced by Rural Entrepreneurs • Agencies Supporting and Promoting Rural Entrepreneurs **Unit-3:-** • Meaning, Features, Role and Importance, Concept of Social Entrepreneurship • Differentiating Role of Social Entrepreneurship and NGOs • Problems faced by Social Entrepreneurs and Need for Promotion and Assistance – Suggestions to Overcome the Challenges faced by Social Entrepreneurs • d. Examples of Social Entrepreneurship in India

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

8. International Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to International Marketing	12
2	Product Decisions in International Marketing	11
3	Finance and Pricing Decisions In International Marketing	11
4	International Marketing Environment	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to International Marketing**
	a. International Marketing- Features, Importance and scope of International Marketing. Domestic Marketing & International Marketing. **b.** Motivating Factors for International Marketing, Problems in International Marketing, Challenges faced by Indian Exporter in International Market. **c.** International Marketing Research – Need & importance, Scope & complexities, International Marketing Information System- Concept, Importance and Components.
2	**Product Decisions in International Marketing**
	a. Product-Product Mix, International Product Life Cycle, New Product Development steps. **b.** Branding – Factors affecting International branding, Importance, Types. **c.** Labeling, Marking & Packaging – Essential of Good Packaging in International Marketing, Importance of Labeling, Marking & Packaging.
3	**Finance and Pricing Decisions In International Marketing**
	a. Export Finance-, Types, Features, Procedure for obtaining export finance. **b.** Export Financial Institutions-Role and Functions of Commercial Banks, EXIM, SIDBI, ECGC Cover. **c.** Pricing – Factors determining pricing in International Marketing, quotations including INCO terms (Sums / Practical Problems) Pricing strategies in International Marketing.
4	**International Marketing Environment**
	a. International Marketing Environment- ,Components of International Marketing Environment (Eco, Social, Cultural, Legal & regulatory environment) **b.** Trade barriers – Types (Tariff and Non-Tariff Barriers), trading blocs (EU, SAARC, ASEAN). **c.** International Forums – WTO -Role/ Functions, Agreements (TRIMS, TRIPS, GATS, AOA, AOT), IMF, IBRD, BRICS- Role/ Functions.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

9. Merchant Banking Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Merchant Banking	11
2	Capital Funds	11
3	Issue Management Process	11
4	Issue Management & Due Diligence	12
	Total	**45**

Sr. No.	Modules / Units
1	**Merchant Banking**
	Merchant Banking and Financial Services: Introduction, Concept of merchant banking, Financial system in India and Development of merchant banks and regulations in India. Underwriting and Brokerage - Different roles played by underwriters and brokers in issue management and their responsibilities
2	**Capital Funds**
	Raising Capital from International Markets - Needs of Indian companies for raising funds from foreign markets, Usage of Euro issue, Evaluation of various types of depository receipts - American Depository Receipts, Global Depository Receipts, FCCBs and FCEBs.
3	**Issue Management Process**
	The process of issue management and merchant banker's role in it, The appointment of SEBI registered intermediaries and other intermediaries, The process of filing of offer document by the issuer with SEBI and the ROC with the help of the lead Merchant Banker, List of the documents to be submitted before opening of the issue, Copy of agreement between the Issuer and Merchant Banker, Certificate of compliance stating compliance of conditions, Due diligence certificate while registering DRHP/ Red Herring Prospectus/ prospectus with the ROC/ final post issue report, The type of In-Principle Approval from recognized stock exchanges for initial public issues as well as in the case for rights and further public offerings, the allotment, refund and payment of interest.
4	**Issue Management & Due Diligence**
	The general obligations of Intermediaries with respect to Public Issues and Rights Issue, The pricing in preferential issue, The pricing and restrictions on allotment of Qualified Institutional Placement, The pre-issue advertisement for rights issue, Utilization of funds raised through rights issue and the manner of disclosures in the offer document, The procedure for Institutional Placement Programme w.r.t Offer Document Pricing and Allocation/Allotment Restrictions, Minimum number of allotees, Restrictions on size of the offer, Period of subscription and display of demand, Transferability of eligible securities, The procedure for issue of Indian Depository Receipts (IDRs) w.r.t Eligibility Conditions for issue of IDR, Minimum Subscription Filing of Draft Prospectus, Due diligence Certificate, Payment of Fees and Issue of advertisements for IDR, Post Issue Reports, Undersubscribed Issue Finalisation of basis of allotment, The importance of due diligence, The role of external parties in the due diligence process and List of due diligence documents.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

10. Direct and Indirect Taxes Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Basic Terms	04
2	Scope of Total Income & Residential Status	04
3	Heads of Income	24
4	Deduction from Total Income	04
5	Computation of Total Income for Individual	09
	Total	**45**

Sr. No.	Modules / Units
1	**Basic Terms**
	Assessee, Assessment, Assessment Year, Annual value, Business, Capital Assets, Income, Person, Previous Year, Transfer
2	**Scope of Total Income & Residential Status**
	Scope of Total Income (S: 5) Residential Status (S: 6) for Individual assessee
3	**Heads of Income (S: 14)**
	• Salary (S: 15 to 17) • Income from House Properties (S: 22 to 27) • Profit and Gain From Business (S:28, 30, 31, 32, 35, 35D, 36, 37, 40, 40A 43B. • Capital Gains (S: 45, 48, 49, 50, 54, 54 EC) restricted to computation of Capital gain on transfer of residential house property only • Income from Other Sources (S: 56 to S: 59) Exclusions From Total Income (S: 10) Exclusion related to specified heads to be covered with relevant head.eg. Salary, Business Income, Capital Gain, Income from Other Sources
4	**Deduction from Total Income**
	S 80 A, S 80C, 80CCC, 80D, 80DD, 80E, 80 U, 80 TTA
5	**Computation of Total Income for Individual**

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

11. Labour Welfare and Practice Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Labour welfare	15
2	Labour Legislations in India	10
3	Agencies of Labour welfare	10
4	Industrial Hygiene & Occupational Health	10
	Total	**45**

Sr. No.	Modules / Units
1	**Labour welfare**
	• Meaning, Definition, Scope, Objective & Theories of Labour welfare. • Evolution of Labour Welfare in India. • Provisions for Labour welfare content in the Constitution of India (including Articles 41,42,43…..factories Act 1948, ESI Act 1948, Workmen's Compensation Act 1923)
2	**Labour Legislations in India**
	• Labour Welfare Facilities • National Commission on Labour and Labour Welfare • Labour Laws of the Elimination of Child Labour
3	**Agencies of Labour welfare**
	• Agencies of Labour welfare in India (Central govt. , State govt., Employers & Trade-Unions) • Labour Welfare Officer: role and functions. • Labour Administration in India
4	**Industrial Hygiene & Occupational Health**
	• Industrial hygiene & Occupational Health • Industrial accidents – causes & prevention. • Occupational diseases & Statutory Provisions, Fatigue, Frustration, Absentism

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

12. Purchasing and Store Keeping Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Material Management and Material Requirement Planning	12
2	Materials Research & 'E' Material management	11
3	Scientific Purchasing	11
4	Purchase procedure	11
	Total	**45**

Sr. No.	Modules / Units
1	**Material Management and Material Requirement Planning**
	a. **Material Management –** Definition, Concept, Importance, Objectives, Functions, Scope, Responsibilities of material manager, Interdepartmental relationship. b. **Materials budget** – Purpose, Procedures & Factors. c. **Material Requirement Planning –** Concept, Need, Objectives and Factors affecting MRP.
2	**Materials Research & 'E' Material management**
	a. **Material Research –** Meaning, Definition, Need, Importance, Scope & Functions. b. **'E' Material Management –** Concept, Application & Operation, Uses & Advantages, Classes/ Types of materials. c. **Coding and Standardization –** Nature, Methods and Advantages of Codification, Standardization – Nature & Importance.
3	**Scientific Purchasing**
	a. **Purchase Department** - Types of Buyers/ Consumers, Personality traits for Purchase executives/ Manager-qualities & qualification, Functions of Purchase department, Records maintain by Purchase department b. **Scientific Purchasing** - Meaning, Importance, Objectives & Principles, Purchase policies-Centralized vs decentralized purchasing. c. **Suppliers** – Sources of supplier, Selection of Suppliers – Methods, Vendor rating & Vendor development.
4	**Purchase procedure**
	a. **Purchase procedure -** Make or Buy or Import decision, Buyer & Seller relationship – Techniques, Ethics in Buying – Principles, Purchase methods, Documentation. b. **National purchase Procedure** – Steps/procedure, Purchase requisition, quotations – types, Invoice – Types and different Methods of payment settlement, Legal aspect of contract- Contents and Clauses**.** c. **International Purchase Procedure** – Need, Indent house / firm – Functions & Services offered by Indent house, Steps/Procedure of Importing, Documentations, Emerging trends in purchasing.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

13. Insurance Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Risk Management	11
2	Insurance	11
3	Insurance Market	11
4	Insurance Regulation	12
	Total	**45**

Sr. No.	Modules / Units
1	**Risk Management**
	a. Risk - Concept, different types of risks - actual and consequential losses b. Risk Management- Management of risks – Concept and Methods, loss minimization techniques c. Insurance Terminology**:** Common terms used in insurance - terms common to both life and non-life insurance - terms as specific to life and non-life insurance
2	**Insurance**
	a. Insurance **–** Concept**,** Nature of insurance, evolution of insurance, Different Types of insurance –importance of insurance, Insurance contract – Concept and Terms of an insurance contract b. Fundamental principles of insurance contract – principle of insurable interest, principle of indemnity, principle of subrogation, principle of contribution, principle of disclosure of all relevant information, principle of utmost good faith. Relevance of proximate cause c. ***Policy documents:*** Importance of a policy document, Format of a policy document
3	**Insurance Market**
	a. Insurance Market- Various Constituents of Insurance Market, operations of insurance companies - operations of intermediaries – specialist insurance companies – insurance specialists b. Insurance customers – different customer needs -importance of understanding customers – customer mind-sets' - customer satisfaction - customer behaviour at purchase point - customer behaviour at the time of claim. c. Ethics in Insurance – concept and importance of ethical behaviour
4	**Insurance Regulation**
	a. Role of regulators – IRDA – Role, functions and importance b. Management of risk by individuals – management of risk by insurers – fixing of premiums, how insurance takes care of unexpected eventualities. c. Reinsurance – Concept and its importance for insurers - role of insurance in Economic development and social security - contribution of insurance to the society. Double Insurance

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

14. Banking Law and Practice Paper - I
Central Banking

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	An Overview of Central Banking	09
2	RBI as the Central Bank of India	09
3	Supervisory Role of RBI	09
4	Central Banking in other Countries	09
5	Central Banking in the Cyber World	09
	Total	**45**

Sr. No.	Modules / Units
1	**An Overview of Central Banking**
	Overview: Concept of Central Banking – Institutional Growth of Central Banking – The Changing Face of Central Banking. Role of Central Banks: Determination of Goals – Inflation Targeting – Exchange Rate Targeting – Money Supply Targeting – Money-Growth Targeting – Viable Alternatives to Central Bank – Central Banking in India. Contemporary Issues- Autonomy and Independence- credibility, accountability and transparency of a central bank
2	**RBI as the Central Bank of India**
	Policy Framework for RBI: Organizational Framework – Operational Framework – Role as a Central Banker – Promotional Role of RBI – Regulatory Role of RBI. RBI and Monetary Policy: Macroeconomic Policies: Objectives – What is a Monetary Policy? – Goals, Targets and Instruments – Monetary Policy in India. A Brief Overview of Fiscal Policy- Striking Balance between Inflation and Growth through Monetary and Fiscal Policies
3	**Supervisory Role of RBI**
	Regulation and Supervision: Need for Regulation and Supervision – Banking Regulation Act, 1949 – Banking Regulation and Supervision – Functions of the Department of Supervisory – Regulations Review Authority – Unified Regulator v/s Multiple Regulators. RBI – On-site Inspection and Off-site Monitoring and Surveillance: The Core Principles for Effective Supervision – On-site Examination – Off-site Surveillance – On-site Inspection and Off-site Monitoring in India – Off-site Monitoring in Different Countries – Computerized Off-site Monitoring and Surveillance (OSMOS). RBI and Financial System- Introduction- Functions- Characteristics of Financial System- Role of RBI in regulating Financial System and Financial Sector Reforms
4	**Central Bank in other Countries**
	Federal Reserve System – Bank of England – The European Central Banking, Bank of Japan, Peoples Bank of China Interconnectivity of Central Banks with Other International Financial Institutions- ADB- IMF- World Bank- BIS- Objectives- Role and Functions
5	**Central Banking in Cyber World:**
	E Banking, E money, IT induced Changes and Monetary Policy, E payments, Risks in the New IT ERA, Impact of IT, Globalization and Central Banks.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

15. Regional Planning Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development	15
2	Factors Determining Regional Planning	10
3	Problems in India	10
4	Human and Environmental Impacts	10
	Total	**45**

Sr. No.	Modules / Units
1	**Development**
	• Development: Meaning – Growth versus Development • Factors promoting development of resources, infrastructure, technology, culture – diversities & disparities & need for balanced growth. • Concept and Nature of Planning, need for planning of region
2	**Factors Determining Regional Planning**
	• Factors determining regional planning Area versus regions, formal functional & problem regions – utility of these concepts in identifying regions for planning. • National versus regional planning- Regional hierarchy & Multi-level planning
3	**Problems in India**
	• Regional Problem in India- varying levels of development- causative factors • Problems characterizing development-potential, declining • Backward and ecologically sensitive regions examples-Inter related nature of regional problem.
4	**Human and Environmental Impacts**
	• Human and Environmental impacts of regional planning • Rural and Urban planning policy • Rural and Tribal Development Plans.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

16. Rural Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Rural Marketing	11
2	Rural Consumer Behaviour	12
3	Marketing Mix – Product and Price in Rural Marketing	11
4	Marketing Mix– Promotion and Distribution in Rural Marketing	11
	Total	**45**

Sr. No.	Modules / Units
1	**Rural Marketing**
	a. Rural Marketing-Concept, Nature, Scope, Significance of Rural Marketing b. Factors contributing to Growth of rural markets, e-rural marketing, growing importance of rural marketing, challenges in rural marketing c. Components and classification of Rural markets, Rural Marketing Information System
2	**Rural Consumer Behaviour**
	a. Rural Consumer behaviour-features, Rural Market VS Urban Market, Lifestyle of rural consumer, Classification of rural consumers, factors influencing consumer behaviour b. Rural Marketing Research- Significance, Tools of marketing research for rural marketing c. FMCG sector in Rural India-concept and classification of consumer goods
3	**Marketing Mix – Product and Price in Rural Marketing**
	a. Potential and size of the Rural Markets, Marketing mix for rural marketing b. Product Strategy - Product mix Decisions - Competitive product strategies for rural markets, importance of Branding, Packaging and Labelling in rural marketing c. Pricing strategy – pricing objectives, pricing policies, innovative pricing methods for rural markets
4	**Marketing Mix– Promotion and Distribution in Rural Marketing**
	a. Promotion strategy - appropriate media - Designing right promotion mix – promotional campaigns b. Distribution - Logistics Management - Problems encountered, Channels for rural markets, selection of appropriate channels- Factors c. New approaches and strategies to reach out rural markets

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

17. Elements of Operational Research Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Operation Research	10
2	Replacement Theory	05
3	Linear Programming Problems (LPP)	15
4	Transportation Problem	15
	Total	**45**

Pre-requisites: ***Use of Normal Distribution in finding Probabilities. Concept of present value of money. Application of derivatives to obtain minima of Cost functions***

Sr. No.	Modules / Units
1	**Introduction to Operation Research and Replacement Theory**
	Introduction: Meaning and scope of Operations Research, Applications in Business, Commerce and Industry, limitations of Operations Research.
2	**Replacement Theory**
	Replacement Theory: Replacement Models for items that deteriorate with time assuming value money i) constant ii) changes with time. Replacement of items that fail completely using individual and Group replacement.
3	**Linear Programming Problems (LPP)**
	Mathematical Formulation of LPP . Solution to the LPP using Graphical Method, Simplex Method and Big M method Duality in LPP. Detection of optimum solution to primal using optimum solution to the dual.
4	**Transportation Problem**
	Description and Formulation of Transportation Problem Initial Basic Feasible Solution by i) North West Corner Rule, ii) Least Cost Entry Method (Matrix Minima), iii) Vogel's Approximation Method. Optimum Solution by MODI Method. Existence of Alternative optimum solution. Impact of change in some cost Coefficients on optimum solution. Maximization type and Unbalanced Transportation Problems.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

18. Psychology of Human Behavior at Work Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	What is Organizational Behaviour?	11
2	Attitudes and Job Satisfaction	11
3	Motivation Concepts	12
4	Leadership	11
	Total	**45**

Sr. No.	Modules / Units
1	**What is Organizational Behaviour?**
	a) The importance of interpersonal skills b) What managers do - management functions, roles, and skills c) Defining organizational behaviour; Disciplines that contribute to the OB field d) Challenges and Opportunities for OB - Responding to globalization; managing work force diversity; coping with "temporariness"; helping employees balance work–life conflicts; creating a positive work environment; improving ethical behaviour
2	**Attitudes and Job Satisfaction**
	a) Attitudes - Main components of attitudes; Major Job Attitudes b) Job Satisfaction - Measuring job satisfaction. What causes job satisfaction? The impact of satisfied and dissatisfied employees on the workplace
3	**Motivation Concepts**
	a) Defining Motivation; 4 early theories of motivation b) Contemporary theories of motivation - Goal Setting Theory, Equity Theory/ Organizational justice, Expectancy Theory
4	**Leadership**
	a) What is Leadership? Trait theories, Behavioural theories b) Contingency Theory – The Fiedler Model c) Charismatic Leadership and Transformational Leadership - Key characteristics of a charismatic leader; characteristics of transactional leaders; characteristics of transformational leaders d) Leading for the future: Mentoring

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Elective Courses (EC)
Discipline Specific Elective (DSE) Courses
Group A: Advanced Accountancy
1. Financial Accounting and Auditing VII- Financial Accounting
• *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.* • *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.* • *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi* • *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers* • *Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition*
2. Financial Accounting and Auditing VIII- Cost Accounting
• *Cost Accounting- A managerial emphasis by Horngren, Charles, Foster and Datar, Prentice Hall* • *Management Accounting by Khan and Jain, Tata McGraw Hill* • *Practical Costing by P C Tulsian, Vikas New Delhi* • *Advanced problems and solutions in cost Accounting by S N Maheshwari, Sultan Chand New Delhi* • *Cost Accounting (For B. Com 4th Sem, Delhi Univ) by Arora M N, Vikas Publishing House Pvt. Ltd.* • *A Textbook of Cost And Management Accounting - 10th Edn by Arora M N, Vikas Publishing House Pvt. Ltd.* • *Cost Accounting: Principles & Practice - 12 Edn by Arora M N, Vikas Publishing House Pvt. Ltd.* • *Essentials of Cost Accounting by Arora M N, Vikas Publishing House Pvt. Ltd.* • *Students Guide to Cost Accounting & Financial Management (Set of 2 Volumes) (CA-IPCC) (Group I) by Bhavesh N. Chandarana, Taxmann* • *Lectures on Costing by Swaminathan: S. Chand and Company (P) Ltd., New Delhi* • *Cost Accounting by C.S. Rayudu, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Cost Accounting by Jawahar Lal and Seema Srivastava, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Cost Accounting by Ravi M. Kishore, Taxmann Ltd., New Delhi* • *Principles and Practices of Cost Accounting by N.K. Prasad, Book Syndicate Pvt. Ltd., Calcutta* • *Cost Accounting Theory and Practice by B.K. Bhar, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Cost Accounting Principles and Practice by M.N. Arora, Vikas Publishing House Pvt. Ltd., New Delhi* • *Advanced Cost and Management Accounting: Problems and Solutions by V.K. Saxena and C.D. Vashist, S. Chand and Company (P) Ltd., New Delhi* • *Cost Accounting by S.P. Jain and K.L. Narang, Kalyani Publishers, Ludhiana* • *Modern Cost and Management Accounting by M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi* • *Fundamentals of Cost Accounting by Jhamb. H. V., Ane Books Pvt. Ltd.* • *Cost Accounting by Gupta Nirmal, Ane Books Pvt. Ltd.*
Discipline Specific Elective (DSE) Courses
Group B: Business Management
1. Business Management Paper I
• *Essentials of Management by Koontz and Weihrich / McGraw Hill* • *Principles of Management by Koontz and O. Donnel/ Tata McGraw Hill, New Delhi* • *Principles of Management: Theory and practices by Sarangi S.K. VMP Publishers and Distributors.* • *Guide to Management Ideas by Tim Hindle, The Economist* • *Principles of Management by Terry G.R. AITBS* • *Business Organization and Principles of Management by Dutta Chowdury, Central Education*

Reference Books
• *Principles of Management, Daver Rustoms, Crown* • *Principles of Management, Tripathi P.C. Tata McGraw Hill, New York* • *Management Theory and Practices by Dale, Ernest / McGraw Hill, New York.* • *Practice of Management by Peter Drucker / Allied Publisher, New Delhi* • *Management by Ricky W Griffin / Houghton Mifflin Company* • *Management by Gary Dessler / Prentice Hall* • *Management by Stephen Robbins, Mary Coulter / Prentice Hall* • *Management by James Stoner, Edward Freeman / Prentice Hall* • *Time Management by Roberta Roesch, Tata Mc Graw Hill* • *Time Management by Marc MANCINI, Tata Mc Graw Hill*
2. Business Management Paper II
• *Fundamentals of Financial Management(5th edition) by Chandra Prasanna (2010). Tata McGraw Hill Education Pvt. Ltd.: New Delhi* • *Financial Management – Analytical and Conceptual Approach (12th edition) by Kuchhal S.C. (1995).Chaitanya Publishing House: Allahabad* • *Financial Management by Reddy R.Jayprakash (2010) APH Publishing Corporation: New Delhi* • *Financial Management – Theory and Practice (5 & 6th edition) by Chandra Prasanna (2003, 2004). Tata McGraw Hill Education Pvt. Ltd.: New Delhi* • *Fundamentals of Financial Management (13th edition) by Horne, James C. Van (2012) PHI Learning Pvt. Ltd.: New Delhi* • *Financial Management and decision making by Samuels, John (1999) International Thomson Nusiness Press : London* • *Financial Management - problems & solutions (2nd edition) by Kishore, Ravi M. (2010) Taxmann Publication Pvt. Ltd.: New Delhi* • *Financial Management : theory, concepts and cases(5th rev edition) by Rustagi, R.P. (2011) Taxmann Publication Pvt. Ltd.: New Delhi* • *Financial Management : principles & problems (7th edition) by Srivastava, R.M.&VermaShubhra (2002) PragatiPrakashan: Meerut* • *Fundamentals of Financial Management – problems and solutions (3rd edition) by Maheswari, S.N. (2006) Sultan Chand and Sons: New Delhi*
Discipline Specific Elective (DSE) Courses
Group C: Banking and Finance
1. Banking and Finance Paper- I Financial Markets
• *Khan M.Y, Financial Services, Mc Graw Hill Education.* • *Dr.S. Gurusamy, Financial Services, Vijay Nicole Imprints.* • *E. Gordon and K. Natarajan – Financial Markets and Services* • *Niti Chatnani- Commodity markets McGraw Hill Publication* • *S. Kevin, - Commodities & financial derivatives PHI Learning Pvt ltd*
2. Banking and Finance Paper- II Financial Reporting Analysis
• *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.* • *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.* • *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi* • *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers* • *IFRS – Dr Ram Mohan Bhave and Dr Anjali Bhave*

Reference Books

Discipline Specific Elective (DSE) Courses

Group D: Commerce

1. Commerce Paper I

- *Bhattacharjee, Service Sector Mgt; An Indian Perspective, Jaico Publishing house, 2011.*
- *Christoper lovelock, service marketing –people technology, strategy, pearson education, IV Edi, 2003.*
- *Valarie A. Zeithaml 8 Mary Jo Bitner, Services Marketing, Tata Mcgraw-Hill, 2000.*
- *A. Vijaykumar, service sector in India – Recent Policy initiative, New century Publication, 2008.*

2. Commerce Paper II

- *Office Management, Pillai R S N, S. Chand Publishers, 2010*
- *Office Organisation & Management, N.Kumar & R. Mttal, Anmol Publisher, 2001*
- *Office Management, Balachandran, Tata Mc Graw Hill, 2009*

Discipline Related Elective(DRE) Courses

3. Commerce V

- *Phillip Kotler. (2005) Marketing Management, Englewood cliffs, Prentice Hall, NJ*
- *Richard M. S Wilson, Colin gilligam, Strategic Marketing Management, Viva BooksPvt. Ltd.,2003.*
- *Walker –Boyd, Larreche , Marketing Strategies –Planning Implementations, TataMacgraw Hill.2004.*
- *Neelamegam,S.(2007) Marketing in India : Cases and Readings, Vikas, New Delhi*
- *Kotler, P., Keller, K.L. Koshy, A. &Jha. M. (2009). Marketing Management: A South Asian Perspective. (Thirteenth Ed). Pearson Education, New Delhi.*
- *Gandhi, J.C. Marketing a Managerial Introduction TataMcGrawHill.*
- *Maheshwari, R.P., Jindal, Lokesh, (2011). Marketing Management Theory and Practice.*
- *Sherlekar, S.A. Marketing Management. Himalaya Publishing House.*
- *Saxena, Rajan. Marketing Management*
- *Ramaswamy & Kumari Nama. Marketing Management*

4. Business Economics V

- *Indian Economic Survey Reports (Annual), Ministry of Finance, Government of India*
- *Indian Economy by Misra and Puri, Himalaya Publishing House - Delhi*
- *Gaurav Dutt & Ashwini Mahajan, (2016) Indian Economy, S.Chand& company PVT LTD New Delhi*
- *A.N.Agarwal – Indian Economy problems of Development and Planning New Age International Publisher*
- *RuddarDatt K.P.M Sundharam – Indian Economy S. Chand E-co LTD. Delhi*
- http://www.environmentalpollution.in/industrial-pollution/industrial-pollution-types-effects-and-control-of-industrial-pollution/299 *for industrial pollution*

Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper I

- *Myers C.A. & Kannappan S. (1970), 'Industrial Relation in India' , Asia publishing House, India.*
- *Singh, J.K. (1988), 'Labour Economics. Principles Problem and Practices', Deep andDeep Publication Pvt. Ltd. New Delhi.*
- *Jackson, M.P. , Strikes*
- *Karnik V.B. (1974),'Indian labour, Problems and prospects', Minewal Associations.*
- *Joshi C.K (1967), ' Unionism in Developing Economy', Asia Publication House, Bombay.*
- *Mamoria C.B. &Mamoria S.(1992),'Dynamics of Industrial Relation in India', Himalaya Publishing House.*
- *Sahani, Dr, N.K. (2009) 'Industrial Relations' Kalyani Pub. Ludhiyana.*
- *Tripathi, P.C. (2009) 'Personal Management and Ind. Relations' – Sultan Chand and Jons, New Delhi.*
- *Memoria&Memoria- 'Ind. Relations' Himalaya Pub. House, Mumbai.*
- *A.M. Sharma- 'Ind. Relations' - Himalaya Pub. House, Mumbai.*
- *G.Ramanugan- The Honey bee to words a new culture in Ind, Relations- Sterling Pub. Pvt. Ltd.*

Reference Books

2. Computer Systems and Applications Paper I

- *Data Communication and Networking -Behrouz A Forouzan*
- *Introduction to Computers – Peter Norton, Tata McGraw Hill*
- *Fundamentals of Database Systems - Elmasri Navathe, Somayajulu, Gupta*
- *Database Systems and Concepts - Henry F. Korth, Silberschatz, Sudarshan McGraw Hill*
- *DBMS - Date*
- *The complete reference SQL - Vikram Vaswani TMH*
- *The complete reference SQL - James R. Groff & Paul N. Weinberg TMG*
- *Learning SQL - Alan Beaulieu O'REILLY.*
- *Learning MySQL - Seyed M. M. and Hugh Williams, O'REILLY.*
- *SQL a complete reference - Alexis Leon & Mathews Leon TMG*

3. Export Marketing Paper I

- *Export Policy Procedures& Documentation– M. I. Mahajan, Snow White Publications Pvt. Ltd, 26th Edition,*
- *International Business, K. Aswathappa,McGraw-Hill Education (India) Pvt. Ltd.,6th Edition*
- *Export Import Procedures - Documentation and Logistics, C. Rama Gopal, New Age International Publishers, 2006 / Reprint Jan 2016*
- *International Trade and Export Management, Francis Cherunilam, Himalaya Publishing House, 20th Edition, 2017*
- *R. K. Jain's, Foreign Trade Policy & Handbook of Procedures [With Forms, Circulars & Public Notices], Centax Publication, 2017*
- *EXIM Policy & Handbook of EXIM Procedure – VOL I & II*
- *International Marketing and Export Management, Gerald Albaum, Edwin Duerr, Alexander Josiassen, Pearson Publications, 8th Edition, June 2016*
- *International Marketing Strategy,IsobelDoole and Robin Lowe, 5th Edition, Thomson Learning, 2008.*
- *Global marketing, Warren J. Keegan 9th Edition Pearson Education, Delhi,*
- *New Import Export Policy - Nabhi Publications, 2017*
- *P.K. Khurana, Export Management, Galgotia Publishing Co, New Delhi*
- *P.K.Vasudeva, International Marketing-, Excel Books, fourth edition, New Delhi*
- *Paras Ram, Export documentation and procedure A-Z*
- *Export: What, Where, How?Paras Ram, & Nikhil K. Garg, Anupam Publishers, 47th Edition, 2016-17*
- *International Marketing, Mary C. Gilly, John L. Graham, Philip R. Cateora, 14th Edition, Tata McGraw-Hill Co. Ltd., 2014*
- *International Marketing Management, An Indian Perspective,R.L.Varshney and B. Bhattacharya, Sultan Chand & Sons, 24th Edition, 2012*
- *International Marketing Analysis and Strategy, SakOnkvisit, John J. Shaw, Prentice-Hall of India Pvt. Ltd., 5th Edition, 2008*
- *International Marketing, Subhash C. Jain, South-Western, 6th Edition, 2001*
- *Export Management, T.A.S.Balagopal , Himalaya Publishing House, Mumbai, 2014*
- *Michael R. Czinkota and Iikka A. Ronkainen, International Marketing, South-Western, 10th Edition, 2012*
- *Export-Import and Logistics Management, Charlie Hill, Random Publications, 2014*
- *International Marketing Management, M.V. Kulkarni, Everest Publishing House*

4. Marketing Research Paper I

- *Marketing Research Text and Cases, Rajendra Nargundkar, McGraw Hill, 2nd edition*
- *Marketing Research (Text with Cases), Suja Nair, Himalaya Publishing House, Maharashtra, 2014*
- *Marketing Research, John Boyce, Tata McGraw Hill Publishing Co. Ltd., Maharashtra, 2011*
- *Encyclopaedia of Marketing Research Series, S.D. Singh, Anmol Publications Pvt. Ltd., New Delhi, 2012*
- *Marketing Research: A Global Outlook, V. Kumar, Sage Publications, New Delhi, 2015*
- *Marketing Research, G. C. Beri, McGraw Hill, New Delhi, 2007*
- *Fundamentals of Marketing Research, M.K. Gawande, Chandralok Prakashan, Kanpur, 2012*
- *Marketing Research: The impact of internet, Gates, Roger et al, John Wiley & sons, Great Britain, 2002*

Reference Books

5. Investment Analysis and Portfolio Management Paper I

- *Security Analysis and Portfolio Management, Prasanna Chandra, Tata McGraw Hill*
- *Financial Management, Prasanna handra, Tata McGraw Hill*
- *Security Analysis and Portfolio Management, Ravi Kishor, Taxman Publishers*
- *Financial Management, Khan & Jain, Tata McGraw Hill*
- *Fundamentals of Investment Management, Hirt and Block, Tata McGraw Hill. Ed 2009.*
- *Portfolio Management Handbook, Robert A. Strong, Jaico Publishing House, Mumbai*

6. Transport Management Paper I

- *Phil Hughes & Ed Ferrett (2010). International Health and Safety at Work. Routledge Publisher.*
- *Mather J. C. (ed.) (1992). 'Transport and Economic Development', Chugh Publications, Allahabad.*
- *Modak S.K. (1980). 'Adgunik Parivahanache Arthashastra', Maharashtra Vidhyapeeth Grantha Nirmitee Mandal, Nagpur.*
- *Hugh M. Kindred & Mary R. Brooks (1997). 'Multimodal Transport Rules'. Martinus Nijhoff Publishers.*
- *Multimodal Transportation of Goods Act, 1993 Along With Allied Rules, Professional Book Publishers.*
- *Slim Hammadi & Mekki Ksouri (2013). Multimodal Transport Systems. John Wiley & Sons.*
- *Joseph S. Szyliowicz, Luca Zamparini, Genseric L.L. Reniers & Dawna L. Rhoades (2016). Multimodal Transport Security: Frameworks and Policy Applications in Freight and Passenger Transport. Edward Elgar Publishing.*
- *United Nations Economic and Social Commission for Asia and the Pacific (2004). Manual on Modernization of Inland Water Transport for Integration within a Multimodal Transport System. United Nations Publications.*
- *Jean-Paul Rodrique, Claude Comtois & Brian Slack (2013). The Geography of Transport Systems. Routledge.*
- *Christos N. Pyrgidis (2016). Railway Transportation System: Design, Construction and Operation. CRC Press.*
- *United Nations. Economic and Social Commission for Asia and the Pacific Secretariat (2003). Training Manual on the Operational Aspects of Multi Model Transport. United Nations Publications.*
- *Container and Multimodal Transport Management (2002). Shroff Publishers & Distributors.*
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- *Owen, W. (1964). 'Strategy for Mobility', East-West Centre Edition, Honolulu.*
- *Bruton, M.J. (1985). Introduction to Transportation Planning', Hutchinson, Londan.*
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- *K.W.Ogden, "Safer Roads – A guide to Road Safety Engineering".*
- *Babkov, V.F. (1986). Road Conditions and Traffic Safety. MIR Publications, Moscow.*
- *Popkes, C.A. (1986). Traffic Control and Road Accident Prevention. Chapman and Hall Limited.*
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- *Konkan Railway - A Dream Come True- Konkan Railway Corporation Ltd.*
- *S. Ponnuswamy (2012), 'Urban Transportation: Planning, Operation and Management' Publisher- Tata McGraw-Hill Education.*
- *B.C. Vaidya (2003). 'Geography of Transport Development in India' Concept Publishing Company*

7. Entrepreneurship & Management of Small Scale Industries Paper I

- *Batra G.S. and Dangal R.C., Entrepreneurship and Small Scale Industries, Deep and Deep Publications Pvt. Ltd.*
- *Entrepreneurial Development, Colombo Plan, 1998, Tata McGraw Hill, New Delhi.*
- *Entrepreneurship Development, Himalaya Publishing House, Mumbai.*
- *Gupta C.B., Entrepreneurial Development, 1995, Somaiya Publication, New Delhi.*
- *Hisrich R.D., Cases in International Entrepreneurship, 1997, Liven, Chicago.*
- *Hisrich Robert D and Peters Michael, Entrepreneurship, 2002, Tata McGraw Hill, New Delhi,*
- *Mascarenhas Romeo S., Entrepreneurship and Management of Small and Medium Enterprises, Vipul Prakashan, Mumbai.*

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- *Mascarenhas Romeo S., Management of Small Scale Industries, Vipul Prakashan, Mumbai.*
- *MSME Policy Document, Government of India.*
- *Pooja, Micro, Small and Medium Enterprises (MSMEs) in Indian Economy, New Century Publications New Delhi.*
- *Principles of Entrepreneurship, Excel India Publishers, New Delhi.*
- *Sharma P.K., Development Banks and Entrepreneurship Promotion in India, Mittal Publications.*
- *Singh P.N. and Saboo J.C., Entrepreneurial Management, Dr. P. N. Singh Centre for HRD.*
- *Vasant Desai, Entrepreneurial Development, 3 Volumes Himalaya Publishing House.*
- *Vasant Desai, Entrepreneurship and Management of Small and Medium Enterprises, Himalaya Publishing House.*
- *Vasant Desai, Small Scale Industries and Entrepreneurship, Himalaya Publishing House.*
- *Yerram Raju B. and Pujari Ram R., The Small Entrepreneur Starting and Growing, Excel Publication, New Delhi.*

8. International Marketing Paper I

- *International Marketing - Rathor Jani Rathor*
- *International Business - P. Suhbarau*
- *Global Marketing Strategy - Jeannet&Hennssey*
- *Managing International Marketing - dr. V. O. Varkey*
- *Modern Marketing Research – M.N.Mithani*
- *Marketing Research – G.C.Berry*
- *Marketing Research : Applied Orientation.- Naresh Malhotra*
- *Marketing Research- Boyd, Westfall &Stasch SakOnkvisit , John J. Shaw ,*
- *International Marketing -Phillip R Cateora and John Graham*
- *International Marketing - Varshney and Bhattacharya*
- *International Marketing - P.K. Vasudev.*
- *International Marketing & Export Management – Edwin Duerr, Jesper*
- *B.L. Varshney and B. Bhattacharya , International Marketing Management .*
- *P.G. Apte, International Financial Management .*
- *Francis Cherunilum, International Marketing Management.*
- *Phillip R. Cateoria, International Marketing.*

9. Merchant Banking Paper I

- *Merchant Banking and Financial Services – Dr. S Guruswamy Fourth Edition, Delhi Publishing House.*
- *Merchant Banking Principles & Practices – H. R Machiraju New Age International Ltd*
- *Merchant Banking – NISM 2015 Edition*
- *Merchant Banking and Financial Services – Dr L.N Natarajan, Margham Publications 2012*

10. Direct and Indirect Taxation Paper I

- *Students guide to Income Tax (simplified version) by V.K.Singhania and Monica Singhania, Taxmann*
- *Systematic approach to Income Tax by Ahuja & Gupta, Bharat Law Publication*
- *Income Tax by T.M. Manorahan, Snow White*
- *Direct Tax ready reckoner by N.V.Mehta, Kuber Publication*
- *Indirect Taxes by V.S.Datey, Taxmann*
- *Service Tax by S.S.Gupta, Taxmann*
- *Commentary on M.V.A.T.ACT, 2002 by M.S.Mathuria & Dilip Phadke, Maharashtra Sales Tax Vat News*
- *Indirect Taxes by V.S.Balchandra, Sultanchand*
- *Direct Taxes by B.B. Lal and N. Vashishta, Pearson Education*
- *Students Guide to Income Tax (Including Service Tax / VAT) - Simplified Version with Problems and Solutions (Set of 2 Vols) by Dr Monica Singhania Dr. Vinod K Singhania, Taxmann*
- *Indirect Tax Laws - Service Tax & VAT (Module -II) by Vineet Sodhani, Taxmann*
- *Indirect Taxes Law and Practice by V. S. Datey, Taxmann*

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11. Labour Welfare & Practice Paper I

- *Jayant S. Railkar- Labour welfare & Practice – Vipul Prakashan.*
- *A.M. Sarma – Aspects of Labour welfare & Social Security – Himalaya Publications.*
- *Punekar & Deodhar – Labour welfare Tata MC Graw Hill Publishing.*
- *Misra & Puri – Indian Economy – Himalaya Publications.*
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- *Labour Welfare, Trade Unionisms and Industrial Relations – S.D. Panekar, S.B. Deodhar, Mrs. Saraswathi Sankaram, Himalaya Publishing House.*

12. Purchasing and Storekeeping Paper I

- *Ammer. Dean S : Materials Management (Richard D. Irwin Inc. U.S.A.).*
- *Baily, Peter and Farmer, D. : Purchasing Principles and Techniques : Arnold Heinemann, Publishers India New Delhi.*
- *Baily, Peter : Purchasing Principles and Management.*
- *Benjamin Melnitsky : Industrial Storekeeping Manual (Chilton Company, Philadelphia).*
- *Branch, Alan E. : International Purchasing and Management : Thomson Learning.*
- *Buchan and Keenigsberg : Scientific Inventory Management : Prentice Hall, U.S.A.*
- *Bagade, Shankar D. : Production and Materials Management : Himalaya.*
- *Chadha, H. L. : Industrial Purchasing and Materials Management (Jaico Publishing House, Bombay).*
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- *Gupta D. R. : Purchasing and Storekeeping : Tata McGraw Hill.*
- *Gokarn, P. R. : Essentials of Materials Management : Somaiya.*
- *Gopalakrishnan, P. and Sandiya, M. S. : Purchasing Strategy (Sterling Publishers Pvt. Ltd., New Delhi).*
- *Gopalakrishnan, P. and Sundaresan, Materials Management : Prentice Hall of India, New Delhi). 5*
- *Gopalakrishnan, P. Purchasing and Materials Management : Tata McGraw Hill 2001.*
- *Heinritz, Stuart F. : Purchasing Principles and Applications (Prentice Hall U.S.A.)*
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- *Lee, Lamer: Purchasing and Materials Management Texts and Cases : Tata McGraw Hill.*
- *Magee, John F. : Production Planning and Inventory Control (McGrow Hill, U.S.A.).*
- *Materials Management, Inventory Control and Logistics Texts and Cases.*
- *Menon K. S. : Purchasing and Inventory Control : Wheeler.*
- *Morrison, A : Storage and Control of Stock (Pitman Publishing Co., London).*
- *Nair, N. K. Purchasing and Materials Management : Vikas.*
- *Roy Chowdhury, B. K. : Management of Materials (Sultan Chand and Sons, New Delhi).*
- *Varma : Essentials of Store Keeping and Purchasing : M. M. Sultan Chand.*
- *Westing, J. H., Fine, I.V., Zenz, G. J. : Purchasing Management (Wiley Eastern Ltd., New Delhi).*

13. Insurance Paper I

- *General Insurance, John Magee & David Bicklhaupt,*
- *Operational Transformation of General Insurance Industry during the period 1950 to 1990 &Beyond, R D Samarth*
- *Study on Distribution Functions in General Insurance & Role of Intermediaries, Arun Agarwal / PR Rao*
- *General Insurance for Information Technology Professionals, Martin Frappoli*
- *S. Arunajatesan and T.R. Vishwanathan: Risk Management and Insurance:Macmillan, New Delhi.*
- *Shashidharan K. Kutty: Managing Life Insurance:Prentice Hall of India, New Delhi*
- *Kenneth Black Jr. and Harold D. Skipper Jr.: Life and Health Insurance: Pearson, New Delhi*
- *Uma Narang, Insurance Industry in India, Features, Reforms & Outlook, New century Publication, 2013*

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14. Banking Law and Practice Paper I Central Banking

- *Central Banking- IIBF- MacMillan Publishers*
- *Central Banking – ICFAI Press*
- *Theory and Practice of Central Banking in India- V.A.Avdhani*
- *Central Banking- M H deKock*
- *Central Banking in Planned Economy- The Indian Experiment- C.R.Basu*

15. Regional Planning

- *Glasson, J. (1974), 'An Introduction to Regional planning, Hutchinson & Co., London.*
- *O.E.C.D (1970), 'The Regional Factor in Economic Development',*
- *Minahull, R.(1968), ' Regional Geography'. Hutchinson * Co., Ltd., London.*
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- *Misra, R.P et.al (1974). 'Regional Development Planning in India', Vikas, New Delhi.*
- *Sen. L.K. (ed.) (1972),'Reading in micro level planning and rural growth centers, NICD, Hyderabad.*
- *B.M.R.P.E. (1974), Regional plan for Bombay metropolitan Region: 1970-1991, Bombay*
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16. Rural Marketing Paper I

- *DantwalaM.L., Indian Agriculture Since Independence Oxford & IBH Publishing Co. Pvt. Ltd. NewDelhi–110001, 1990.*
- *Habeeb U.R.,Rahman K.S., Rural Marketing in India, HPH-Mumbai 400004---2003*
- *Rural Marketing, Gopala swamy, Vikas Publishing House, NewDelhi.*
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17. Elements of Operation Research Paper I

- *PERT & CPM Principles and Applications by L.S.Srinath*
- *Operations Research Principles & Practice by Ravinderan, Phillips Solber.*
- *Schaum's outline series Therory & Problems of Operations Research by Richard Bronson*
- *Operations Research by H.A.Taha*
- *Operations Research by Gupta & Hira*
- *Operations Research Theory & Applications by J.K.Sharma*
- *Operations Research Problems & Solutions by V.K.Kapoor*
- *Quantitative Techniques by Shenoy, Shrivastav & Sharma*
- *Introduction to Operations Research by Hiller & Lieberman*
- *Operations Research Techniques for Management by B.Banerjee*
- *Operations Research by Gupta & Manmohan*
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18. Psychology of Human Behaviour at work Paper I

- *Robbins, S. P. Judge, T. A. & Vohra, N. (2013). Organizational Behavior. (15th ed.), Indian subcontinent adaptation, New Delhi: Pearson Education, Dorling Kindersley India pvt ltd.*
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- *Greenberg, J. (2013). Behaviour in organizations (10th ed.). PHI Learning Private Limited.*

Reference Books
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B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester VI

No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**
1B	***Discipline Related Elective(DRE) Courses***	
3	Commerce VI	**03**
4	Business Economics VI	**03**
2	***Ability Enhancement Courses (AEC)***	
5 & 6	**Any two courses from the following list of the courses	**03+03**
	Total Credits	**20**

List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)	
Group A: Advanced Accountancy	
1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing X - Cost Accounting
Group B: Business Management	
1	Business Management Paper - III
2	Business Management Paper - IV
Group C: Banking and Finance	
1	Banking and Finance Paper - III
2	Banking and Finance Paper - IV
Group D: Commerce	
1	Commerce Paper - III
2	Commerce Paper - IV
Group E: Quantitative Techniques	
1	Quantitative Techniques Paper - III
2	Quantitative Techniques Paper - IV
Group F: Economics	
1	Economics Paper - III
2	Economics Paper - IV

List of Ability Enhancement Courses (AEC) for Semester VI (Any Two)	
1	Trade Unionism and Industrial Relations Paper - II
2	Computer systems & Applications Paper - II
3	Export Marketing Paper - II
4	Marketing Research Paper - II
5	Investment Analysis Portfolio Paper - II
6	Transport Management Paper - II
7	Entrepreneurship& M.S.S.I. Paper - II
8	International Marketing Paper - II
9	Merchant Banking Paper - II
10	Direct & Indirect Taxation Paper - II
11	Labour Welfare & Practice Paper - II
12	Purchasing & Store keeping Paper - II
13	Insurance Paper - II
14	Banking Law & Practice Paper - II
15	Regional Planning Paper - II
16	Rural Marketing Paper - II
17	Elements of Operational Research Paper - II
18	Psychology of Human Behaviour at work Paper - II

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

1. Financial Accounting and Auditing Paper-IX: Financial Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	AS – 14 - Amalgamation, Absorption & External Reconstruction	15
2	Accounting of Transactions of Foreign Currency	15
3	Liquidation of Companies	10
4	Underwriting of Shares & Debentures	10
5	Accounting for Limited Liability Partnership	10
	Total	**60**

Sr. No.	Modules / Units
1	**AS – 14 - Amalgamation, Absorption & External Reconstruction (excluding inter-company holdings)**
	In the nature of merger and purchase with corresponding accounting treatments of pooling of interests and purchase method respectively. Meaning and Computation of purchase consideration. Problems based on purchase method only.
2	**Accounting of Transactions of Foreign Currency**
	In relation to purchase and sale of goods, services and assets and loan and credit transactions. Computation and treatment of exchange rate differences
3	**Liquidation of Companies**
	Introduction, Underwriting, Underwriting Commission Provision of Companies Act with respect to Payment of underwriting commission Underwriters, Sub-Underwriters, Brokers and Manager to issues Types of underwriting, Abatement Clause Marked, Unmarked and Firm-underwriting applications, Liability of the underwriters in respect of underwriting contract Practical problems
4	**Underwriting of Shares & Debentures**
	Meaning of liquidation or winding up Preferential payments Overriding preferential payments Preparation of statement of affairs, deficit / surplus account Liquidator's final statement of account
5	**Accounting for Limited Liability Partnership**
	Statutory Provisions Conversion of partnership firm into LLP Final Accounts

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

2. Financial Accounting and Auditing Paper-X: Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Cost Control Accounts	10
2	Contract Costing	10
3	Process Costing	10
4	Introduction to Marginal Costing	10
5	Introduction to Standard Costing	10
6	Some Emerging concepts of Cost accounting	10
	Total	**60**

Sr. No.	Modules / Units
1	**Cost Control Accounts**
	Advantages and Disadvantages Cost Control Accounts, Principal Accounts, Subsidiary Accounts to be maintained Note- Simple practical problems on preparation of cost control accounts
2	**Contract Costing**
	Progress payments, Retention money, Contract accounts, Accounting for material, Accounting for Tax deducted at source by the contractee, Accounting for plant used in a contract, treatment of profit on incomplete contracts, Contract profit and Balance sheet entries. Excluding Escalation clause **Note-** Simple practical problems
3	**Process Costing**
	Process loss, Abnormal Gains and Losses, Joint products and by-products. Excluding Equivalent units, Inter-process profit **Note-** Simple Practical problems Process Costing and joint and by-products
4	**Introduction to Marginal Costing**
	Marginal costing meaning, applications, advantages, limitations Contribution, Breakeven analysis, Margin of safety and profit volume graph. ***Note****-Simple Practical problems based on Marginal Costing excluding decision making*
5	**Introduction to Standard Costing**
	Various types of standards, Setting of standards, Basic concepts of Material and Labour variance analysis. **Note**-Simple Practical problems based on Material and labour variances excluding sub-variances
6	**Some Emerging concepts of Cost accounting**
	Target Costing Life cycle Costing Benchmarking ABC Costing **Note**- No practical problems

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

1. Business Management Paper-IV
Management and Organization Development

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Directing & Leading	15
02	Co-ordination & Motivation	15
03	Controlling & Information Management	15
04	Contemporary Issues in Management	15
	Total	**60**

Sr. No.	Modules / Units
1	**Directing and Leading**
	• Communication as an important tool for effective direction and leadership • Barriers to Communication • Ethical issues in using social media for communication • Role of a leader in business organisations - qualities of a good leader • Style of leadership • Leadership continuum – developing an effective leader – path goal theory • Transactional and transformational leaders
2	**Co-ordination and Motivation**
	• Co-ordination as essence of management • Co-ordination vs co-operation vs conciliation • Motivation – meaning and importance of motivation • Financial and non-financial motivators • Theories of Motivation – Maslow's theory – Herzberg's theory – McGregor's theory.
3	**Controlling and information Management**
	• Definition and steps in controlling. • Strategic and operational controlling techniques. • Requirements of an effective control system. • Flow of information n a typical organisation - Need for managing information. • Designing and developing modern MIS - Introduction to ERP.
4	**Contemporary Issues in Management**
	• Challenges in organisational growth and development - management perspective • Change management • Importance of time management and tools for effective time management • Addressing diversity due to human resource mobility • Conflict management.

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

2. Business Management Paper-VI
Financial Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Capital Budgeting and Evaluation techniques	11
02	Working Capital Management	11
03	Receivable Management, Cash Management and Marketable Securities	12
04	Basic Principles of Cost Accounting	11
	Total	**45**

Sr. No.	Modules / Units
1	**Capital Budgeting and Evaluation techniques**
	• Capital Budgeting - Meaning and Importance • Evaluation techniques • Pay-back method and ARR • NPV and Profitability index • Choice of evaluation techniques, uses and limitations
2	**Working Capital Management**
	• Working Capital – Meaning and Importance • Factors determining Working Capital requirements, Working Capital cycle • Classification of Working Capital – Gross and Net Working Capital, Permanent and Variable Working Capital, Positive and Negative Working Capital, Cash and Net Current Assets concept of Working Capital • Management of Working Capital • Estimation of Working Capital requirement
3	**Receivable Management, Cash Management and Marketable Securities Management**
	• Receivables Management – Meaning and importance, aspects of receivable management, Credit Policy and Credit Evaluation • Control of accounts receivables – Day's Sales Outstanding, Ageing Schedule, ABC Analysis • Cash Management – Meaning, motives of holding cash, ways of speeding up cash collections • Preparation of Cash Budget • Understanding the role of marketable securities in corporate financial management
4	**Basic Principles of Cost Accounting**
	• Cost Accounting – Meaning, classification of costs and non-cost items • Preparation of Cost sheet • Marginal Costing - Meaning, features, advantages and limitations of marginal costing, • Break Even Analysis • Application of marginal costing

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group C: Banking and Finance

1. Banking and Finance Paper-III: Risk Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Foundations of Risk Management	15
02	Capital markets Risk Management	15
03	Credit Market Risk Management	15
04	Risk Measurement	15
	Total	**60**

Sr. No.	Modules / Units
1	**Foundations of Risk Management**
	• Basic risk types • The role of risk management • Enterprise Risk Management (ERM) • History of financial disasters and risk management failures • 2007 financial crisis
2	**Capital Market Risk Management**
	• Equity, currencies & commodities markets in India • Introduction to Derivatives • Forward, Future and option contracts • Hedging through Derivatives contract • Fixed-income securities • Fixed-income risk management through derivatives • Rating agencies
3	**Credit Market Risk Management**
	• Introduction, • Information required for evaluation of credit risk, • Procedure for Credit Risk Management, • Credit Lifecycle, • Loan Review Mechanism, • RBI guidelines on Credit Rating Framework in Banks, • Introduction of Basel Norms and calculation of capital adequacy ratio
4	**Risk Measurement**
	• Estimation of volatilities and correlations (application to volatility term structures) Monte Carlo simulations (application to interest rate forecasting) • Linear Value-at-Risk (application to market, credit and operational risk) • Option valuation • Risk-adjusted return on capital (RAROC) & beta calculation • Risk management of derivatives (application to convertible risk) • Interest rates and measures of interest rate sensitivity

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group C: Banking and Finance

2. Banking and Finance Paper-IV: Actuarial Analysis in Banking and Insurance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Probability & Mathematical Statistics	12
02	Models	12
03	Mortality Model	12
04	Contingencies	12
05	Statistical Methods	12
	Total	**60**

Sr. No.	Modules / Units
1	**Probability & Mathematical Statistics**
	Concepts of Probability, Bayes' Theorem, Concepts of Random Variable, Probability Distribution, Distribution Function, Expected Value, Variance and Higher Moments, Basic Discrete And Continuous Distributions, Central Limit Theorem, Statistical Inference And Sampling Distribution, Confidence Intervals For Unknown Parameters. Test Hypotheses, Concepts Of Analysis Of Variance
2	**Models**
	The Principles of Actuarial Modelling., General Principles of Stochastic Processes, Markov Chain, Markov Process., Concept of Survival Models., Estimation Procedures for Lifetime Distributions., Maximum Likelihood Estimators For The Transition Intensities In Models Of Transfers Between States With Piecewise Constant Transition Intensities.
3	**Mortality Model**
	Binomial Model of Mortality, Derive A Maximum Likelihood Estimator for The Probability of Death, How to Estimate Transition Intensities Depending on Age, Exactly Or Using The Census Approximation., How To Test Crude Estimates For Consistency With A Standard Table Or A Set Of Graduated Estimates, And Describe The Process Of Graduation.
4	**Contingencies**
	Simple assurance and annuity contracts, means and variances of the present values of the payments under these contracts, assuming constant deterministic interest. Expressions in the form of sums for the mean and variance of the present value of benefit payments under each contract above, in terms of the curtate random future lifetime, assuming that death benefits are payable at the end of the year of death and that annuities are paid annually in advance or in arrear, and, where appropriate, Obtain expressions in the form of integrals for the mean and variance of the present value of benefit payments under each contract above, in terms of the random future lifetime, assuming that death benefits are payable at the moment of death and that annuities are paid continuously, and, where appropriate.
5	**Statistical Methods**
	Concepts of decision theory, Decision function and a risk function. Apply decision criteria to determine which decision functions are best with respect to a specified criterion. In particular consider the minimax criterion and the Bayes criterion. Calculate probabilities and moments of loss distributions both with and without limits and risk-sharing arrangements. The properties of the statistical distributions which are suitable for modelling individual and aggregate losses. Apply the principles of statistical inference to select suitable loss distributions for sets of claims. Concepts of excesses (deductibles), and retention limits. The operation of simple forms of proportional and excess of loss reinsurance.

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group D: Commerce

1. Commerce III: Management of Service Industry

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Housing and Construction Industry	15
02	Computer Services and e- commerce	15
03	Banking	15
04	Insurance	15
	Total	**60**

Sr. No.	Modules / Units
1	**Housing and Construction Industry**
	Characteristics- scope- challenges-promotion activities of construction industry-role of co-operative societies and Government schemes- career opportunities
2	**Computer Services and e- commerce**
	e-commerce- concept-functions- merits & limitations IT enabled services (ITES): features- Business Process Outsourcing: concept-advantages & challenges- Consultancy services: classification & significance
3	**Banking**
	Types of Banks- functions of a commercial bank-types of banking products-role of RBI- recent trends in Banking- Career opportunities in Banking
4	**Insurance**
	Concept- importance- types (Life, Fire, Marine & General)- Regulation of Insurance sector: role of Insurance Regulatory and Development Authority of India – Foreign Direct Investment in insurance sector- career opportunities in insurance sector

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group D: Commerce

2. Commerce IV: Commercial Administration

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Human Resource Management for office	15
02	Office Services -I	15
03	Office Services -II	15
04	Office Services -III	15
	Total	**60**

Sr. No.	Modules / Units
1	**Human Resource Management for office**
	Human Resource Management: Meaning, nature and importance of human resource management- scope of HR functions in an office- duties and responsibilities of HR officer- records and information to be maintained with respect to the human resource- important HR legislations in India.
2	**Office Services -I**
	Reception & hospitality: Role and function of the reception desk- duties and responsibilities of a receptionist, importance of reception. **Meetings & Travel Arrangement**: meaning and procedure for business meetings- types of meetings- information and services related to travel- procedure for making travel arrangements
3	**Office Services -II**
	Accounts & financial services: Role and functions of an accounts department/ officer- documents to be prepared by the accounts officer- types of hardware and software used – procedure for making and receiving payments- bank and cash related documents and procedures, digital payments. **Sales, marketing and customer care**: functions of sales & marketing officer- functions of customer service officer, importance of customer care
4	**Office Services -III**
	Procurement & dispatch: role and functions of procurement officer- procedure for procurement of materials and services- functions of a dispatch clerk- documents to be maintained with respect to procurement and dispatch **Inventory management:** meaning and nature of inventory management, functions of inventory management - stock records to be maintained manual and electronic

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

3. Commerce-VI

Human Resource Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Human Resource Management	12
02	Human Resource Development	11
03	Human Relations	11
04	Trends In Human Resource Management	11
	Total	**45**

Sr. No.	Modules / Units
1	**Human Resource Management**
	• Human Resource Management – Concept, Functions, Importance, Traditional v/s Strategic Human Resource Management • Human Resource Planning- Concept Steps in Human Resource Planning Job Analysis-Concept, Components, Job design- Concept, Techniques • Recruitment- Concept, Sources of Recruitment Selection - Concept , process , Techniques of E,selection,
2	**Human Resource Development**
	• Human Resource Development- Concept, functions Training- Concept, Process of identifying training and development needs, Methods of Training & Development (Apprenticeship, understudy, job rotation, vestibule training, case study, role playing, sensitivity training, In, basket, management games) Evaluating training effectiveness- Concept, Methods • Performance Appraisal- Concept, Benefits, Limitations, Methods Potential Appraisal-Concept, Importance • Career Planning- Concept, Importance Succession Planning- Concept, Need Mentoring- Concept, Importance Counseling- Concept, Techniques.
3	**Human Relations**
	• Human Relations- Concept, Significance Leadership –Concept, Transactional & Transformational Leadership Motivation- Concept, Theories of Motivation,(Maslow's Need Hierarchy Theory, Vroom's Expectancy Theory, McGregor's Theory X and Theory Y, Pink's Theory of Motivation) • Employees Morale- Concept, Factors affecting Morale, Measurement of Employees Morale Emotional Quotient and Spiritual Quotient- Concept, Factors affecting EQ & SQ • Employee Grievance- Causes, Procedure for Grievance redressal Employee welfare measures and Healthy & Safety Measures.
4	**Trends In Human Resource Management**
	• HR in changing environment: Competencies- concept, classification Learning organizations- Concept, Creating an innovative organization, Innovation culture- Concept, Need, Managerial role. • Trends in Human Resource Management,: Employee Engagement- Concept, Types Human resource Information System (HRIS) – Concept, Importance, Changing patterns of employment. • Challenges in Human Resource Management: Employee Empowerment, Workforce Diversity. Attrition, Downsizing, Employee Absenteeism, Work life Balance, Sexual Harassment at work place, Domestic and International HR Practices, Millennial (Gen Y)Competency Mapping

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

4. Business Economics-VI
International Economics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to International Trade	10
02	Commercial Policy	10
03	Balance of payments and International Economic Organization	15
04	Foreign Exchange market	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to International Trade**
	• Theories of International Trade - Ricardo's Theory of Comparative Costs and the Heckscher- Ohlin Theory. • Terms of Trade - Types and Limitations. • Gains from International trade - Offer Curves and Reciprocal Demand.
2	**Commercial Policy**
	• Commercial Trade Policy –Free Trade and Protection – Pros and Cons. • Tariff And Non Tariff Barriers: Meaning, Types and Effects • International Economic Integration – Types and Objectives:-EU and Brexit, ASAEN
3	**Balance of payments and International Economic Organization**
	• Balance of Payment: Meaning, Structure, Types of Disequilibrium. • Causes and measures to correct the disequilibrium in Balance of Payments • WTO- Recent Developments in TRIPS, TRIMS and GATS.
4	**Foreign Exchange market**
	• Foreign Exchange Market: Meaning, Functions, Determination of Equilibrium Rate of Exchange. • Purchasing Power Parity Theory, Spot and Forward Exchange Rates, Arbitrage. • Role of Central Bank in foreign exchange rate management, Managed flexible exchange rate system of India.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Industrial relations	12
2	Industrial conflicts and its Measures for Prevention and Settlement	12
3	Collective bargaining and Workers Participation in Management	11
4	Industrial relations in Public Sector Multi-nationals, and Co-operative Sector	10
	Total	**45**

Sr. No.	Modules / Units
1	**Industrial relations**
	• Industrial relations: Meaning, Importance, Scope, Role and Impact on Labour Laws legislation, Execution, Employer, Trade Unions and Judiciary • Recommendations of Second National Commission on labour 2002.
2	**Industrial conflicts and its Measures for Prevention and Settlement**
	• Industrial conflicts: Meaning causes and impact. Strike: Meaning, Types &Legal aspects. Concept of lockout. • Measures for prevention and settlement of industrial conflicts- (a) Conciliation (b) Mediation (c) Arbitration (d) Adjudication.
3	**Collective bargaining and Workers Participation in Management**
	• Collective bargaining: concept, principles and importance. Collective bargaining in India. • Workers participation in management- Meaning, Types with reference to India.
4	**Industrial relations in Public Sector Multi-nationals, and Co-operative Sector**
	• Industrial relations in public sector, multi-nationals, and co-operative Sector. • Plant level Industrial relations:- standing orders and grievance procedure. • Work and role of labour welfare officer.

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

2. Computer Systems and Applications Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	E – Commerce	18
2	Advanced Spread Sheet	09
3	Advanced Spread Sheet	09
4	Visual Basic	09
	Total	**45**

Sr. No.	Modules / Units
1	**E – Commerce**
	a) Definition of E-commerce b) Features of E-commerce c) Types of E-commerce (B2C, B2B, C2C, P2P) d) Business Models in E-commerce (Advertising, Subscription, Transaction Fee, Sales Revenue, Affiliate Revenue) e) Major B2C models (Portal, Etailer, Content Provider, Transaction Broker, Market Creator, Service Provider, Community Provider). f) E-Commerce Security: Integrity, Non repudiation, Authenticity, Confidentiality, Privacy Availability. g) Encryption: Definition, Digital Signatures, SSL. h) Payment Systems: Digital Cash, Online stored value, Digital accumulating balance payment, Digital credit accounts, digital checking. i) How an Online credit card transaction works. SET protocol. j) Limitation of E-commerce. k) M-commerce (Definition and Features).
2	**Advanced Spread Sheet**
	a) Multiple Spread sheets • Creating and using templates, Using predefined templates, Adding protection option. • Creating and Linking Multiple Spreadsheets. • Using formulas and logical operators. • Creating and using named ranges. • Creating Formulas that use reference to cells in different worksheets. **b) Functions** • Database Functions LOOKUP, VLOOKUP, HLOOKUP • Conditional Logic functions IF, Nested IF, COUNTIF, SUMIF, AVERAGEIF • String functions LEFT, RIGHT, MID, LEN, UPPER, LOWER, PROPER, TRIM, FIXED
3	**Advanced Spread Sheet**
	a) Functions • Date functions TODAY, NOW, DATE, TIME, DAY, MONTH, YEAR, WEEKDAY, DAYS360 • Statistical Functions COUNTA, COUNTBLANK, CORREL, LARGE, SMALL **b) Data Analysis** • Filter with customized condition. • The Graphical representation of data Column, Line, Pie and Bar charts. • Using Scenarios, creating and managing a scenario. • Using Goal Seek • Using Solver • Understanding Macros, Creating, Recording and Running Simple Macros. Editing a Macro(concept only)

Sr. No.	Modules / Units
4	**Visual Basic**
	a) Introduction to Visual Basic, Introduction Graphical User Interface (GUI). Programming Language (Procedural, Object Oriented, Event Driven), Writing VB Projects. The Visual Basic Environment b) Introduction to VB Controls Text boxes, Frames, Check boxes, Option button, Designing the User Interface, Default & Cancel property, tab order, Coding for controls using Text, Caption, Value property and Set Focus method c) Variables, Constants, and Calculations Variable and Constant, Data Type (String, Integer, Currency, Single, Double, Date), Naming rules/conventions, Constants (Named & Intrinsic), Declaring variables, Val Function, Arithmetic Operations, Formatting Data. d) Decision and Condition Condition, Comparing numeric variables and constants, Comparing Strings, Comparing Text Property of text box, Compound Conditions (And, Or, Not). If Statement, if then-else Statement, LCase and Ucase function, Using If statements with Option Buttons & Check Boxes. Msgbox (Message box) statement Input Validation : Is Numeric function. e) Sub-procedures and Sub-functions, Using common dialog box, Creating a new sub–procedure, Writing a Function procedure. Simple loops using For Next statements and Do while statement and display output using MsgBox Statement.

Note :

a) Theory 03 lectures per week.

b) Practical batch size 20-25, 01 practical = 03 theory lectures per week.

c) 10 Practical's are to be completed in each semester.

Semester VI

Topic	Number of Practical's
Presentation skills	01
Advanced Spread Sheet	06
Introduction to Visual Basic	03

Minimum 6 practical's are to be recorded in the journal in the Semester VI
[Minimum 4 on VB, 2 on Advanced Spread Sheet)

❖ **Suggested list of Practical's for Semester VI**

1. Preparing a PowerPoint presentation on an E-Commerce website.
2. Calculation of DA, HRA, PF, Gross Salary and Net Salary using Spread Sheet
3. Calculation of Income Tax using Spread Sheet
4. Filtering data and Graphical representation of data using Spread Sheet
5. Using VLOOKUP and HLOOKUP using Spread Sheet
6. Creating and managing a scenario using Spread Sheet
7. Use of Goal Seek and Solver using Spread Sheet

8. Write a project in VB to design a suitable form to add two numbers and display their sum.
9. Write a project in VB to design a suitable form to enter sales and calculate and display the bonus which is 10% of sales.
10. Write a project in VB to design a suitable form to enter salary and calculate and display the DA which is 90% of salary.

❖ **Scheme of Examination**

Type	Marks	Duration
Theory	75	2½ hours
Practical	20	1 hour per batch of 10
Active Participation and Class conduct	05	---

- **Theory Examination Pattern**

  All questions are compulsory

Question No.	Unit No.	Marks	Marks with Internal Option
Q. 1.	Objective type based on I, (II,III) and IV	11+2+2	23
Q. 2.	I	15	30
Q. 3.	II	15	30
Q. 4.	III	15	30
Q. 5.	IV	15	30

- **Practical Examination Pattern- Semester VI**

Sr. No.	Topic	Marks
01	Advanced Spread sheet	07
02	Introduction to VB Programing	03
03	Journal	05
04	Viva	05

  - Practical examination to be conducted 2 to 3 weeks before the theory examination. Marks out of 25 to be submitted to the University before commencement of theory examination.
  - Software Requirement :
    Spread Sheet 2010, VB 6.0
  - Hardware
    For a batch of 120 students minimum 10 computers with appropriate hardware and software installed on each computer. During practical hours maximum two student may share one computer.
  - For in house computing facility fee of rupees 750/- be charged for each student per Semester in the existing fee structure against head of computer fee/computer practical.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

3. Export Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Product Planning and Pricing Decisions for Export Marketing	12
2	Export Distribution and Promotion	11
3	Export Finance	11
4	Export Procedure and Documentation	11
	Total	**45**

Sr. No.	Modules / Units
1	**Product Planning and Pricing Decisions for Export Marketing**
	a) Planning for Export Marketing with regards to Product, Branding, Packaging b) Need for Labelling and Marking in Exports, Factors determining Export Price; Objectives of Export Pricing c) International Commercial (INCO) Terms; Export Pricing Quotations – Free on Board (FOB), Cost Insurance and Freight (CIF) and Cost and Freight (C&F); Problems on FOB quotation
2	**Export Distribution and Promotion**
	a) Factors influencing Distribution Channels; Direct and Indirect Exporting Channels; Distinction between Direct and Indirect Exporting Channels b) Components of Logistics in Export marketing; Selection criteria of Modes of Transport; Need for Insurance in Export Marketing c) Sales Promotion Techniques used in Export Marketing; Importance of Trade Fairs and Exhibitions; Benefits of Personal Selling; Essentials of Advertising in Export Marketing;
3	**Export Finance**
	a) Methods of Payment In export marketing; Procedure to open Letter of Credit, Types and Benefits of Countertrade b) Features of Pre-Shipment and Post-shipment finance; Procedure to obtain Export Finance; Distinction between Pre-shipment Finance and Post Shipment Finance. c) Role of Commercial Banks, EXIM Bank, SIDBI in financing exporters; Role of ECGC
4	**Export Procedure and Documentation**
	a. Registration with different authorities; Pre-shipment Procedure involved in Exports; Procedure of Quality Control and Pre-shipment Inspection; b. Shipping and Custom Stage Formalities; Role of Clearing & Forwarding Agent; Post-shipment Procedure for Realisation of Export Proceeds; Procedure of Export under Bond and Letter of Undertaking. (LUT) c. Importance of - Commercial Invoice cum Packing list, Bill of Lading/ Airway Bill, Shipping Bill/Bill of Export, Consular Invoice, Certificate of Origin

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

4. Marketing Research Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Applications of Marketing Research-I	12
2	Applications of Marketing Research-II	11
3	Applications of Marketing Research-III	11
4	Managing Marketing Research	11
	Total	**45**

Sr. No.	Modules / Units
1	**Applications of Marketing Research-I**
	a. Product Research- concept, areas, steps in new product development Product Testing & Test Marketing- concept, methods b. Brand Research- concept, components of a Brand, importance of brand research Packaging Research- concept, importance c. Price Research- concept, factors influencing pricing, importance of price research, methods of price research
2	**Applications of Marketing Research-II**
	a. Physical Distribution research- concept, types of distribution channels, Supply Chain Management- concept, components of supply chain management, importance of physical distribution research b. Promotion Research- concept, elements of promotion, importance of promotion research Advertising Research- concept, scope, pre & post testing methods of advertising effectiveness c. Consumer Research- concept, objectives, methods Motivation Research- concept, importance
3	**Applications of Marketing Research-III**
	a. Sales Research- concept, significance, scope/areas b. Rural Marketing Research-concept, features of Indian rural market, sources of data, research tools, do's and don'ts in rural Marketing Research c. Global Marketing Research- concept, factors affecting Global Marketing , need and scope of Global Marketing Research
4	**Managing Marketing Research**
	a. Organizing Marketing Research activity- factors involved in organizing Marketing Research activity, methods of organizing Marketing Research activity, In house marketing department,--structure, merits , demerits b. Professional Marketing Research agencies- structure, merits, demerits, professional standards c. Prominent Marketing Research agencies- HTA, ORG, IMRB, NCAER, Nielson

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

5. Investment Analysis and Portfolio Management Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Fundamental Analysis	12
2	Technical Analysis	11
3	Efficient Market Theory	11
4	Capital Asset Pricing Model	11
	Total	**45**

Sr. No.	Modules / Units
1	**Fundamental Analysis**
	A) Economy Analysis – Meaning, Framework, Economic Analysis, Forecasting, Barometric or Indicator Approach, Econometric Model Building and Opportunistic Model Building. **B)** Industry Analysis – Concept of Analysis, Industry Life Cycle, Industry Characteristics Company Analysis – Financial Statements, Analysis of Financial Statements, (Practical questions on Debt equity ratios, total debt ratio, proprietary ratios, interest coverage ratio, Profitability ratios related to sales, investment and equity shares Efficiency or Activity Ratios) and Assessment of risk (Leverages)
2	**Technical Analysis**
	A) Dow Theory **B)** Meaning and Principles of Technical Analysis, Price Chart, Line Chart, Bar Chart, Japanese Candlestick Chart, Trends and Trend Reversals, Chart Patterns, Support and Resistance, Reversal Patterns, Continuation Patterns and Elliot Wave Theory **C)** Mathematical Indicators – Calculation of Moving Averages (Simple and Exponential Moving Average), Oscillators and Relative Strength Index **D)** Market Indicators **E)** Fundamental Analysis V/s Technical Analysis
3	**Efficient Market Theory**
	A) Random Walk Theory **B)** The Efficient Market Hypothesis **C)** Forms of Market Efficiency **D)** Competitive Market Hypothesis
4	**Capital Asset Pricing Model**
	A) CAPM – Fundamental Notions of Portfolio Theory, Assumption of CAPM, Efficient Frontier with Riskless Lending and Borrowing, Capital Market Line, Security Market Line and Pricing of Securities with CAPM. **B)** Arbitrage Pricing Theory (APT) – The Return Generating Model, Factors Affecting Stock Return, Expected Return on Stock, APT V/s CAPM.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

6. Transport Management Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Indian Surface Transport Service	11
2	Marketing of Transport Services	11
3	Transport Organisation	11
4	Safety Management Systems	12
	Total	**45**

Sr. No.	Modules / Units
1	**Indian Surface Transport Service**
	Development of Railway network and problem-changes in composition of passenger and freight traffic, Development of Road transport- Growth of Automobile Industry, Indian Motor Vehicle Acts, Urban transport problems with special defence to Mumbai
2	**Marketing of Transport Services**
	Marketing of transport services: Role of Advertising – Changes in fares and freight rates and their impact on demand, Regulation of transport services: Licensing policies, transport taxation, role of International bodies in transport development
3	**Transport Organisation**
	Water transport: Present status of Inland and Coastal Shipping in India, Growth of Merchant Shipping, International competition and problems of port. Air transport: Working of Indian Airlines and Air India - International Airport Authority of India – Air Cargo.
4	**Safety Management Systems**
	Overview and Understanding Safety, factors for improving safety on roads – causes of accidents due to drivers and pedestrians-design, selection, operation and maintenance of motor trucks, Responsibility for Management of Safety, Basics of Safety Management, Safety Training Programme

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

7. Entrepreneurship and Management of Small Scale Industries Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Micro, Small and Medium Enterprises	11
2	Setting-up of SSI/SME/MSME	11
3	Organization of SSI/SME/MSME	11
4	Specialized Focus Areas in Micro, Small and Medium Enterprises	12
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Micro, Small and Medium Enterprises**
	Unit-1: – • Meaning, Features, Concept of SSI • Role and Importance of SSI • Evolution and Growth of SSI since Independence in India w.r.t. 5-Year Plans in India • SSI Support Mechanism in India - Central and State Level, Government and Non-Government Agencies support to SSI with due emphasis to Concessions and Incentives **Unit-2:-** • Meaning, Features, Concept of Micro, Small and Medium Enterprises • Need and Significance of MSMEs • Evolution and Growth of MSMEs since Economic Liberalization in India • Role and Importance of MSMEs **Unit-3:-** • Meaning, Features, Concept of Industrial Sickness • Causes of Industrial Sickness • Consequences of Industrial Sickness • Remedies to Resolve the Problem of Industrial Sickness
2	**Setting-up of SSI/SME/MSME**
	Unit-1:- • Steps in Setting-up a SSI/SME/MSME • Registration Procedure – Benefits of Registration – De-registration • Environmental and Locational Issues – Environmental Clearance • Steps in Setting up a SSI/SME/MSME in India with Special Reference to Clearances and Permissions required **Unit-2:-** • Meaning, Features, Concept of Regulatory Environment in India • Brief insights relating to Laws affecting SSI/SME/MSME • MSME Policy in India - Highlights of MSMED Act, 2006 • Classification of Manufacturing and Service Industries under MSMED Act, 2006 **Unit-3:-** • Growth and Expansion of SSI/SME/MSME • Options available to SSI/SME/MSME for Growth and Expansion (Part-I): Ancillarisation, Licensing, Franchising • Options available to SSI/SME/MSME for Growth and Expansion (Part-II): Outsourcing, Insourcing • Options available to SSI/SME/MSME for Growth and Expansion (Part-III): Mergers, Acquisitions, Takeovers in India and at Global Level

Sr. No.	Modules / Units
3	**Organization of SSI/SME/MSME**
	Unit-1:- • Meaning, Features, Concept of Organisation Structure of SSI/SME/MSME • Overview of Principles of Management applicable in Management of SSI/SME/MSME - Types of Organisation of SSI/SME/MSME • Problems and Prospects of SSI/SME/MSME • Legal Framework and Regulations Governing SSI/SME/MSME - Government Measures, Policy Support, Taxation Benefits for SSI/SME/MSME **Unit-2:-** • Meaning, Features, Concept of SSI/SME/MSME Funding • Requirements of Capital (Fixed and Working) for SSI/SME/MSME • Factors Determining Capital (Fixed and Working) Requirements of SSI/SME/MSME • Sources of Institutional Finance to SSI/SME/MSME **Unit-3:-** • Meaning, Features, Concept of Marketing Mechanism in SSI/SME/MSME • Marketing related Problems of SSI/SME/MSME - Measures to Reduce Marketing related Problems of SSI/SME/MSME • Export Potential of SSI/SME/MSME - Export Incentives available to SSI/SME/MSME – SSI/SME/MSME and Special Economic Zones (SEZs) • Role of Self Help Groups (SHGs) in Development of SSI/SME/MSME
4	**Specialized Focus Areas in Micro, Small and Medium Enterprises**
	Unit-1:- • Meaning, Features, Concept, Significance of Rural Industries • Nature of activities involved in Rural Industries - Measures to Support and Promote Rural Industries • Meaning, Features, Concept, Significance and Role of Rural Artisans • Measures to Support and Promote Rural Artisans – Role of Government and Non-Government Agencies in Promoting Rural Artisans **Unit-2:-** • Meaning, Features, Concept, Significance of Agro-based Industries • Nature of activities involved in Agro-based Industries - Measures to Support and Promote Agro-based Industries • Meaning, Features, Concept of Ancillary Industries • Nature of activities involved in Ancillary Industries - Measures to Support and Promote Ancillary Industries **Unit-3:-** • Meaning and Concept of Industrial Estates • Features of Industrial Estates • Utility and Significance of Industrial Estates to SSI/SME/MSME Sector • Policy Initiatives and Measures to Revive Industrial Estates

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

8. International Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	International Marketing Channels & Physical Distribution	12
2	Procedures & Policy Framework in International Marketing	11
3	International Trade Promotion Organization	11
4	Export Assistance, Incentives & Documentation	11
	Total	**45**

Sr. No.	Modules / Units
1	**International Marketing Channels & Physical Distribution**
	a. International Marketing Channels- , Need and Importance. **b.** Method of Entry in International Market. Factors influencing selection of Suitable Channels. **c.** Physical Distribution – Importance, Scope and Problems.
2	**Procedures & Policy Framework in International Marketing**
	a. Foreign Trade Policy (FTP), 2015-20-Highlights and implications. **b.** Export Procedure- Registration Procedure, Role of Customs House Agent, Customs/Shipment Formalities, Procedure of Export Proceeds Realization. Procedure to obtain ISO Certification. **c.** Import Procedure involved in International Market.
3	**International Trade Promotion Organization**
	a. Export Marketing Organisation- and Types, Role and Functions of Export Promotion Councils, Commodity Board, IPP, FIEO, IIFT, DGFT, ITPO and IIP. **b.** Export Promotion Organisation- and Types. **c.** E- Marketing – Features Importance and Impact.
4	**Export Assistance, Incentives & Documentation**
	a. Main Assistance available for Exporters. **b.** Incentives available for exporters- Duty Drawback, EPCG, MDA, ASIDE, IRMAC. **c.** Export Documentation-and Importance, Main Export Documents- Commercial Invoice, Consular Invoice, Certificate of Origin, Shipping Bill, Mats Receipt, GR Form and Bill of Exchange.

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

9. Merchant Banking Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Factoring	11
2	Securitization	11
3	Mergers, Acquisitions & Takeovers	11
4	Disinvestment and Buyback of Equity Shares	12
	Total	**45**

Sr. No.	Modules / Units
1	**Factoring**
	Factoring: Concept, Nature and Scope of Factoring, Forms of Factoring , Factoring vis-à-vis Bills Discounting , Factoring vis-àvis Credit Insurance, Factoring vis-à-vis Forfeiting, Evaluation of a factor , Evaluation of factoring, Status of Factoring in India.
2	**Securitization**
	Securitization / Mortgages: Meaning, Nature and Scope of Securitization, Securitization as a Funding Mechanism, Securitization of Residential Real Estate and Mortgages -Features, Types and Provisions. Security Brokerage: Meaning of Brokerage, Types of Brokers, Difference between Broker and Jobber, SEBI Regulations relating to brokerage business in India.
3	**Mergers, Acquisitions & Takeovers**
	Difference between Mergers, Acquisitions and Takeover, The Role of Merchant Banker in M&A and Takeovers, SEBI (Substantial Acquisition of Shares and Takeovers) Regulations, 2011 w.r.t Substantial acquisition of shares or voting rights, Voluntary Offer- Offer Size, Offer Price, Payment Mode, Exemptions and Process of Open Offer.
4	**Disinvestment and Buyback of Equity Shares**
	The Role of Merchant Banker in Disinvestment Process, Role and Obligations of Merchant Banker in Buyback of Equity Shares, Role of Merchant Banker in Delisting of Shares, Role of Merchant Banker in Issue and Listing of Debt Securities and The Role of Merchant Banker in ESOP

Elective Courses (EC)
2. Ability Enhancement Courses (AEC)

10. Direct and Indirect Taxation Paper - II
Goods and Service Tax Act

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	09
2	Levy and Collection of Tax	09
3	Time, Place and Value of Supply	09
4	Input Tax Credit & Payment of Tax	09
5	Registration under GST Law	09
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction**
	• What is GST • Need for GST • Dual GST Model • Definitions Section 2(17) Business Section 2(13) Consideration Section 2(45) Electronic Commerce Operator Section 2(52) Goods Section 2(56) India Section2 (78) Non taxable Supply Section 2(84) Person Section 2(90) Principal Supply Section 2(93) Recipient Section 2(98) Reverse charge Section 2(102) Services Section 2(105) Supplier Section 2(107) Taxable Person Section 2(108) Taxable Supply • Goods & Services Tax Network (GSTN)
2	**Levy and Collection of Tax**
	• Scope of Supply • Non taxable Supplies • Composite and Mixed Supplies • Composition Levy • Levy and Collection of tax • Exemption from tax
3	**Time, Place and Value of Supply**
	• Time of Supply • Place of Supply • Value of Supply
4	**Input Tax Credit & Payment of Tax**
	• Eligibility for taking Input Tax Credit • Input Tax Credit in Special Circumstances • Computation of Tax Liability and payment of tax
5	**Registration under GST Law**
	• Persons not liable registration • Compulsory registration • Procedure for registration • Deemed registration • Cancellation of registration

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

11. Labour Welfare and Practice Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Social Security	15
2	Labour Markets	10
3	Labour Force in India	10
4	Globalization &Labour	10
	Total	**45**

Sr. No.	Modules / Units
1	**Social Security**
	• Meaning, Definition &Objective of Social Security. • Various Social Security provisions made in India (Employees provident fund Act, Maternity benefit Act, Family Pension Scheme, Provision of Gratuity Act 1972) • Trade Union – Structure, Types & Functions.
2	**Labour Markets**
	• Demand for and supply of labour- determinants of demand for and supply of labour – • Mobility of Labour • Problems of Agricultural Labour, Child Labour and Female Labour
3	**Labour Force in India**
	• Factors determining Labour Force. • Labour Force & Human Development in India • Participation of workers in Management • Industrial disputes
4	**Globalization &Labour**
	• Globalisation & Labour Markets in India. • Impact of Labour Migration. • ILO- Aims & objectives & impact on Labour Welfare.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

12. Purchasing and Store Keeping Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Store Keeping and Materials Handling	12
2	Store Accounting and Store Record	11
3	Inventory Control	11
4	Logistics and Supply Chain Management (SCM)	11
	Total	**45**

Sr. No.	Modules / Units
1	**Store Keeping and Materials Handling**
	• **Store Keeping -** Concept, Meaning, Objectives, Functions of Storekeeping, Types of stores, Stages in storekeeping, Duties and Responsibilities of Storekeeper. • **Material handling** – Objective, Advantages & Principles, Protection and Preservation of materials in store. • **Store Location & Layout** – Location of Store House, Factors influencing store location, Objectives, Principles and Types of store layout.
2	**Store Accounting and Store Record**
	• **Store Accounting** – Objectives, Importance, Advantages, Need for Store Accounting, Methods of Valuation of Material – FIFO, LIFO, Simple average & Weighted average method • **Store Record** – Concept, Objectives, Need, and Documents required for Store Record • **Store Ledger & Bin card** – Meaning, Advantages of Store ledger and Bin card, Stock Audit, Lead time- Concept & Classification
3	**Inventory Control**
	• **Stock levels & Value analysis** – Types of stock level, Value analysis – Concept, Essentials & Steps. • **ABC analysis** – Purpose, Steps and Advantages of ABC analysis. • **Inventory Control** – Objectives, Advantages and Disadvantages of Periodical & Perpetual Inventory Control, Selective Inventory control techniques, Economic Order Quantity – Importance.
4	**Logistics and Supply Chain Management (SCM)**
	• **Logistics –** Concepts, Nature, Importance & Challenges • **Supply chain management –** concepts, Objectives, Benefits & Process of Supply Chain Management • **Recent trends in logistics & SCM –** Role of IT in logistics / SCM, Issues & Challenges in logistics, Logistics Outsourcing – Concept & Benefits.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

13. Insurance Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Life Insurance Products	11
2	General Insurance	11
3	Miscellaneous Coverage's	11
4	Insurance Business Environment in India	12
	Total	**45**

Sr. No.	Modules / Units
1	**Life Insurance Products**
	a. Different products offered by life insurers – term plans, pure endowment plans, combinations of plans, traditional products b. Market linked policies, of Annuities and group policies. c. Procedure for obtaining life insurance policy, procedure for settlement of Claims.
2	**General Insurance**
	a. Fire Insurance- Risks faced by the owner of assets – exposure to perils – features of products covering fire and allied perils, Procedure for obtaining fire insurance policy b. Marine Insurance- Products covering marine and transit risks -products covering financial losses due to accidents, Procedure for obtaining marine insurance policy c. Health insurance - Products covering financial losses due to hospitalization - products covering miscellaneous risks. Procedure for obtaining health/ Medi-claim insurance policy
3	**Miscellaneous Coverage's**
	a. Motor insurance – Liability only policy – Package policy –Personal Accident insurance b. Burglary insurance – Baggage insurance – Legal Liability insurance – Public & Product Liability insurances – Professional Indemnity insurance c. Workmen's Compensation insurance – Fidelity Guarantee insurance – Banker's Indemnity insurance – Carrier's Legal Liability insurance – Jeweller's Block insurance -Aviation insurance – Engineering insurance – Rural insurances – Micro insurance
4	**Insurance Business Environment in India**
	a. Specialised Insurances*:* Industrial All Risks insurance – Advance Loss of Profits insurance – Oil & Energy Risks insurance – Satellite insurance b. Challenges in Insurance Industry, LIC v/s Private Insurance Companies in India c. Recent trends in Insurance, Growth of Insurance Business, Actuarial Role, Reasons for attraction of Foreign Insurance Companies in India.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

14. Banking Law and Practice Paper - II Corporate and Securities Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Company Law – An Overview	12
02	Regulatory Framework Governing Stock Exchanges as per Securities Contracts Regulation Act 1956	11
03	Security Exchange Board of India	11
04	The Depositories Act, 1996	11
	Total	**45**

Sr. No.	Modules / Units
1	**Company Law – An Overview**
	• Development of Company Law in India • **Doctrines Governing Corporates** – Lifting the Corporate Veil**,** Doctrine of Ultra Vires, Constructive Notice, Indoor Management, Alter Ego. The Principle of Non Interference (Rule in Foss V/s Harbottle) – Meaning , Advantages , Disadvantages & Exceptions, Majority and Minority Rights under Companies Act • **Application of Company Law to Banking and Insurance Sector** Application of Companies Act to Banking and Insurance sector governed by Special Acts. S.1(4) of Companies Act 2013 Exceptions provided (S.67(3), S.73(1), S.129(1), 179(3), S.180(1)(c), S.186, S.189
2	**Regulatory Framework governing Stock Exchanges as per Securities Contracts Regulation Act 1956**
	• Definition of Securities, Spot Delivery Contract, Ready Delivery Contract, Stock Exchange. • Corporatisation and demutualisation of Stock Exchange –Meaning, Procedure & Withdrawal • Power of Recognised Stock Exchange to make rules restricting voting rights etc • Power of Central Government to Direct Rules or Make rules • Power of SEBI to make or amend bye laws of recognised stock exchange • Books and Accounts to be maintained by recognized stock exchange • Grounds on which stock exchange can delist the securities of a company. • Section 3 to Section 20
3	**Security Exchange Board of India**
	• SEBI: Objectives-terms-establishment-powers-functions-accounts and audit-penalties –registration. • Issues of Disclosure Investors Protection Guidelines: Pre & Post obligations-conditions for issue-Debt Security-IPO-E-IPO-Employee option-right-bonus-preferential allotment intermediary-operational-promoter lock in period requirements-offer document.
4	**The Depositories Act, 1996**
	• Depository – Meaning , Benefits , Models, Functions Participants • The Depository Act 1996 – Objectives, Eligibility condition for depository services, Fungibility, Bye laws of depository , Governance of Depository and Internal audit of depository Participants • BSDA and single registration for depository participants.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

15. Regional Planning Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Regional Planning Strategies & Techniques	15
2	Regionalization of Planning in India	10
3	Regional Development in Maharashtra	10
4	Problem Regions and Case Studies	10
	Total	**45**

Sr. No.	Modules / Units
1	**Regional Planning Strategies & Techniques**
	• Regional planning strategies & techniques • Planning machinery & problems of co-ordination – integrated area development • Multi-level nature of planning in India, specific contribution of planning at different levels.
2	**Regionalization of Planning in India**
	• Regionalization of planning in India: an assessment • Regional development & efficiency • Ecological dimension – strategy for future.
3	**Regional Development in Maharashtra**
	• Regional development in Maharashtra – regional backlogs causative factors. • Strategies for regional development – achievements & failures • Strategy for future.
4	**Problem Regions and Case Studies**
	• Problem regions: Nature of problems& strategies for its solution • Case Studies: Mumbai Metropolitan Region-Vidharbha, South Kokan, Marathwada, Western Ghats, Sugarcane growing areas

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

16. Rural Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Agricultural Marketing	11
2	Rural Marketing and Market Regulation	12
3	Institutional Support to Rural Marketing	11
4	Problems in Rural Marketing	11
	Total	**45**

Sr. No.	Modules / Units
1	**Agricultural Marketing**
	a. Agricultural Marketing- Concept, Nature and Types, Agriculture produce-concept and types of Agricultural Markets. b. Marketing agencies, Risks involved in marketing, Types of risks, Measures to minimise risks c. Contract Marketing (Farmer – Processor linkage), Marketing channels for agricultural produce
2	**Rural Marketing and Market Regulation**
	a. Regulated Market- APMC Act 1963, Standardisation and Grading, Inspection of quality, AGMARK b. The National Council for State Marketing Boards (NCOSAMB) State Trading corporation (STC), Public Distribution System(PDS) – Need and importance c. Fruit Products order (FPO) 1955 - objectives, Consumer Protection Act 1986-Rights of Consumers
3	**Institutional Support to Rural Marketing**
	a. Commission on Agriculture Costs and Prices (CACP)- Role, Functions and Importance b. National Agriculture Co-operative Marketing Federation (NAFED)-Role, Functions and Importance c. Agriculture and Processed Food Exports Development Authority (APEDA)-Role, Functions and Importance
4	**Problems in Rural Marketing**
	a. Problems in rural marketing---Strategies for rural marketing--- Integration, Efficiency, Cost and Price Spread b. Need for marketing finance, Source of marketing finance, Non Institutional---Institutions---Commercial Banks---PACS, Farmers Service Societies (FSS), RRBs and NABARD c. Challenges and recent trends in rural marketing

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

17. Elements of Operational Research Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Project Analysis	15
2	Theory of Games	15
3	Inventory Models	15
	Total	**45**

Sr. No.	Modules / Units
1	**Project Analysis**
	Basic concepts and Definitions, Gannt Charts and its weaknesses, CPM and PERT networks, Numbering of Events, Contractual Obligation Time, Earliest occurrence time, Latest allowable occurrence Time and Slack Time for Events, Different types of floats for activities. Critical Path Calculations, Probability Assessment in PERT Networks. Time Cost Trade - Off Analysis for CPM Networks
2	**Theory of Games**
	Basic Concept and Definitions. Two Person Zero Sum Game. Saddle point, Pure and Mixed Strategies. Reducing the size of the game using dominance property. Optimum Solution to a 2x2 game without saddle point. Graphical solution to 2xn and mx2 games.
3	**Inventory Models**
	Costs in Inventory management Deterministic Inventory Models- EOQ Model with Instantaneous Replenishment and Constant Rate of Demand Assuming that shortages are not allowed (Mathematical derivation expected), its price break model. Other EOQ models with instantaneous/uniform rate of replenishment and constant rate of demand assuming shortages are allowed/not allowed.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

18. Psychology of Human Behavior at Work Paper-II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Understanding Work Teams	11
2	Conflict and Negotiation	11
3	Emotions and Moods	12
4	Organizational Change and Stress Management	11
	Total	**45**

Sr. No.	Modules / Units
1	**Understanding Work Teams**
	a) Differences between groups and teams; Types of teams b) Creating effective teams
2	**Conflict and Negotiation**
	a) Defining Conflict; transitions in conflict thought b) The Conflict Process c) Negotiation: Bargaining strategies; the negotiation process
3	**Emotions and Moods**
	a) What are Emotions and Moods? The basic emotions; sources of emotions and moods b) Emotional Intelligence c) Organizational Behaviour applications of emotions and moods
4	**Organizational Change and Stress Management**
	a) a Forces for Change **b)** Work Stress and its Management

Reference Books

Reference Books
Elective Courses (EC)
Discipline Specific Elective (DSE) Courses
Group A: Advanced Accountancy
1. Financial Accounting and Auditing IX- Financial Accounting
• *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.* • *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.* • *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi* • *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers* • *Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition*
2. Financial Accounting and Auditing X- Cost Accounting
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Reference Books
18. Psychology of Human Behaviour at work Paper I
• *Robbins, S. P. Judge, T. A. & Vohra, N. (2013). Organizational Behavior. (15th ed.), Indian subcontinent adaptation, New Delhi: Pearson Education, Dorling Kindersley India pvt ltd.* • *Aquinas, P. G. (2013). Organisational Behavior Concepts Realities Application and Challenges. (2nd ed.) New Delhi: Excel Books* • *Ashliegh, A. M. (2012). The psychology of people in organizations. Pearson Education* • *Baltus, R. (2012). Personal psychology for work and life. Tata McGraw Hill* • *Dash, C. (2013). Organisational behavior. New Delhi: International Book House* • *Gibson, J. L., Ivancevich, J. M., & Konopaske, R.(2013). Organisations: Behaviour, Structure, Processes. Tata McGraw Hill* • *Greenberg, J. (2013). Behaviour in organizations (10th ed.). PHI Learning Private Limited.* • *Luthans, F. (2013). Organisational behaviour: An evidence –based approach. Tata McGraw Hill* • *McShane, S. L., Glinow, M. A., Sharma, R. R. (2012) Organisational behavior. (5th ed.): Tata McGraw Hill, New Delhi.* • *Pareek, U. & Khanna, S. (2011). Understanding organizational behavior. Oxford University Press* • *Rajendra, P. Maheshwari, J. & Mahajan, P. (2012). Business organization management. (2nd Revised ed.) New Delhi: International Book House.* • *Riggio, R. (2012). Introduction to industrial and organizational psychology. Pearson Education* • *Schultz, D. & Schultz,S.(2013). Psychology and work today. Pearson* • *Shankar, M. (2013). Organizational behavior. International Book House* • *Sharma, S. (2013). Organisational behavior. New Delhi: Tata McGraw Hill.* • *Singh, K. (2012). Organizational behaviour text and cases. New Delhi: Pearson Education.*

Revised Syllabus of Courses of B.Com. Programme at Semester V and VI with effect from the Academic Year 2018-2019

Question Paper Pattern

(Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 or 10/5 Marks.

Revised Syllabus of Courses of B.Com. Programme at Semester V and VI with effect from the Academic Year 2018-2019

Question Paper Pattern

(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 or 10/5 Marks.

UNIVERSITY OF MUMBAI
No. UG/ 178 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Com degree course **vide** this office Circular No. UG/140 of 2011 dated 14th June, 2011 and the Principals of affiliated Colleges in Commerce are hereby informed that the recommendation made by Board of Studies in Commerce at its meeting held on 21st June, 2016 has been accepted by the Academic Council at its meeting held on 14th July, 2016 **vide** item No. 4.79 and that in accordance therewith, the revised syllabus as per Choice Based Credit System for F.Y.B.Com. in Mathematical and Statistical Techniques (Sem. I & II), which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032
22 November, 2016

(Dr.M.A. Khan)
REGISTRAR

To,

The Principals of affiliated Colleges in Commerce.

A.C/4.79 /14/07/2016

****

No. UG/ 178 -A of 2016-17 MUMBAI-400 032 22 November, 2016

Copy forwarded with compliments for information to:-

1) The Co-ordinator, Faculty of Commerce,
2) The Director, Board of College and University Development,
3) The Controller of Examinations,
4) The Professor-cum- Director, Institute of Distance and Open Learning (IDOL),
5) The Co-Ordinator, University Computerization Centre.

(Dr.M.A. Khan)
REGISTRAR

PTO..

SYLLABUS FOR MATHEMATICAL AND STATISTICAL TECHNIQUES AT F.Y.B.Com. EXAMINATION
Revised Course
(WITH EFFECT FROM THE ACADEMIC YEAR 2016-2017)

Why Revision?

There is a Rapid expansion of knowledge in subject matter areas and improved instructional method during last decade. There are considerable curricular revisions happening at the high school level. Application of Mathematics and Statistics are widely used in industry and business. Keeping this in mind, a revision of syllabus required in accordance with the growth of subject of at the high school level and emerging needs of industry and its application.

Objective:

The main objective of this course is to introduce mathematics and statistics to undergraduate students of commerce, so that they can use them in the field of commerce and industry to solve the real life problems.

Distribution of topics and lectures

a. **Workload :**

Theory: 5 lectures per week of which 2 lectures are for Mathematics and 3 lectures for Statistics.

Tutorial: 1 lecture per week per batch. Batch size is as prescribed by the University.

No. of working weeks in a semester: 15

Total no. of lectures in a semester: 15 * 5 = 75

b. Introductory lecture of about 120 minutes may be arranged for students who did not offer general mathematics in the 9th & 10th Standard and/or Mathematics at the XIth and XIIth to familiarize the students with the concept of Tabulation, Graphical Representation of the data (basically Histogram and Ogives)

Semester I

Course	Topic	No. of lectures
UBCOMFSI.6 Mathematical and Statistical Techniques-I	Unit I	15
	Unit II	15
	Unit III	15
	Unit IV	15
	Unit V	15
	Total	75

Total number of lectures 75 **+**Notional75**=150** lectures = **3** CREDITS

Semester II

Course	Topic	No. of lectures
UBCOMFSII.6 Mathematical	Unit I	15
	Unit II	15

and Statistical Techniques-II	Unit III	15
	Unit IV	15
	Unit V	15
	Total	75

Total number of lectures 75 **+**Notional **75=150** lectures = **3** CREDITS

MATHEMATICAL AND STATISTICAL TECHNIQUES

WORKLOAD: MATHEMATICS : 2 lectures per week
STATISTICS : 3 lectures per week
TUTORIAL : 1 per week

Tutorial batch size : 25 Students

Semester I

Course: UBCOMFSI.6

Mathematical and Statistical Techniques-I

[A] MATHEMATICS: (40 marks)

Unit I: Shares and Mutual Funds

a. **Shares**: Concept of share, face value, market value, dividend, equity shares, preferential shares, bonus shares. Simple examples.

b. **Mutual Funds**: Simple problems on calculation of Net income after considering entry load, dividend, change in Net Asset Value (N.A.V.) and exit load. Averaging of price under the Systematic Investment Plan (S.I.P.)

Unit II: Permutation, Combination and Linear Programming Problems:

a. **Permutation and Combination:** Factorial Notation, Fundamental principle of counting, Permutation as arrangement, Simple examples, combination as selection, Simple examples, Relation between ${}^{n}C_{r}$ and ${}^{n}P_{r}$ Examples on commercial application of permutation and combination.

b. **Linear Programming Problem:** Sketching of graphs of (i) linear equation Ax + By + C = 0 (ii) linear inequalities. Mathematical Formulation of Linear Programming Problems upto 3 variables. Solution of Linear Programming Problems using graphical method up to two variables.

[B] STATISTICS: (60 marks)

Unit III: Summarization Measures:

a. **Measures of Central Tendencies:** Definition of Average, Types of Averages: Arithmetic Mean, Median, and Mode for grouped as well as ungrouped data. Quartiles, Deciles and Percentiles. Using Ogive locate median and Quartiles. Using Histogram locate mode. Combined and Weighted mean.

b. **Measures of Dispersions**: Concept and idea of dispersion. Various measures Range, Quartile Deviation, Mean Deviation, Standard Deviation, Variance, Combined Variance.

Unit IV: Elementary Probability Theory:

a. **Probability Theory:** Concept of random experiment/trial and possible outcomes; Sample Space and Discrete Sample Space; Events their types, Algebra of Events, Mutually Exclusive and Exhaustive Events, Complimentary events.
   Classical definition of Probability, Addition theorem (without proof), conditional probability.
   Independence of Events: $P(A \cap B) = P(A)\,P(B)$. Simple examples.
b. **Random Variable**: Probability distribution of a discrete random variable; Expectation and Variance of random variable, simple examples on probability distributions.

Unit V: Decision Theory:

Decision making situation, Decision maker, Courses of Action, States of Nature, Pay-off and Pay-off matrix; Decision making under uncertainty, Maximin, Maximax, Minimax regret and Laplace criteria; simple examples to find optimum decision. Formulation of Payoff Matrix. Decision making under Risk, Expected Monetary Value (EMV); Decision Tree; Simple Examples based on EMV. Expected Opportunity Loss (EOL), simple examples based on EOL.

Semester II
Course: UBCOMFSII.6
Mathematical and Statistical Techniques-II

[A] MATHEMATICS : (40 marks)

Unit I : Functions, Derivatives and Their Applications

a. **Concept of real functions:** constant function, linear function, x^n, e^x, a^x, log x.
   Demand, Supply, Total Revenue, Average Revenue, Total cost, Average cost and Profit function. Equilibrium Point, Break-even point.
b. **Derivative of functions:**
   i. Derivative as rate measure, Derivative of x^n, e^x, a^x, log x.
   ii. Rules of derivatives: Scalar multiplication, sum, difference, product, quotient (Statements only), Simple problems. Second order derivatives.
   iii. Applications: Marginal Cost, Marginal Revenue, Elasticity of Demand. Maxima and Minima for functions in Economics and Commerce.
   (Examination Questions on this unit should be application oriented only.)

Unit II: Interest and Annuity:

a. **Interest:** Simple Interest, Compound Interest (Nominal & Effective Rate of Interest),. Calculations involving upto 4 time periods.

b. **Annuity:** Annuity Immediate and its Present value, Future value. Equated Monthly Installments (EMI) using reducing balance method & amortization of loans. Stated Annual Rate & Affective Annual Rate Perpetuity and its present value. Simple problems involving up to 4 time periods.

[B] STATISTICS: (60 marks)

Unit III: Bivariate Linear Correlation and Regression

a. **Correlation Analysis:** Meaning, Types of Correlation, Determination of Correlation: Scatter diagram, Karl Pearson's method of Correlation Coefficient (excluding Bivariate Frequency Distribution Table) and Spearman's Rank Correlation Coefficient.
b. **Regression Analysis:** Meaning, Concept of Regression equations, Slope of the Regression Line and its interpretation. Regression Coefficients (excluding Bivariate Frequency Distribution Table), Relationship between Coefficient of Correlation and Regression Coefficients , Finding the equations of Regression lines by method of Least Squares.

Unit IV : Time series and Index Numbers

a. **Time series**: Concepts and components of a time series. Representation of trend by Freehand Curve Method, Estimation of Trend using Moving Average Method and Least Squares Method (Linear Trend only). Estimation of Seasonal Component using Simple Arithmetic Mean for Additive Model only (For Trend free data only). Concept of Forecasting using Least Squares Method.
b. **Index Numbers:** Concept and usage of Index numbers, Types of Index numbers, Aggregate and Relative Index Numbers, Lasperye's, Paasche's, Dorbisch-Bowley's, Marshall-Edgeworth and Fisher's ideal index numbers, Test of Consistency: Time Reversal Test and Factor Reversal Test. Chain Base Index Nos. Shifting of Base year. Cost of Living Index Numbers, Concept of Real Income, Concept of Wholesale Price Index Number. (Examples on missing values should not be taken)

Unit V: Elementary Probability Distributions

Probability Distributions:

i. Discrete Probability Distribution: Binomial, Poisson (Properties and applications only, no derivations are expected)
ii. Continuous Probability distribution: Normal Distribution. (Properties and applications only, no derivations are expected)

Tutorial:

Two tutorials to be conducted on each unit i.e. 10 tutorials per semester. At the end of each semester one Tutorial assignment of 10 marks should be given.

Examination:

Semester End Examination: 100 marks

At the end of each semester, there will be a Semester End Examination of 100 marks , 3 hours duration and question paper pattern as shown below.

Question Paper Pattern :(Course: UBCOMFSI.6 and Course: UBCOMFSII.6)

1. In **Section I** (**based on Mathematics**), Two questions carrying 20 marks each. First question should be on Unit I and Second question should be from Unit II.
2. In each question there should be five sub-questions carrying 5 marks each. Students should be asked to answer any 4 sub questions from each question.
3. In **Section II** (**based on Statistics**), Three questions carrying 20 marks each. First question should be on Unit III, Second question should be from Unit IV and third question should be from Unit V.
4. In each question there should be five sub-questions carrying 5 marks each. Students should be asked to answer any 4 sub questions from each question.

Reference Books:

1. Mathematics for Economics and Finance Methods and Modelling by Martin Anthony and Norman Biggs, Cambridge University Press, Cambridge low-priced edition, 2000, Chapters 1, 2, 4, 6 to 9 & 10.
2. Applied Calculus: By Stephen Waner and Steven Constenoble, Brooks/Cole Thomson Learning, second edition, Chapter 1 to 5.
3. Business Mathematics By D. C. Sancheti and V. K. Kapoor, Sultan Chand & Sons, 2006, Chapter 1, 5, 7, 9 &10.
4. Mathematics for Business Economics: By J. D. Gupta, P. K. Gupta and Man Mohan, Tata Mc-Graw Hill Publishing Co. Ltd., 1987, Chapters 9 to 11 & 16.
5. Quantitative Methods-Part-I By S. Saha and S. Mukerji, New Central Book Agency, 1996, Chapters 7 & 12.
6. Mathematical Basis of Life Insurance By S.P. Dixit, C.S. Modi and R.V. Joshi, Insurance Institute of India, Chapters 2: units 2.6, 2.9, 2.20 & 2.21.
7. Securities Laws & Regulation of Financial Market : Intermediate Course Paper 8, Institute of Company Secretaries of India, Chapter 11.
8. Investments By J.C. Francis & R.W. Taylor, Schaum's Outlines, Tata Mc-Graw Hill Edition 2000, Chapters 2,4 & section 25.1.
9. Indian Mutual Funds Handbook : By Sundar Shankaran, Vision Books, 2006, Sections 1.7,1.8.1, 6.5 & Annexures 1.1to 1.3.
10. STATISTICS by Schaum Series.
11. Operations Research by Gupta and Kapoor
12. Operations Research by Schaum Series
13. Fundamentals of Statistics - D. N. Elhance.
14. Statistical Methods - S.G. Gupta (S. Chand & Co.
15. Statistics for Management - Lovin R. Rubin D.S. (Prentice Hall of India)
16. Statistics - Theory, Method & Applications D.S.Sancheti & V. K. Kapoor.
17. Modern Business Statistics - (Revised}-B. Pearles & C. Sullivan –Prentice Hall of India.

18. Business Mathematics & Statistics : B Aggarwal, Ane Book Pvt. Limited
19. Business Mathematics : D C Sancheti & V K Kapoor, Sultan Chand & Sons
20. Business Mathematics : A P Verma, Asian Books Pvt. :Limited.

QUESTION PAPER – SET I

MARKS:- 100 TIME:- 3 HRS

N.B : (1) ALL QUESTION ARE COMPALSORY

(2) ALL QUESTION CARRY EQUAL MARKS

(3) FIGURES TO THE RIGHT INDICATES MARKS TO A SUB-QUESTION.

(4)GRAPGH PAPER WILL BE SUPPLIED ON REQUEST.

(5)USE OF NON-PROGRAMMABLE CALCULATOR IS ALLOWED.

SECTION-I

Q.1 ATTEMPT ANY FOUR OF THE FOLLOWING

(a) 5 Marks (b) 5 Marks (c) 5 Marks (d) 5 Marks (e) 5 Marks 20 Marks

Q.2 ATTEMPT ANY FOUR OF THE FOLLOWING

(a) 5 Marks (b) 5 Marks (c) 5 Marks (d) 5 Marks (e) 5 Marks 20 Marks

SECTION-II

Q.3 ATTEMPT ANY FOUR OF THE FOLLOWING

(a) 5 Marks (b) 5 Marks (c) 5 Marks (d) 5 Marks (e) 5 Marks 20 Marks

Q.4 ATTEMPT ANY FOUR OF THE FOLLOWING

(a) 5 Marks (b) 5 Marks (c) 5 Marks (d) 5 Marks (e) 5 Marks 20 Marks

Q.5 ATTEMPT ANY FOUR OF THE FOLLOWING

(a) 5 Marks (b) 5 Marks (c) 5 Marks (d) 5 Marks (e) 5 Marks 20 Marks

UNIVERSITY OF MUMBAI

Syllabus

for F. Y. B. Sc. / F. Y. B. A. Semester I & II (CBCS)

Program: B. Sc. / B. A.

Course: Mathematics

with effect from the academic year 2020-2021

F. Y. B. Sc. (CBCS) SEMESTER I

CALCULUS I				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 101	I	Real Number System	2	3
	II	Sequences in $\mathbb{R}$		
	III	First Order First Degree Differential Equations		
ALGEBRA I				
USMT 102	I	Integers and Divisibility	2	3
	II	Functions, Relations and Binary Operations		
	III	Polynomials		
PRACTICALS				
USMTP01	-	Practicals based on USMT101, USMT102	2	2

F. Y. B. A. (CBCS) SEMESTER I

CALCULUS I				
Course Code	UNIT	TOPICS	Credits	L/Week
UAMT 101	I	Real Number System	3	3
	II	Real Sequences		
	III	First Order First Degree Differential Equations		
Tutorials				
	-	Tutorials based on UAMT101		

F. Y. B. Sc. (CBCS) SEMESTER II

CALCULUS II				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 201	I	Limits and Continuity	2	3
	II	Differentiability of functions		
	III	Applications of Differentiability		
DISCRETE MATHEMATICS				
USMT 202	I	Preliminary Counting	2	3
	II	Advanced Counting		
	III	Permutations and Recurrence Relation		
PRACTICALS				
USMTP02	-	Practicals based on USMT201, USMT202	2	2

F. Y. B. A. (CBCS) SEMESTER II

CALCULUS II				
Course Code	UNIT	TOPICS	Credits	L/Week
UAMT 201	I	Limits and Continuity	3	3
	II	Differentiability of functions		
	III	Applications of Differentiability		
TUTORIALS				
	-	Tutorials based on UAMT201		

Revised Syllabus in Mathematics
Choice Based Credit System
F. Y. B. Sc. / B. A. 2020-2021

Preamble:
The University of Mumbai has brought into force the revised syllabi as per the Choice Based Credit System (CBCS) for the First year B. Sc/ B. A. Programme in Mathematics from the academic year 2020-2021.

Mathematics has been fundamental to the development of science and technology. In recent decades, the extent of application of Mathematics to real world problems has increased by leaps and bounds. Taking into consideration the rapid changes in science and technology and new approaches in different areas of mathematics and related subjects like Physics, Statistics and Computer Sciences, the board of studies in Mathematics with concern of teachers of Mathematics from different colleges affiliated to University of Mumbai has prepared the syllabus of F.Y.B. Sc. / F. Y. B. A. Mathematics. The present syllabi of F. Y. B. Sc. for Semester I and Semester II has been designed as per U. G. C. Model curriculum so that the students learn Mathematics needed for these branches, learn basic concepts of Mathematics and are exposed to rigorous methods gently and slowly. The syllabi of F. Y. B. Sc. / F. Y. B. A. would consist of two semesters and each semester would comprise of two courses for F. Y. B. Sc. Mathematics and one course for each semester for F. Y. B. A. Mathematics. Course I is 'Calculus I and Calculus II'. Calculus is applied and needed in every conceivable branch of science. Course II, 'Algebra I and Discrete Mathematics' develops mathematical reasoning and logical thinking and has applications in science and technology.

Aims:

(1) Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerous power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.

(2) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.

(3) Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

(4) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences

Course outcomes:

1. Calculus (Sem I & II): This course gives introduction to basic concepts of Analysis with rigor and prepares students to study further courses in Analysis. Formal proofs are given lot of emphasis in this course which also enhances understanding of the subject of Mathematics as a whole. The portion on first order, first degree differentials prepares learner to get solutions of so many kinds of problems in all subjects of Science and also prepares learner for further studies of differential equations and related fields.

2. Algebra I (Sem I) & Discrete Mathematics (Sem II): This course gives expositions to number systems (Natural Numbers & Integers), like divisibility and prime numbers and

their properties. These topics later find use in advanced subjects like cryptography and its uses in cyber security and such related fields.

Teaching Pattern for Semester I

[1.] Three lectures per week per course.

[2.] One Practical per week per batch for each of the courses USMT101, USMT 102 (the batches to be formed as prescribed by the University).

[3.] One Tutorial per week per batch for course UAMT101 (the batches to be formed as prescribed by the University).

Teaching Pattern for Semester II

[1.] Three lectures per week per course.

[2.] One Practical per week per batch for each of the courses USMT201, USMT 202. (the batches to be formed as prescribed by the University).

[3.] One Tutorial per week per batch for the course UAMT201 (the batches to be formed as prescribed by the University).

F.Y.B.Sc. / F.Y.B.A. Mathematics

SEMESTER I

USMT 101 / UAMT 101: CALCULUS I

Note: All topics have to be covered with proof in details (unless mentioned otherwise) and examples.

Unit 1 : Real Number System (15 Lectures)

(1) Real number system $\mathbb{R}$ and order properties of $\mathbb{R}$, absolute value $|\ |$ and its properties.

(2) AM-GM inequality, Cauchy-Schwarz inequality, Intervals and neighbourhoods, interior points, limit point, Hausdorff property.

(3) Bounded sets, statements of I.u.b. axiom and its consequences, supremum and infimum, maximum and minimum, Archimedean property and its applications, density of rationals.

Unit II: Sequences in $\mathbb{R}$ (15 Lectures)

(1) Definition of a sequence and examples, Convergence of sequences, every convergent sequences is bounded. Limit of a convergent sequence and uniqueness of limit, Divergent sequences.

(2) Convergence of standard sequences like $\left(\dfrac{1}{1+na}\right)$ $\forall a > 0$, (b^n) $\forall b$, $0 < b < 1$, $(c^{\frac{1}{n}})$ $\forall c > 0$, & $(n^{\frac{1}{n}})$.

(3) Algebra of convergent sequences, sandwich theorem, monotone sequences, monotone convergence theorem and consequences as convergence of $\left(\left(1+\dfrac{1}{n}\right)^n\right)$.

(4) Definition of subsequence, subsequence of a convergent sequence is convergent and converges to the same limit, definition of a Cauchy sequences, every convergent sequences s a Cauchy sequence and converse.

Unit III: First order First degree Differential equations (15 Lectures)

Review of Definition of a differential equation, order, degree, ordinary differential equation and partial differential equation, linear and non linear ODE. Solution of homogeneous and non-homogeneous differential equations of first order and first degree. Notion of partial derivatives.

(1) Exact Equations: General solution of Exact equations of first order and first degree. Necessary and sufficient condition for $Mdx + Ndy = 0$ to be exact. Non-exact equations: Rules for finding integrating factors (without proof) for non exact equations, such as :

i) $\dfrac{1}{M\ x + N\ y}$ is an I.F. if $M\ x + N\ y \neq 0$ and $Mdx + Ndy = 0$ is homogeneous.

ii) $\dfrac{1}{M\ x - N\ y}$ is an I.F. if $M\ x - N\ y \neq 0$ and $Mdx + Ndy = 0$ is of the form $f_1(x, y)\ y\ dx + f_2(x, y)\ x\ dy = 0$.

iii) $e^{\int f(x)\ dx}$ (resp $e^{\int g(y)\ dy}$) is an I.F. if $N \neq 0$ (resp $M \neq 0$) and $\frac{1}{N}\left(\frac{\partial M}{\partial y} - \frac{\partial N}{\partial x}\right)$ $\left(\text{resp}\frac{1}{M}\left(\frac{\partial M}{\partial y} - \frac{\partial N}{\partial x}\right)\right)$ is a function of x (resp y) alone, say $f(x)$ (resp $g(y)$).

iv) Linear and reducible linear equations of first order, finding solutions of first order differential equations of the type for applications to orthogonal trajectories, population growth, and finding the current at a given time.

(2) Reduction of order :

(i) If the differential equation does not contain only the original function y, that is equations of Type $F(x, y', y'') = 0$.

(ii) If the differential equation does not contain the independent variable x that is, equations of Type $F(y, y', y'') = 0$.

Reference Books:

1. R. R. Goldberg, Methods of Real Analysis, Oxford and IBH, 1964.
2. K. G. Binmore, Mathematical Analysis, Cambridge University Press, 1982.
3. R. G. Bartle- D. R. Sherbert, Introduction to Real Analysis, John Wiley & Sons, 1994.
4. Sudhir Ghorpade and Balmohan Limaye, A course in Calculus and Real Analysis, Springer International Ltd, 2000.
5. G. F. Simmons, Differential Equations with Applications and Historical Notes, McGraw Hill, 1972.
6. E. A. Coddington , An Introduction to Ordinary Differential Equations.Prentice Hall, 1961.
7. W. E. Boyce, R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, Wiely, 2013.

Additional Reference Books

1. T. M. Apostol, Calculus Volume I, Wiley & Sons (Asia) Pte, Ltd.
2. Richard Courant-Fritz John, A Introduction to Calculus and Analysis, Volume I, Springer.
3. Ajit kumar and S. Kumaresan, A Basic Course in Real Analysis, CRC Press, 2014.
4. James Stewart, Calculus, Third Edition, Brooks/ cole Publishing Company, 1994.
5. D. A. Murray, Introductory Course in Differential Equations, Longmans, Green and Co., 1897.
6. A. R. Forsyth, A Treatise on Differential Equations, MacMillan and Co.,1956.

ALGEBRA I
USMT 102

Prerequisite :
Set Theory: Set, subset, union and intersection of two sets, empty set, universal set, complement of a set, De Morgan's laws, Cartesian product of two sets, Relations, Permutations ${}^nP_r$ and Combinations ${}^nC_r$.
Complex numbers: Addition and multiplication of complex numbers, modulus, amplitude and conjugate of a complex number.

Unit I : Integers & Divisibility (15 Lectures)

(1) Statements of well-ordering property of non-negative integers, Principle of finite induction (first and second) as a consequence of Well-Ordering Principle.

(2) Divisibility in integers, division algorithm, greatest common divisor (g.c.d.) and least common multiple (l.c.m.) of two non zero integers, basic properties of g.c.d. such as existence and uniqueness of g.c.d. of two non zero integers $a\&b$ and that the g.c.d. can be expressed as $ma + nb$ for some $m, n \in \mathbb{Z}$, Euclidean algorithm.

(3) Primes, Euclid's lemma, Fundamental Theorem of arithmetic, The set of primes is infinite, there are arbitrarily large gaps between primes, there exists infinitely many primes of the form $4n - 1$ or of the form $6n - 1$.

(4) Congruence, definition and elementary properties, Results about linear congruence equations. Examples.

Unit II : Functions, Relations and Binary Operations (15 Lectures)

(1) Definition of relation and function, domain, co-domain and range of a function, composite functions, examples, Direct image $f(A)$ and inverse image $f^{-1}(B)$ for a function f, injective, surjective, bijective functions, Composite of injective, surjective, bijective functions when defined, invertible functions, bijective functions are invertible and conversely, examples of functions including constant, identity, projection, inclusion, Binary operation as a function, properties, examples.

(2) Equivalence relation, Equivalence classes, properties such as two equivalences classes are either identical or disjoint, Definition of partition, every partition gives an equivalence relation and vice versa.

(3) Congruence is an equivalence relation on $\mathbb{Z}$, Residue classes and partition of $\mathbb{Z}$, Addition modulo$n$, Multiplication modulo n, examples.

Unit III: Polynomials (15 Lectures)

(1) Definition of a polynomial, polynomials over F where $F = \mathbb{Q}, \mathbb{R}$ or $\mathbb{C}$, Algebra of polynomials, degree of polynomial, basic properties.

(2) Division algorithm in $F[X]$ (without proof), and g.c.d of two polynomials and its basic properties, Euclidean algorithm (proof of the above results may be given only in the case of $\mathbb{Q}[X]$ with a remark that the results as well as the proofs remain valid in the case of $\mathbb{R}[X]$ or $\mathbb{C}[X]$).

(3) Roots of a polynomial, relation between roots and coefficients, multiplicity of a root. Elementary consequences such as the following.

(i) Remainder theorem, Factor theorem.

(ii) A polynomial of degree n has at most n roots.

(iii) Complex and non-real roots of a polynomials in $\mathbb{R}[X]$ occur in conjugate pairs.

(Emphasis on examples and problems in polynomials with real coefficients).

(4) Necessary condition for a rational number $\frac{p}{q}$ to be a root of a polynomial with integer coefficients (viz. p divides the constant coefficient and q divides the leading coefficient), corollary for monic polynomials (viz. a rational root of monic polynomial with integer coefficients is necessarily an integer). Simple consequence such as the irrationality is necessarily of $\sqrt{p}$ for any prime number p. Irreducible polynomials in $\mathbb{Q}[x]$, Unique Factorisation Theorem. Examples.

Reference Books:

1. David M. Burton, Elementary Number Theory, Seventh Edition, McGraw Hill Education (India) Private Ltd.

2. 2. Norman L. Biggs, Discrete Mathematics, Revised Edition, Clarendon Press, Oxford 1989.

Additional Reference Books

1. I. Niven and S. Zuckerman, Introduction to the theory of numbers, Third Edition, Wiley Eastern, New Delhi, 1972.

2. G. Birkoff and S. Maclane, A Survey of Modern Algebra, Third Edition, Mac Millan, New York, 1965.

3. N. S. Gopalkrishnan, University Algebra, Ne Age International Ltd, Reprint 2013.

4. I .N. Herstein, Topics in Algebra, John Wiley, 2006.

5. P. B. Bhattacharya S. K. Jain and S. R. Nagpaul, Basic Abstract Algebra, New Age International, 1994.

6. Kenneth Rosen, Discrete Mathematics and its applications, Mc-Graw Hill, International Edition, Mathematics Series.

PRACTICALS FOR F.Y.B.Sc
USMTP01 – Practicals

A. **Practicals for USMT101/ UAMT 101:**

(1) Algebraic and Order Properties of Real Numbers and Inequalities
(2) Hausdorff Property and LUB Axiom of $\mathbb{R}$, Archimedian Property.
(3) Convergence and divergence of sequences, bounded sequences, Sandwich Theorem.
(4) Cauchy sequences, monotonic sequences, non-monotonic sequences.
(5) Solving exact and non-exact, linear, reducible to linear differential equations.
(6) Reduction of order of Differential Equations, Applications of Differential Equations.
(7) Miscellaneous Theoretical Questions based on full paper.

B. **Practicals for USMT102:**

(1) Mathematical induction ,Division Algorithm, Euclidean algorithm in $\mathbb{Z}$, Examples on expressing the gcd. of two non zero integers $a\&b$ as $ma + nb$ for some $m, n \in \mathbb{Z}$,
(2) Primes and the Fundamental theorem of Arithmetic, Euclid's lemma, there exists infinitely many primes of the form $4n - 1$ or of the form $6n - 1$.
(3) Functions, Bijective and Invertible functions, Compositions of functions.
(4) Binary Operation, Equivalence Relations, Partition and Equivalence classes.
(5) Polynomial (I)
(6) Polynomial (II)
(7) Miscellaneous Theoretical Questions based on full paper.

TUTORIALS FOR F.Y.B.A

Tutorials for UAMT101 :

(1) Algebraic and Order Properties of Real Numbers and Inequalities
(2) Hausdorff Property and LUB Axiom of $\mathbb{R}$, Archimedian Property.
(3) Convergence and divergence of sequences, bounded sequences, Sandwich Theorem.
(4) Cauchy sequences, monotonic sequences, non-monotonic sequences.
(5) Solving exact and non-exact, linear, reducible to linear differential equations.
(6) Reduction of order of Differential Equations, Applications of Differential Equations.
(7) Miscellaneous Theoretical Questions based on full paper.

Semester II
USMT 201 / UAMT201: CALCULUS II

Unit-I: Limits and Continuity (15 Lectures)

{Brief review: Domain and range of a function, injective function, surjective function, bijective function, composite of two functions (when defined), Inverse of a bijective function. Graphs of some standard functions such as $|x|$, e^x, $\log x$, ax^2+bx+c, $\frac{1}{x}$, x^n $n \geq 3$), $\sin x$, $\cos x$, $\tan x$, $\sin\left(\frac{1}{x}\right)$, $x^2 \sin\left(\frac{1}{x}\right)$ over suitable intervals of $\mathbb{R}$. No direct questions to be added.}

(1) $\varepsilon - \delta$ definition of Limit of a function, uniqueness of limit if it exists, algebra of limits, limits of composite function, sandwich theorem, left-hand-limit $\lim\limits_{x \longrightarrow a^-} f(x)$, right-hand-limit $\lim\limits_{x \longrightarrow a^+} f(x)$, non-existence of limits, $\lim\limits_{x \longrightarrow -\infty} f(x)$, $\lim\limits_{x \longrightarrow \infty} f(x)$ and $\lim\limits_{x \longrightarrow a} f(x) = \pm\infty$.

(2) Continuous functions: Continuity of a real valued function at a point and on a set using $\epsilon - \delta$ definition, examples, Continuity of a real valued function at end points of domain using $\epsilon - \delta$ definition, f is continuous at a if and only if $\lim\limits_{x \longrightarrow a} f(x)$ exists and equals to $f(a)$, Sequential continuity, Algebra of continuous functions, discontinuous functions, examples of removable and essential discontinuity.

(3) Intermediate Value theorem and its applications, Bolzano-Weierstrass theorem (statement only): A continuous function on a closed and bounded interval is bounded and attains its bounds.

Unit-II: Differentiability of functions (15 Lectures)

(1) Differentiation of real valued function of one variable: Definition of differentiability of a function at a point of an open interval, examples of differentiable and non differentiable functions, differentiable functions are continuous but not conversely, algebra of differentiable functions.

(2) Chain rule, Higher order derivatives, Leibniz rule, Derivative of inverse functions, Implicit differentiation (only examples)

Unit-III: Applications of differentiability (15 Lectures)

(1) Rolle's Theorem, Lagrange's and Cauchy's Mean Value Theorems, applications and examples, Monotone increasing and decreasing functions, examples.

(2) L-Hospital rule (without proof), examples of indeterminate forms, Taylor's theorem with Lagrange's form of remainder with proof, Taylor polynomial and applications.

(3) Definition of critical point, local maximum/minimum, necessary condition, stationary points, second derivative test, examples, concave/convex functions, point of inflection.

(4) Sketching of graphs of functions using properties.

Reference books:

1. R. R. Goldberg, Methods of Real Analysis, Oxford and IBH, 1964.
2. James Stewart, Calculus, Third Edition, Brooks/ Cole Publishing company, 1994.
3. T. M. Apostol, Calculus, Vol I, Wiley And Sons (Asia) Pte. Ltd.

4. Sudhir Ghorpade and Balmohan Limaye, A course in Calculus and Real Analysis, Springer International Ltd, 2000.

Additional Reference:

1. Richard Courant and Fritz John, A Introduction to Calculus and Analysis, Volume-I, Springer.
2. Ajit Kumar and S. Kumaresan, A Basic course in Real Analysis, CRC Press, 2014.
3. K. G. Binmore, Mathematical Analysis, Cambridge University Press, 1982.
4. G. B. Thomas, Calculus, 12th Edition 2009

USMT 202: DISCRETE MATHEMATICS

Unit I: Preliminary Counting (15 Lectures)

(1) Finite and infinite sets, countable and uncountable sets examples such as $\mathbb{N}$, $\mathbb{Z}$, $\mathbb{N} \times \mathbb{N}$, $\mathbb{Q}$ $(0, 1)$, $\mathbb{R}$.

(2) Addition and multiplication Principle, counting sets of pairs, two ways counting.

(3) Stirling numbers of second kind. Simple recursion formulae satisfied by $S(n, k)$ for $k = 1, 2, \cdots, n-1, n$.

(4) Pigeonhole principle simple and strong form and examples, its applications to geometry.

Unit II: Advanced Counting (15 Lectures)

(1) Permutation and combination of sets and multi-sets, circular permutations, emphasis on solving problems.

(2) Binomial and Multinomial Theorem, Pascal identity, examples of standard identities such as the following with emphasis on combinatorial proofs.

- $\displaystyle\sum_{k=0}^{r} \binom{m}{k}\binom{n}{r-k} = \binom{m+n}{r}$
- $\displaystyle\sum_{i=0}^{k} \binom{k}{i}^2 = \binom{2k}{k}$
- $\displaystyle\sum_{i=r}^{n} \binom{i}{r} = \binom{n+1}{r+1}$
- $\displaystyle\sum_{i=0}^{n} \binom{n}{i} = 2^n$

(3) Non-negative integer solutions of equation $x_1 + x_2 + \cdots + x_k = n$.

(4) Principal of inclusion and exclusion, its applications, derangements, explicit formula for d_n, deriving formula for Euler's function $\phi(n)$.

Unit III: Permutations and Recurrence relation (15 lectures)

(1) Permutation of objects, S_n, composition of permutations, results such as every permutation is a product of disjoint cycles, every cycle is a product of transpositions, signature of a permutation, even and odd permutations, cardinality of S_n, A_n.

(2) Recurrence Relations, definition of homogeneous, non-homogeneous, linear, non-linear recurrence relation, obtaining recurrence relations of Tower of Hanoi, Fibonacci sequence, etc. in counting problems, solving homogeneous as well as non homogeneous recurrence relations by using iterative methods, solving a homogeneous recurrence relation of second degree using algebraic method proving the necessary result.

Recommended Books:

1. Norman Biggs, Discrete Mathematics, Oxford University Press.
2. Richard Brualdi, Introductory Combinatorics, John Wiley and sons.
3. V. Krishnamurthy, Combinatorics-Theory and Applications, Affiliated East West Press.
4. Discrete Mathematics and its Applications, Tata McGraw Hills.
5. Schaum's outline series, Discrete mathematics,
6. Allen Tucker, Applied Combinatorics, John Wiley and Sons.
7. Sharad Sane, Combinatorial Techniques, Springer.

PRACTICALS FOR F.Y.B.Sc
USMTP02-Practicals

A. **Practicals for USMT201 :**

(1) Limit of a function and Sandwich theorem, Continuous and discontinuous function.

(2) Algebra of limits and continuous functions, Intermediate Value theorem, Bolzano-Weierstrass theorem.

(3) Properties of differentiable functions, derivatives of inverse functions and implicit functions.

(4) Higher order derivatives, Leibnitz Rule.

(5) Mean value theorems and its applications, L'Hospital's Rule, Increasing and Decreasing functions.

(6) Extreme values, Taylor's Theorem and Curve Sketching.

(7) Miscellaneous Theoretical Questions based on full paper.

B. **Practicals for USMT202:**

(1) Counting principles, Two way counting.

(2) Stirling numbers of second kind, Pigeon hole principle.

(3) Multinomial theorem, identities, permutation and combination of multi-set.

(4) Inclusion-Exclusion principle. Euler phi function.

(5) Composition of permutations, signature of permutation, inverse of permutation.

(6) Recurrence relation.

(7) Miscellaneous Theoretical Questions based on full paper.

TUTORIALS FOR F.Y.B.A

Tutorials for UAMT201 :

(1) Limit of a function and Sandwich theorem, Continuous and discontinuous function.

(2) Algebra of limits and continuous functions, Intermediate Value theorem, Bolzano-Weierstrass theorem.

(3) Properties of differentiable functions, derivatives of inverse functions and implicit functions.

(4) Higher order derivatives, Leibnitz Rule.

(5) Mean value theorems and its applications, L'Hospital's Rule, Increasing and Decreasing functions.

(6) Extreme values, Taylor's Theorem and Curve Sketching.

(7) Miscellaneous Theoretical Questions based on full paper.

Scheme of Examination (75:25)

The performance of the learners shall be evaluated into two parts. The learner's performance shall be assessed by Internal Assessment with 25 percent marks in the first part and by conducting the Semester End Examinations with 75 percent marks in the second part. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:-

I. **Internal Evaluation of 25 Marks:**

F.Y.B.Sc. :

(i) One class Test of 20 marks to be conducted during Practical session.
Paper pattern of the Test:
Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).
Q2: Multiple choice 5 questions. (10 Marks: 5×2)
Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

(ii) Active participation in routine class: 05 Marks.

F.Y.B.A. :

(i) One class Test of 20 marks to be conducted during Tutorial session.
Paper pattern of the Test:
Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).
Q2: Multiple choice 5 questions. (10 Marks: 5×2)
Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

(ii) Journal : 05 Marks.

II. **Semester End Theory Examinations :** There will be a Semester-end external Theory examination of 75 marks for each of the courses USMT101/UAMT101, USMT102 of Semester I and USMT201/UAMT201, USMT202 of semester II to be conducted by the college.

1. Duration: The examinations shall be of 2 and $\frac{1}{2}$ hours duration.
2. Theory Question Paper Pattern:
   a) There shall be FOUR questions. The first three questions Q1, Q2, Q3 shall be of 20 marks, each based on the units I, II, III respectively. The question Q4 shall be of 15 marks based on the entire syllabus.
   b) All the questions shall be compulsory. The questions Q1, Q2, Q3, Q4 shall have internal choices within the questions. Including the choices, the marks for each question shall be 25-27.
   c) The questions Q1, Q2, Q3, Q4 may be subdivided into sub-questions as a, b, c, d & e, etc and the allocation of marks depends on the weightage of the topic.
3. **Semester End Examinations Practicals:**
   At the end of the Semesters I & II Practical examinations of three hours duration and 100 marks shall be conducted for the courses USMTP01, USMTP02.
   In semester I, the Practical examinations for USMT101 and USMT102 are held together by the college.
   In Semester II, the Practical examinations for USMT201 and USMT202 are held together by the college.

   Paper pattern: The question paper shall have two parts A and B.
   Each part shall have two Sections.

   Section I Objective in nature: Attempt any Eight out of Twelve multiple choice questions (04 objective questions from each unit) ($8 \times 3 = 24$ Marks).

   Section II Problems: Attempt any Two out of Three (01 descriptive question from each unit) ($8 \times 2 = 16$ Marks).

Practical Course	Part A	Part B	Marks out of	duration
USMTP01	Questions from USMT101	Questions from USMT102	80	3 hours
USMTP02	Questions from USMT201	Questions from USMT202	80	3 hours

Marks for Journals and Viva:
For each course USMTP01 (USMT101, USMT102) and USMTP02 (USMT201, USMT202):

1. Journal: 10 marks (5 marks for each journal).
2. Viva: 10 marks.

Each Practical of every course of Semester I and II shall contain at least 10 objective questions and at least 6 descriptive questions.
A student must have a certified journal before appearing for the practical examination.
In case a student does not posses a certified journal he/she will be evaluated for 80 marks.
He/she is not qualified for Journal + Viva marks.

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UNIVERSITY OF MUMBAI

Syllabus

for S. Y. B. Sc. / S. Y. B. A. Semester III & IV (CBCS)

Program: B. Sc. / B. A.

Course: Mathematics

with effect from the academic year 2021-2022

(UNIVERSITY OF MUMBAI)

Syllabus for: S.Y.B.Sc./S.Y.B.A.

Program: B.Sc./B/A.
Course: Mathematics
Choice based Credit System (CBCS)
with effect from the
academic year 2021-22

SEMESTER III

Calculus III				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 301, UAMT 301	I	Infinite Series	2	3
	II	Riemann Integration		
	III	Applications of Integrations and Improper Integrals		
Linear Algebra I				
USMT 302 ,UAMT 302	I	System of Equations and Matrices	2	3
	II	Vector Spaces over IR		
	III	Determinants, Linear Equations (Revisited)		
ORDINARY DIFFERENTIAL EQUATIONS				
USMT 303	I	Higher Order linear Differential Equations	2	3
	II	Systems of First Order Linear differential equations		
	III	Numerical Solutions of Ordinary Differential Equations		
PRACTICALS				
USMTP03		Practicals based on USMT301, USMT 302 and USMT 303	3	5
UAMTP03		Practicals based on UAMT301, UAMT 302	2	4

SEMESTER IV

Multivariable Calculus I				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 401, UAMT 401	I	Functions of several variables	2	3
	II	Differentiation of Scalar Fields		
	III	Applications of Differentiation of Scalar Fields and Differentiation of Vector Fields		
Linear Algebra II				
USMT 402 ,UAMT 402	I	Linear transformation, Isomorphism, Matrix associated with L.T.	2	3
	II	Inner product spaces		
	III	Eigen values, eigen vectors, diagonalizable matrix		
Numerical methods (Elective A)				
USMT 403A	I	Solutions of algebraic and transcendental equations	2	3
	II	Interpolation, Curve fitting, Numerical integration		
	III	Solutions of linear system of Equations and eigen value problems		
Statistical methods an their applications(Elective B)				
USMT 403B	I	Descriptive Statistics and random variables	2	3
	II	Probability Distribution and Correlation		
	III	Inferential Statistics		
PRACTICALS				
USMTP04		Practicals based on USMT401, USMT 402 and USMT 403	3	5
UAMTP04		Practicals based on UAMT401, UAMT 402	2	4

Teaching Pattern for Semester III

1. Three lectures per week per course. Each lecture is of 48 minutes duration.
2. One Practical (2L) per week per batch for courses USMT301, USMT 302 combined and one Practical (3L) per week for course USMT303 (the batches tobe formed as prescribed by the University. Each practical session is of 48 minutes duration.)

Teaching Pattern for Semester IV

1. Three lectures per week per course. Each lecture is of 48 minutes duration.
2. One Practical (2L) per week per batch for courses USMT301, USMT 302 combined and one Practical (3L) per week for course USMT303 (the batches to be formed as prescribed by the University. Each practical session is of 48 minutes duration.)

Semester-III

Note: Unless indicated otherwise, proofs of the results mentioned in the syllabus should be covered.

USMT301/ UAMT301: Calculus III

Unit I. Infinite Series (15 Lectures)

1. Infinite series in $\mathbb{R}$. Definition of convergence and divergence. Basic examples including geometric series. Elementary results such as if $\sum_{n=1}^{\infty} a_n$ is convergent, then $a_n \longrightarrow 0$ but converse not true. Cauchy Criterion. Algebra of convergent series.
2. Tests for convergence: Comparison Test, Limit Comparison Test, Ratio Test (without proof), Root Test (without proof), Abel Test (without proof) and Dirichlet Test (without proof). Examples. The decimal expansion of real numbers. Convergence of $\sum_{n=1}^{\infty} \frac{1}{n^p}$ $(p > 1)$. Divergence of harmonic series $\sum_{n=1}^{\infty} \frac{1}{n}$.
3. Alternating series. Leibnitz's Test. Examples. Absolute convergence, absolute convergence implies convergence but not conversely. Conditional Convergence.

Unit II. Riemann Integration (15 Lectures)

1. Idea of approximating the area under a curve by inscribed and circumscribed rectangles. Partitions of an interval. Refinement of a partition. Upper and Lower sums for a bounded real valued function on a closed and bounded interval. Riemann integrability and the Riemann integral.
2. Criterion for Riemann integrability. Characterization of the Riemann integral as the limit of a sum. Examples.

3. Algebra of Riemann integrable functions. Also, basic results such as if $f : [a, b] \longrightarrow \mathbb{R}$ is integrable, then (i) $\int_a^b f(x)\ dx = \int_a^c f(x)\ dx + \int_c^b f(x)\ dx$. (ii) $|f|$ is integrable and $\left| \int_a^b f(x)\ dx \right| \leq \int_a^b |f|(x)\ dx$ (iii) If $f(x) \geq 0$ for all $x \in [a, b]$ then $\int_a^b f(x)\ dx \geq 0$.
4. Riemann integrability of a continuous function, and more generally of a bounded function whose set of discontinuities has only finitely many points. Riemann integrability of monotone functions.

Unit III. Applications of Integrations and Improper Integrals (15 lectures)

1. Area between the two curves. Lengths of plane curves. Surface area of surfaces of revolution.
2. Continuity of the function $F(x) = \int_a^x f(t)\ dt, x \in [a, b]$, when $f : [a, b] \longrightarrow \mathbb{R}$ is Riemann integrable. First and Second Fundamental Theorems of Calculus.
3. Mean value theorem. Integration by parts formula. Leibnitz's Rule.
4. Definition of two types of improper integrals. Necessary and sufficient conditions for convergence.
5. Absolute convergence. Comparison and limit comparison tests for convergence.
6. Gamma and Beta functions and their properties. Relationship between them (without proof).

Reference Books

1. Sudhir Ghorpade, Balmohan Limaye; A Course in Calculus and Real Analysis (second edition); Springer.
2. R.R. Goldberg; Methods of Real Analysis; Oxford and IBH Pub. Co., New Delhi, 1970.
3. Calculus and Analytic Geometry (Ninth Edition); Thomas and Finney; Addison-Wesley, Reading Mass., 1998.
4. T. Apostol; Calculus Vol. 2; John Wiley.

Additional Reference Books

1. Ajit Kumar, S.Kumaresan; A Basic Course in Real Analysis; CRC Press, 2014
2. D. Somasundaram and B.Choudhary; A First Course in Mathematical Analysis, Narosa, New Delhi, 1996.
3. K. Stewart; Calculus, Booke/Cole Publishing Co, 1994.
4. J. E. Marsden, A.J. Tromba and A. Weinstein; Basic Multivariable Calculus; Springer.
5. R.G. Brtle and D. R. Sherbert; Introduction to Real Analysis Second Ed. ; John Wiley, New Yorm, 1992.

6. M. H. Protter; Basic Elements of Real Analysis; Springer-Verlag, New York, 1998.

USMT/UAMT 302: Linear Algebra I

Unit I. System of Equations, Matrices (15 Lectures)

1. Systems of homogeneous and non-homogeneous linear equations, Simple examples of finding solutions of such systems. Geometric and algebraic understanding of the solutions. Matrices (with real entries), Matrix representation of system of homogeneous and non-homogeneous linear equations. Algebra of solutions of systems of homogeneous linear equations. A system of homogeneous linear equations with number of unknowns more than the number of equations has infinitely many solutions.

2. Elementary row and column operations. Row equivalent matrices. Row reduction (of a matrix to its row echelon form). Gaussian elimination. Applications to solving systems of linear equations. Examples.

3. Elementary matrices. Relation of elementary row operations with elementary matrices. Invertibility of elementary matrices. Consequences such as (i) a square matrix is invertible if and only if its row echelon form is invertible. (ii) invertible matrices are products of elementary matrices. Examples of the computation of the inverse of a matrix using Gauss elimination method.

Unit II. Vector space over $\mathbb{R}$ (15 Lectures)

1. Definition of a vector space over $\mathbb{R}$. Subspaces; criterion for a nonempty subset to be a subspace of a vector space. Examples of vector spaces, including the Euclidean space $\mathbb{R}^n$, lines, planes and hyperplanes in $\mathbb{R}^n$ passing through the origin, space of systems of homogeneous linear equations, space of polynomials, space of various types of matrices, space of real valued functions on a set.

2. Intersections and sums of subspaces. Direct sums of vector spaces. Quotient space of a vector space by its subspace.

3. Linear combination of vectors. Linear span of a subset of a vector space. Definition of a finitely generated vector space. Linear dependence and independence of subsets of a vector space.

4. Basis of a vector space. Basic results that any two bases of a finitely generated vector space have the same number of elements. Dimension of a vector space. Examples. Bases of a vector space as a maximal linearly independent sets and as minimal generating sets.

Unit III. Determinants, Linear Equations (Revisited) (15 Lectures)

1. Inductive definition of the determinant of a $n \times n$ matrix (e. g. in terms of expansion along the first row). Example of a lower triangular matrix. Laplace expansions along an arbitrary row or column. Determinant expansions using permutations
$\Big(\det(A) = \sum_{\sigma \in S_n} \operatorname{sign}(\sigma) \prod_{i=1}^{n} a_{\sigma(i),i}\Big)$.

2. Basic properties of determinants (Statements only); (i) $\det A = \det A^T$. (ii) Multilinearity and alternating property for columns and rows. (iii) A square matrix A is invertible if and only if $\det A \neq 0$. (iv) Minors and cofactors. Formula for A^{-1} when $\det A \neq 0$. (v) $\det(AB) = \det A \det B$.

3. Row space and the column space of a matrix as examples of vector space. Notion of row rank and the column rank. Equivalence of the row rank and the column rank. Invariance of rank upon elementary row or column operations. Examples of computing the rank using row reduction.

4. Relation between the solutions of a system of non-homogeneous linear equations and the associated system of homogeneous linear equations. Necessary and sufficient condition for a system of non-homogeneous linear equations to have a solution [viz., the rank of the coefficient matrix equals the rank of the augmented matrix $[A|B]$]. Equivalence of statements (in which A denotes an $n \times n$ matrix) such as the following.

   (i) The system $A\boldsymbol{x} = \boldsymbol{b}$ of non-homogeneous linear equations has a unique solution.
   (ii) The system $A\boldsymbol{x} = \boldsymbol{0}$ of homogeneous linear equations has no nontrivial solution.
   (iii) A is invertible.
   (iv) $\det A \neq 0$.
   (v) $\text{rank}(A) = n$.

5. Cramers Rule. LU Decomposition. If a square matrix A is a matrix that can be reduced to row echelon form U by Gauss elimination without row interchanges, then A can be factored as $A = LU$ where L is a lower triangular matrix.

Reference books

1 Howard Anton, Chris Rorres, Elementary Linear Algebra, Wiley Student Edition).

2 Serge Lang, Introduction to Linear Algebra, Springer.

3 S Kumaresan, Linear Algebra - A Geometric Approach, PHI Learning.

4 Sheldon Axler, Linear Algebra done right, Springer.

5 Gareth Williams, Linear Algebra with Applications, Jones and Bartlett Publishers.

6 David W. Lewis, Matrix theory.

USMT303: Ordinary Differential Equations

Unit I. Higher order Linear Differential equations (15 Lectures)

1. The general $n-$th order linear differential equations, Linear independence, An existence and uniqueness theorem, the Wronskian, Classification: homogeneous and non-homogeneous, General solution of homogeneous and non-homogeneous LDE, The Differential operator and its properties.

2. Higher order homogeneous linear differential equations with constant coefficients, the auxiliary equations, Roots of the auxiliary equations: real and distinct, real and repeated, complex and complex repeated.

3. Higher order homogeneous linear differential equations with constant coefficients, the method of undermined coefficients, method of variation of parameters.

4. The inverse differential operator and particular integral, Evaluation of $\dfrac{1}{f(D)}$ for the functions like e^{ax}, $\sin ax$, $\cos ax$, x^m, $x^m \sin ax$, $x^m \cos ax$, $e^{ax}V$ and xV where V is any function of x,

5. Higher order linear differential equations with variable coefficients:
   The Cauchy's equation: $x^3\dfrac{d^3y}{dx^3} + x^2\dfrac{d^2y}{dx^2} + x\dfrac{dy}{dx} + y = f(x)$ and
   The Legendre's equation: $(ax+b)^3\dfrac{d^3y}{dx^3} + (ax+b)^2\dfrac{d^2y}{dx^2} + (ax+b)\dfrac{dy}{dx} + y = f(x)$.

Reference Books

1. Units 5, 6, 7 and 8 of E.D. Rainville and P.E. Bedient; Elementary Differential Equations; Macmillan.

2. Units 5, 6 and 7 of M.D. Raisinghania; Ordinary and Partial Differential Equations; S. Chand.

Unit II. Systems of First Order Linear Differential Equations (15 Lectures)

(a) Existence and uniqueness theorem for the solutions of initial value problems for a system of two first order linear differential equations in two unknown functions x, y of a single independent variable t, of the form $\begin{cases} \dfrac{dx}{dt} = F(t,x,y) \\ \dfrac{dy}{dt} = G(t,x,y) \end{cases}$ (Statement only).

(b) Homogeneous linear system of two first order differential equations in two unknown functions of a single independent variable t, of the form $\begin{cases} \dfrac{dx}{dt} = a_1(t)x + b_1(t)y, \\ \dfrac{dy}{dt} = a_2(t)x + b_2(t)y. \end{cases}$.

(c) Wronskian for a homogeneous linear system of first order linear differential equations in two functions x, y of a single independent variable t. Vanishing properties of the Wronskian. Relation with linear independence of solutions.

(d) Homogeneous linear systems with constant coefficients in two unknown functions x, y of a single independent variable t. Auxiliary equation associated to a homogenous system of equations with constant coefficients. Description fo the general solution depending on the roots and their multiplicities of the auxiliary equation, proof of independence of the solutions. Real form of solutions in case the auxiliary equation has complex roots.

(e) Non-homogeneous linear system of linear system of two first order differential equations in two unknown functions of a single independent variable t, of the form
$\begin{cases} \dfrac{dx}{dt} = a_1(t)x + b_1(t)y + f_1(t), \\ \dfrac{dy}{dt} = a_2(t)x + b_2(t)y + f_2(t). \end{cases}$
General Solution of non-homogeneous system. Relation between the solutions of a system

of non-homogeneous linear differential equations and the associated system of homogeneous linear differential equations.

Reference Books

1. G.F. Simmons; Differential Equations with Applications and Historical Notes; Taylor's and Francis.

Unit III. Numerical Solution of Ordinary Differential Equations (15 lectures)

1. Numerical Solution of initial value problem of first order ordinary differential equation using:
   (i) Taylor's series method,
   (ii) Picard's method for successive approximation and its convergence,
   (iii) Euler's method and error estimates for Euler's method,
   (iv) Modified Euler's Method,
   (v) Runge-Kutta method of second order and its error estimates,
   (vi) Runge-Kutta fourth order method.
2. Numerical solution of simultaneous and higher order ordinary differential equation using:
   (i) Runge-Kutta fourth order method for solving simultaneous ordinary differential equation,
   (ii) Finite difference method for the solution of two point linear boundary value problem.

Reference Books

1. Units 8 of S. S. Sastry, Introductory Methods of Numerical Analysis, PHI.

Additional Reference Books

1. E.D. Rainville and P.E. Bedient, Elementary Differential Equations, Macmillan.
2. M.D. Raisinghania, Ordinary and Partial Differential Equations, S. Chand.
3. G.F. Simmons, Differential Equations with Applications and Historical Notes, Taylor's and Francis.
4. S. S. Sastry, Introductory Methods of Numerical Analysis, PHI.
5. K. Atkinson, W.Han and D Stewart, Numerical Solution of Ordinary Differential Equations, Wiley.

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USMT P03 / UAMT P03: Practicals

Suggested Practicals for USMT 301/ UAMT 301

1. Examples of convergent / divergent series and algebra of convergent series.
2. Tests for convergence of series.
3. Calculation of upper sum, lower sum and Riemann integral.
4. Problems on properties of Riemann integral.
5. Problems on fundamental theorem of calculus, mean value theorems, integration by parts, Leibnitz rule.
6. Convergence of improper integrals, different tests for convergence. Beta Gamma Functions.
7. Miscellaneous Theoretical Questions based on full paper.

Suggested Practicals for USMT302 / UAMT 302

1. Systems of homogeneous and non-homogeneous linear equations.
2. Elementary row/column operations and Elementary matrices.
3. Vector spaces, Subspaces.
4. Linear Dependence/independence, Basis, Dimension.
5. Determinant and Rank of a matrix.
6. Solution to a system of linear equations, LU decomposition
7. Miscellaneous Theory Questions.
8. Miscellaneous theory questions from units I, II and III.

Suggested Practicals For USMT 303

1. Finding the general solution of homogeneous and non-homogeneous higher order linear differential equations.
2. Solving higher order linear differential equations using method of undetermined coefficients and method of variation of parameters.
3. Solving a system of first order linear ODES have auxiliary equations with real and complex roots.
4. Finding the numerical solution of initial value problems using Taylor's series method, Picard's method, modified Euler's method, Runge-Kutta method of fourth order and calculating their accuracy.
5. Finding the numerical solution of simultaneous ordinary differential equation using fourth order Runge-Kutta method.
6. Finding the numerical solution of two point linear boundary value problem using Finite difference method.

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Semester-IV

Note: Unless indicated otherwise, proofs of the results mentioned in the syllabus should be covered.

USMT 401/ UAMT 401: Multivariable Calculus I

UNIT I. Functions of Several Variables (15 Lectures)

1. Review of vectors in $\mathbb{R}^n$ [with emphasis on $\mathbb{R}^2$ and $\mathbb{R}^3$] and basic notions such as addition and scalar multiplication, inner product, length (norm), and distance between two points.

2. Real-valued functions of several variables (Scalar fields). Graph of a function. Level sets (level curves, level surfaces, etc). Examples. Vector valued functions of several variables (Vector fields). Component functions. Examples.

3. Sequences, Limits and Continuity: Sequence in $\mathbb{R}^n$ [with emphasis on $\mathbb{R}^2$ and $\mathbb{R}^3$] and their limits. Neighbourhoods in $\mathbb{R}^n$. Limits and continuity of scalar fields. Composition of continuous functions. Sequential characterizations. Algebra of limits and continuity (Results with proofs). Iterated limits.
   Limits and continuity of vector fields. Algebra of limits and continuity vector fields. (without proofs).

4. Partial and Directional Derivatives of scalar fields: Definitions of partial derivative and directional derivative of scalar fields (with emphasis on $\mathbb{R}^2$ and $\mathbb{R}^3$). Mean Value Theorem of scalar fields.

UNIT II. Differentiation of Scalar Fields (15 Lectures)

1. Differentiability of scalar fields (in terms of linear transformation). The concept of (total) derivative. Uniqueness of total derivative of a differentiable function at a point. Examples of functions of two or three variables. Increment Theorem. Basic properties including (i) continuity at a point of differentiability, (ii)existence of partial derivatives at a point of differentiability, and (iii) differentiability when the partial derivatives exist and are continuous.

2. Gradient. Relation between total derivative and gradient of a function. Chain rule. Geometric properties of gradient. Tangent planes.

3. Euler's Theorem.

4. Higher order partial derivatives. Mixed Partial Theorem (n=2).

UNIT III. Applications of Differentiation of Scalar Fields and Differentiation of Vector Fields (15 lectures)

1. Applications of Differentiation of Scalar Fields: The maximum and minimum rate of change of scalar fields. Taylor's Theorem for twice continuously differentiable functions. Notions of local maxima, local minima and saddle points. First Derivative Test. Examples. Hessian matrix. Second Derivative Test for functions of two variables. Examples. Method of Lagrange Multipliers.

2. Differentiation of Vector Fields: Differentiability and the notion of (total) derivative. Differentiability of a vector field implies continuity, Jacobian matrix. Relationship between total derivative and Jacobian matrix. The chain rule for derivative of vector fields (statements only).

Reference books

1. T. Apostol; Calculus, Vol. 2 (Second Edition); John Wiley.
2. Sudhir Ghorpade, Balmohan Limaye; A Course in Multivariable Calculus and Analysis (Second Edition); Springer.
3. Walter Rudin; Principles of Mathematical Analysis; McGraw-Hill, Inc.
4. J. E. Marsden, A.J. Tromba and A. Weinstein, Basic Multivariable Calculus; Springer.
5. D.Somasundaram and B.Choudhary; A First Course in Mathematical Analysis, Narosa, New Delhi, 1996.
6. K. Stewart; Calculus; Booke/Cole Publishing Co, 1994.

Additional Reference Books

1. Calculus and Analytic Geometry, G.B. Thomas and R. L. Finney, (Ninth Edition); Addison-Wesley, 1998.
2. Howard Anton; Calculus- A new Horizon,(Sixth Edition); John Wiley and Sons Inc, 1999.
3. S L Gupta and Nisha Rani; Principles of Real Analysis; Vikas Publishing house PVT LTD.
4. Shabanov, Sergei; Concepts in Calculus, III: Multivariable Calculus; University Press of Florida, 2012.
5. S C Malik and Savita Arora; Mathematical Analysis; New Age International Publishers.

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USMT402/UAMT402: Linear Algebra II

UNIT I. Linear Transformations

1. Definition of a linear transformation of vector spaces; elementary properties. Examples. Sums and scalar multiples of linear transformations. Composites of linear transformations. A Linear transformation of $V \longrightarrow W$, where V, W are vector spaces over $\mathbb{R}$ and V is a finite-dimensional vector space is completely determined by its action on an ordered basis of V.
2. Null-space (kernel) and the image (range) of a linear transformation. Nullity and rank of a linear transformation. Rank-Nullity Theorem (Fundamental Theorem of Homomorphisms).
3. Matrix associated with linear transformation of $V \longrightarrow W$ where V and W are finite dimensional vector spaces over $\mathbb{R}$.. Matrix of the composite of two linear transformations. Invertible linear transformations (isomorphisms), Linear operator, Effect of change of bases on matrices of linear operator.

4. Equivalence of the rank of a matrix and the rank of the associated linear transformation. Similar matrices.

UNIT II. Inner Products and Orthogonality

1. Inner product spaces (over $\mathbb{R}$). Examples, including the Euclidean space $\mathbb{R}^n$ and the space of real valued continuous functions on a closed and bounded interval. Norm associated to an inner product. Cauchy-Schwarz inequality. Triangle inequality.

2. Angle between two vectors. Orthogonality of vectors. Pythagoras theorem and some geometric applications in $\mathbb{R}^2$. Orthogonal sets, Orthonormal sets. Gram-Schmidt orthogonalizaton process. Orthogonal basis and orthonormal basis for a finite-dimensional inner product space.

3. Orthogonal complement of any set of vectors in an inner product space. Orthogonal complement of a set is a vector subspace of the inner product space. Orthogonal decomposition of an inner product space with respect to its subspace. Orthogonal projection of a vector onto a line (one dimensional subspace). Orthogonal projection of an inner product space onto its subspace.

UNIT III. Eigenvalues, Eigenvectors and Diagonalisation

1. Eigenvalues and eigenvectors of a linear transformation of a vector space into itself and of square matrices. The eigenvectors corresponding to distinct eigenvalues of a linear transformation are linearly independent. Eigen spaces. Algebraic and geometric multiplicity of an eigenvalue.

2. Characteristic polynomial. Properties of characteristic polynomials (only statements). Examples. Cayley-Hamilton Theorem. Applications.

3. Invariance of the characteristic polynomial and eigenvalues of similar matrices.

4. Diagonalisable matrix. A real square matrix A is diagonalisable if and only if there is a basis of $\mathbb{R}^n$ consisting of eigenvectors of A. (Statement only - $A_{n\times n}$ is diagonalisable if and only if sum of algebraic multiplicities is equal to sum of geometric multiplicities of all the eigenvalues of $A = n$). Procedure for diagonalising a matrix.

5. Spectral Theorem for Real Symmetric Matrices (Statement only). Examples of orthogonal diagonalisation of real symmetric matrices. Applications to quadratic forms and classification of conic sections.

Reference books

1. Howard Anton, Chris Rorres; Elementary Linear Algebra; Wiley Student Edition).

2. Serge Lang; Introduction to Linear Algebra; Springer.

3. S Kumaresan; Linear Algebra - A Geometric Approach; PHI Learning.

4. Sheldon Axler; Linear Algebra done right; Springer.

5. Gareth Williams; Linear Algebra with Applications; Jones and Bartlett Publishers.

6. David W. Lewis; Matrix theory.

USMT403A: Numerical Methods (Elective A)

Unit I. Solution of Algebraic and Transcendental Equations (15L)

1. Measures of Errors: Relative, absolute and percentage errors, Accuracy and precision: Accuracy to n decimal places, accuracy to n significant digits or significant figures, Rounding and Chopping of a number, Types of Errors: Inherent error, Round-off error and Truncation error.

2. Iteration methods based on first degree equation: Newton-Raphson method. Secant method. Regula-Falsi method.
   Derivations and geometrical interpretation and rate of convergence of all above methods to be covered.

3. General Iteration method: Fixed point iteration method.

Unit II. Interpolation, Curve fitting, Numerical Integration(15L)

1. Interpolation: Lagrange's Interpolation. Finite difference operators: Forward Difference operator, Backward Difference operator. Shift operator. Newton's forward difference interpolation formula. Newton's backward difference interpolation formula.
   Derivations of all above methods to be covered.

2. Curve fitting: linear curve fitting. Quadratic curve fitting.

3. Numerical Integration: Trapezoidal Rule. Simpson's 1/3 rd Rule. Simpson's 3/8th Rule. Derivations all the above three rules to be covered.

Unit III. Solution Linear Systems of Equations, Eigenvalue problems(15L)

1. Linear Systems of Equations: LU Decomposition Method (Dolittle's Method and Crout's Method). Gauss-Seidel Iterative method.

2. Eigenvalue problems: Jacobi's method for symmetric matrices. Rutishauser method for arbitrary matrices.

Reference Books:

1. Kendall E. and Atkinson; An Introduction to Numerical Analysis; Wiley.

2. M. K. Jain, S. R. K. Iyengar and R. K. Jain; Numerical Methods for Scientific and Engineering Computation; New Age International Publications.

3. S. Sastry; Introductory methods of Numerical Analysis; PHI Learning.

4. An introduction to Scilab-Cse iitb.

Additional Reference Books

1. S.D. Comte and Carl de Boor; Elementary Numerical Analysis, An algorithmic approach; McGrawHillll International Book Company.

2. Hildebrand F.B.; Introduction to Numerical Analysis; Dover Publication, NY.

3. Scarborough James B.; Numerical Mathematical Analysis; Oxford University Press, New Delhi.

USMT403B Statistical Methods and their Applications (Elective B)

Unit I. Descriptive Statistics and random variables (15 Lectures)
Measures of location (mean, median, mode), Partition values and their graphical locations, measures of dispersion, skewness and kurtosis, Exploratory Data Analysis (Five number summary, Box Plot, Outliers), Random Variables (discrete and continuous), Expectation and variance of a random variable.

Unit II. Probability Distributions and Correlation (15 Lectures)
Discrete Probability Distribution (Binomial, Poisson), Continuous Probability Distribution: (Uniform, Normal), Correlation, Karl Pearson's Coefficient of Correlation, Concept of linear Regression, Fitting of a straight line and curve to the given data by the method of least squares, relation between correlation coefficient and regression coefficients.

Unit III. Inferential Statistics (15 lectures)
Population and sample, parameter and statistic, sampling distribution of Sample mean and Sample Variance, concept of statistical hypothesis, critical region, level of significance, confidence interval and two types of errors, Tests of significance (t-test, Z-test, F-test, Chi-Square Test (only applications))

Reference Books

1. Fundamentals of Mathematical Statistics,12th Edition, S. C. Gupta and V. K. Kapoor,Sultan Chand & Sons, 2020.

2. Statistics for Business and Economics, 11th Edition, David R. Anderson, Dennis J. Sweeney and Thomas A. Williams, Cengage Learning, 2011.

3. Introductory Statistics, 8th Edition, Prem S. Mann, John Wiley & Sons Inc., 2013.

4. A First Course in Statistics, 12th Edition, James McClave and Terry Sincich, Pearson Education Limited, 2018.

5. Introductory Statistics, Barbara Illowsky, Susan Dean and Laurel Chiappetta, OpenStax, 2013.

6. Hands-On Programming with R, Garrett Grolemund, O'Reilly.

USMT P04 / UAMT P04: Practicals

Suggested Practical for USMT 401/ UAMT 401

1. Limits and continuity of scalar fields and vector fields, using "definition and otherwise" , iterated limits.
2. Computing directional derivatives, partial derivatives and mean value theorem of scalar fields.
3. Differentiability of scalar field,Total derivative, gradient, level sets and tangent planes.
4. Chain rule, higher order derivatives and mixed partial derivatives of scalar fields.
5. Maximum and minimum rate of change of scalar fields. Taylor's Theorem. Finding Hessian/Jacobean matrix. Differentiation of a vector field at a point. Chain Rule for vector fields.
6. Finding maxima, minima and saddle points. Second derivative test for extrema of functions of two variables and method of Lagrange multipliers.
7. Miscellaneous Theoretical Questions based on full paper.

Suggested Practicals for USMT402/UAMT 402

1. Linear transformation, Kernel, Rank-Nullity Theorem.
2. Linear Isomorphism, Matrix associated with Linear transformations.
3. Inner product and properties, Projection, Orthogonal complements.
4. Orthogonal, orthonormal sets, Gram-Schmidt orthogonalisation
5. Eigenvalues, Eigenvectors, Characteristic polynomial. Applications of Cayley Hamilton Theorem.
6. Diagonalisation of matrix, orthogonal diagonalisation of symmetric matrix and application to quadratic form.
7. Miscellaneous Theoretical Questions based on full paper.

Suggested Practicals for USMT403A

The Practical no. 1 to 6 should be performed either using non-programable scientific calculators or by using the software Scilab.

1. Newton-Raphson method, Secant method.
2. Regula-Falsi method, Iteration Method..
3. Interpolating polynomial by Lagrange's Interpolation, Newton forward and backward difference Interpolation.
4. Curve fitting, Trapezoidal Rule, Simpson's 1/3rd Rule, Simpson's 3/8th Rule.
5. LU decomposition method, Gauss-Seidel Interative method.

6. Jacobi's method, Rutishauser method..
7. Miscellaneous theoretical questions from all units.

Suggested Practicals for USMT403B
All practicals should be performed using any one of the following softwares: MS Excel, R, Strata, SPSS, Sage Math to carry out data analysis and computations.

1. Descriptive Statistics.
2. Random Variables.
3. Probability Distributions.
4. Correlation and Regression.
5. Testing of hypothesis.
6. Case studies.
7. Miscellaneous Theory questions based on Unit I,II,III.

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Scheme of Examination (75:25)

The performance of the learners shall be evaluated into two parts.

- Internal Assessment of 25 percent marks.
- Semester End Examinations of 75 percent marks.

I. **Internal Evaluation of 25 Marks:**

S.Y.B.Sc. :

(i) One class Test of 20 marks to be conducted during Practical session.
Paper pattern of the Test:
Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).
Q2: Multiple choice 5 questions. (10 Marks: 5×2)
Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

(ii) Active participation in routine class: 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

S.Y.B.A. :

(i) One class Test of 20 marks to be conducted during Tutorial session.
Paper pattern of the Test:
Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).

Q2: Multiple choice 5 questions. (10 Marks: 5×2)

Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

(ii) Journal : 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

II. **Semester End Theory Examinations :** There will be a Semester-end external Theory examination of 75 marks for each of the courses USMT301/UAMT301, USMT/USAT 302, USMT 303 of Semester III and USMT/UAMT401, USMT/UAMT 402, USMT 403 of semester IV to be conducted by the college.

1. Duration: The examinations shall be of 2 and $\frac{1}{2}$ hours duration.
2. Theory Question Paper Pattern:
   a) There shall be FOUR questions. The first three questions Q1, Q2, Q3 shall be of 20 marks, each based on the units I, II, III respectively. The question Q4 shall be of 15 marks based on the entire syllabus.
   b) All the questions shall be compulsory. The questions Q1, Q2, Q3, Q4 shall have internal choices within the questions. Including the choices, the marks for each question shall be 25-27.
   c) The questions Q1, Q2, Q3, Q4 may be subdivided into sub-questions as a, b, c, d & e, etc and the allocation of marks depends on the weightage of the topic.

III. **Semester End Examinations Practicals:**

At the end of the Semesters III & IV Practical examinations of three hours duration and 150 marks shall be conducted for the courses USMTP03, USMTP04.

At the end of the Semesters III & IV Practical examinations of two hours duration and 100 marks shall be conducted for the courses UAMTP03, UAMTP04.
In semester III, the Practical examinations for USMT301/UAMT301, USMT302/UAMT302 and USMT303 are held together by the college.
In Semester IV, the Practical examinations for USMT401/UAMT401, USMT402/UAMT402 and USMT403 are held together by the college.

Paper pattern: The question paper shall have two parts A and B.
Each part shall have two Sections.

Section I Objective in nature: Attempt any Eight out of Twelve multiple choice questions (04 objective questions from each unit) ($8 \times 3 = 24$ Marks).

Section II Problems: Attempt any Two out of Three (01 descriptive question from each unit) ($8 \times 2 = 16$ Marks).

Practical Course	Part A	Part B	Part C	Marks out of	duration
USMTP03	Questions from USMT301	Questions from USMT302	Questions from USMT 303	120	3 hours
UAMTP03	Questions from UAMT301	Questions from UAMT302	——	80	2 hours
USMTP04	Questions from USMT401	Questions from USMT402	Questions from USMT403	120	3 hours
UAMTP04	Questions from UAMT401	Questions from UAMT402	——	80	2 hours

Marks for Journals and Viva:
For each course USMT301/UAMT301, USMT302/UAMT302, USMT303, USMT401/UAMT401, USMT402/UAMT402, USMT3031:

1. Journal: 10 marks (5 marks for each journal).
2. Viva: 10 marks.

Each Practical of every course of Semester III and IV shall contain 10 (ten) problems out of which minimum 05 (five) have to be written in the journal. .
A student must have a certified journal before appearing for the practical examination.
In case a student does not posses a certified journal he/she will be evaluated for 120/80 marks. He/she is not qualified for Journal + Viva marks.

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Item No.--------

UNIVERSITY OF MUMBAI

Program : B.Sc./B.A.

Course : Mathematics

Syllabus for Semester: V & VI

(Choice Based and Credit System with effect from the Academic year 2022-23)

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
01	Title of the Course	T.Y.B.Sc./ B.A. Sem V & VI Mathematics
02	Eligibility for Admission	As per University Regulations
03	Passing Marks	40% (Internal 25 (10) Marks and External 75 (30) Marks)
04	Ordinances / Regulations (if any)	---
05	No. of Years / Semesters	Three Years (Six Semester) Programme Syllabus for V & VI Semester
06	Level	UG
07	Pattern	Semester
08	Status	Revised
09	To be implemented from Academic Year	From Academic Year: 2022-2023

Date: 09th May 2022

Name: Dr. Vinayak Kulkarni
Chairman of BoS of Mathematics

Name: Dr. Anuradha Majumdar
Dean, Science and Technology

Dean (Science and Technology)

Prof. Anuradha Majumdar (Dean, Science and Technology)

Prof. Shivram Garje (Associate Dean, Science)

Chairperson Board of Studies of Mathematics

Prof. Vinayak Kulkarni

Members of the Board of Studies of Mathematics

Prof. R. M. Pawale

Prof. P. Veeramani

Prof. S. R. Ghorpade

Prof. Ajit Diwan

Dr. S. Aggarwal

Dr. Amul Desai

Dr. S. A. Shende

Dr. Shridhar Pawar

Dr. Sanjeevani Gharge

Dr. Abhaya Chitre

Dr. Mittu Bhattacharya

Dr. Sushil Kulkarni

Dr. Rajiv Sapre

CONTENTS

1. Preamble

The University of Mumbai has brought into force the revised syllabi as per the Choice Based Credit System (CBCS) for the Third year B. Sc / B. A. Programme in Mathematics from the academic year 2022-2023. Mathematics has been fundamental to the development of science and technology. In recent decades, the extent of application of Mathematics to real world problems has increased by leaps and bounds. Taking into consideration the rapid changes in science and technology and new approaches in different areas of mathematics and related subjects like Physics, Statistics and Computer Sciences, the board of studies in Mathematics with concern of teachers of Mathematics from different colleges affiliated to University of Mumbai has prepared the syllabus of T.Y.B. Sc. / T. Y. B. A. Mathematics. The present syllabi of T. Y. B. Sc. for Semester V and Semester VI has been designed as per U. G. C. Model curriculum so that the students learn Mathematics needed for these branches, learn basic concepts of Mathematics and are exposed to rigorous methods gently and slowly. The syllabi of T. Y. B. Sc. / T. Y. B. A. would consist of two semesters and each semester would comprise of four courses and two practical courses for T. Y. B. Sc / T.Y.B.A. Mathematics.

2. Aims and Objectives:

(i) Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerous power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.

(ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.

(iii) Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

(iv) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

3. Programme Outcomes:

(i) Enabling students to develop positive attitude towards mathematics as an interesting and valuable subject

(ii) Enhancing students overall development and to equip them with mathematical modeling, abilities, problem solving skills, creative talent and power of communication.

(iii) Acquire good knowledge and understanding in advanced areas of mathematics and physics.

4. Course outcomes:

(i) **Multivariable Calculus II (Sem V):** In this course students will learn the basic ideas, tools and techniques of integral calculus and use them to solve problems from real-life applications including science and engineering problems involving areas, volumes, centroid, Moments of mass and center of mass Moments of inertia. Examine vector fields and define and evaluate line integrals using the Fundamental Theorem of Line Integrals and Green's Theorem; compute arc length.

(ii) **Complex Analysis (Sem VI):** Students Analyze sequences and series of analytic functions and types of convergence, Students will also be able to evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula, they will also be able to represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem.

(iii) **Group Theory, Ring Theory (Sem V, Sem VI)** Students will have a working knowledge of important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element, rings, Euclidean domain, Principal ideal domain and Unique factorization domain. Students will also understand the connection and transition between previously studied mathematics and more advanced mathematics. The students will actively participate in the transition of important concepts such homomorphisms & isomorphisms from discrete mathematics to advanced abstract mathematics.

(iv) **Topology of metric spaces (Sem V), Topology of metric spaces and real analysis (Sem VI):**
This course introduces students to the idea of metric spaces. It extends the ideas of open sets, closed sets and continuity to the more general setting of metric spaces along with concepts such as compactness and connectedness. Convergence concepts of sequences and series of functions, power series are also dealt with. Formal proofs are given a lot of emphasis in this course. This course serves as a foundation to advanced courses in analysis. Apart from understanding the concepts introduced, the treatment of this course will enable the learner to explain their reasoning about analysis with clarity and rigour.

(v) **Partial Differential equations (Sem V: Paper IV: Elective A):**

a. Students will able to understand the various analytical methods for solving first order partial differential equations.
b. Students will able to understand the classification of first order partial differential equations.
c. Students will able to grasp the linear and non linear partial differential equations.

(vi) **Integral Transforms (Sem VI: Paper IV- Elective A):**

a. Students will able to understand the concept of integral transforms and their corresponding inversion techniques.
b. Students will able to understand the various applications of integral transforms.

(vii) **Number Theory and its applications I and II (Sem V, Sem VI):**
The student will be able to

a. Identify and apply various properties of and relating to the integers including primes, unique factorization, the division algorithm, and greatest common divisors.
b. Understand the concept of a congruence and use various results related to congruences including the Chinese Remainder Theorem. Investigate Pseudo-primes , Carmichael number, primitive roots.
c. Identify how number theory is related to and used in cryptography. Learn to encrypt and decrypt a message using character ciphers. Learn to encrypt and decrypt a message using Public-Key cryptology.
d. Express a rational number as a finite continued fraction and hence solve a linear diophantine equation. Express a given repeated continued fraction in terms of a surd. Expand a surd as an infinite continued fraction and hence find a convergent which is an approximation to the given surd to a given degree of accuracy .Solve a Pell equation from a continued fraction expansion
e. Solve certain types of Diophantine equations. Represent a Primitive Pythagorean Triples with a unique pair of relatively prime integers.
f. Identify certain number theoretic functions and their properties. Investigate perfect numbers and Mersenne prime numbers and their connection. Explore the use of arithmetical functions, the Mobius function, and the Euler function.

(viii) **Graph Theory (Sem V: Paper IV- Elective C)**
Upon successful completion of Graph Theory course, a student will be able to:

a. Demonstrate the knowledge of fundamental concepts in graph theory, including properties and characterization of graphs and trees.
b. Describe knowledgeably special classes of graphs that arise frequently in graph theory
c. Describe the concept of isomorphic graphs and isomorphism invariant properties of graphs
d. Describe and apply the relationship between the properties of a matrix representation of a graph and the structure of the underlying graph
e. Demonstrate different types of algorithms including Dijkstra's, BFS, DFS, MST and Huffman coding.
f. Understand the concept of Eulerian graphs and Hamiltonian graphs.
g. Describe real-world applications of graph theory.

(ix) **Graph Theory and Combinatorics (Sem VI: Paper IV -Elective C)**

a. Understand and apply the basic concepts of graph theory, including colouring of graph, to find chromatic number and chromatic polynomials for graphs
b. Understand the concept of vertex connectivity, edge connectivity in graphs and Whitney's theorem on 2-vertex connected graphs.
c. Derive some properties of planarity and Euler's formula, develop the under-standing of Geometric duals in Planar Graphs
d. Know the applications of graph theory to network flows theory.
e. Understand different applications of system of distinct representative and matching theory.
f. Use permutations and combinations to solve counting problems with sets and multisets.
g. Set up and solve a linear recurrence relation and apply the inclusion/exclusion principle.
h. Compute a generating function and apply them to combinatorial problems.

(x) **Basic concepts of probability and random variables (Sem V: Paper IV: Elective D)**
Students will be able to understand the role of random variables in the statistical analysis and use them to apply in the various probability distributions including Binomial distribution, Poisson distribution and Normal distribution. Moreover students will able to apply the concepts of expectations and moments for the evaluation of various statistical measures

(xi) **Operations research (Sem VI: Paper IV: Elective D)**
Students should able to formulate linear programming problem and apply the graphical and simplex method for their feasible solution. Moreover students should understand various alternative operation research techniques for the feasible solution of LPP.

(5) Course structure with minimum credits and Lectures/ Week

SEMESTER V

Course Code	UNIT	TOPICS	Credits	L/Week
Multivariable Calculus II				
USMT 501, UAMT 501	I	Multiple Integrals	2.5	3
	II	Line Integrals		
	III	Surface Integrals		
Group Theory				
USMT 502 ,UAMT 502	I	Groups and Subgroups	2.5	3
	II	Normal subgroups, Direct products and Cayley's theorem		
	III	Cyclic Groups and Cyclic Subgroups Homomorphism		
Topology of Metric Spaces				
USMT 503, UAMT503	I	Metric spaces	2.5	3
	II	Sequences and Complete metric spaces		
	III	Compact Spaces		
Partial Differential Equations(Elective A)				
USMT5A4 ,UAMT 5A4	I	First Order Partial Differential Equations.	2.5	3
	II	Compatible system of first order PDE		
	III	Quasi-Linear PDE		
Number Theory and Its applications I (Elective B)				
USMT5B4 ,UAMT 5B4	I	Congruences and Factorization	2.5	3
	II	Diophantine equations and their & solutions		
	III	Primitive Roots and Cryptography		
Graph Theory (Elective C)				
USMT5C4 ,UAMT 5C4	I	Basics of Graphs	2.5	3
	II	Trees		
	III	Eulerian and Hamiltonian graphs		
Basic Concepts of Probability and Random Variables (Elective D)				
USMT5D4 ,UAMT 5D4	I	Basic Concepts of Probability and Random Variables	2.5	3
	II	Properties of Distribution function, Joint Density function		
	III	Weak Law of Large Numbers		
PRACTICALS				
USMTP05/UAMTP05		Practicals based on USMT501/UAMT 501 and USMT 502/UAMT 502	3	6
USMTP06/UAMTP06		Practicals based on USMT503/ UAMT 503 and USMT5A4/ UAMT 5A4 OR USMT5B4/ UAMT 5B4 OR USMT5C4/ UAMT 5C4 OR USMT5D4/ UAMT 5D4	3	6

SEMESTER VI

BASIC COMPLEX ANALYSIS				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 601, UAMT 601	I	Introduction to Complex Analysis	2.5	3
	II	Cauchy Integral Formula		
	III	Complex power series, Laurent series and isolated singularities		
Ring Theory				
USMT 602 ,UAMT 602	I	Rings	2.5	3
	II	Ideals and special rings		
	III	Factorization		
Topology of Metric Spaces and Real Analysis				
USMT 603 / UAMT 603	I	Continuous functions on Metric spaces	2.5	3
	II	Connected sets		
	III	Sequences and series of functions		
Integral Transforms(Elective A)				
USMT6A4 ,UAMT 6A4	I	The Laplace Transform	2.5	3
	II	The Fourier Transform		
	III	Applications of Integral Transforms		
Number Theory and Its applications II (Elective B)				
USMT6B4 ,UAMT 6B4	I	Quadratic Reciprocity	2.5	3
	II	Continued Fractions		
	III	Pell's equation, Arithmetic function & and Special numbers		
Graph Theory and Combinatorics (Elective C)				
USMT6C4 ,UAMT 6C4	I	Colourings of Graphs	2.5	3
	II	Planar graph		
	III	Combinatorics		
Operations Research (Elective D)				
USMT6D4 ,UAMT 6D4	I	Basic Concepts of Probability and Linear Programming I	2.5	3
	II	Linear Programming II		
	III	Queuing Systems		
PRACTICALS				
USMTP07/ UAMTP07		Practicals based on USMT601/UAMT 601 and USMT 602/UAMT 602	3	6
USMTP08/UAMTP08		Practicals based on USMT603/ UAMT 603 and USMT6A4/ UAMT 6A4 OR USMT6B4/ UAMT 6B4 OR USMT6C4/ UAMT 6C4 OR USMT6D4/ UAMT 6D4	3	6

Note:

i . USMT501/UAMT501, USMT502/UAMT502, USMT503/UAMT503 are compulsory courses for Semester V.

ii . Candidate has to opt one Elective Course from USMT5A4/UAMT5A4, USMT5B4/UAMT5B4, USMT5C4/UAMT5C4 and USMT5D4/UAMT5D4 for Semester V.

iii . USMT601/UAMT601, USMT602/UAMT602, USMT603/UAMT603 are compulsory courses for Semester VI.

iv . Candidate has to opt one Elective Course from USMT6A4/UAMT6A4, USMT6B4/UAMT6B4, USMT6C4/UAMT6C4 and USMT6D4/UAMT6D4 for Semester VI.

v . Passing in theory and practical and internal exam shall be separate.

(6) Teaching Pattern for T.Y.B.Sc/B.A.

i. Three lectures per week per course (1 lecture/period is of 48 minutes duration).

ii. One practical of three periods per week per course (1 lecture/period is of 48 minutes duration).

(7)Consolidated Syllabus for semester V & VI

SEMESTER V
MULTIVARIABLE CALCULUS II
Course Code: USMT501/UAMT501

ALL Results have to be done with proof unless otherwise stated.

Unit I: Multiple Integrals (15L)

Definition of double (resp: triple) integral of a function and bounded on a rectangle (resp:box). Geometric interpretation as area and volume. Fubini's Theorem over rectangles and any closed bounded sets, Iterated Integrals. Following basic properties of double and triple integrals proved using the Fubini's theorem:

(1) Integrability of the sums, scalar multiples, products, and (under suitable conditions) quotients of integrable functions. Formulae for the integrals of sums and scalar multiples of integrable functions.

(2) Integrability of continuous functions. More generally, Integrability of functions with a "small" set of (Here, the notion of "small sets" should include finite unions of graphs of continuous functions.)

(3) Domain additivity of the integral. Integrability and the integral over arbitrary bounded domains. Change of variables formula (Statement only).Polar, cylindrical and spherical coordinates, and integration using these coordinates. Differentiation under the integral sign. Applications to finding the center of gravity and moments of inertia.

Unit II: Line Integrals (15L)

Review of Scalar and Vector fields on $\mathbb{R}^n$, Vector Differential Operators, Gradient, Curl, Divergence.
Paths (parametrized curves) in $\mathbb{R}^n$ (emphasis on $\mathbb{R}^2$ and $\mathbb{R}^3$), Smooth and piecewise smooth paths. Closed paths. Equivalence and orientation preserving equivalence of paths. Definition of the line integral of a vector field over a piecewise smooth path. Basic properties of line integrals including linearity, path-additivity and behaviour under a change of parameters. Examples.
Line integrals of the gradient vector field, Fundamental Theorem of Calculus for Line Integrals, Necessary and sufficient conditions for a vector field to be conservative. Green's Theorem (proof in the case of rectangular domains). Applications to evaluation of line integrals.

Unit III: Surface Integrals (15 L)

Parameterized surfaces. Smoothly equivalent parameterizations. Area of such surfaces.
Definition of surface integrals of scalar-valued functions as well as of vector fields defined on a surface. Curl and divergence of a vector field. Elementary identities involving gradient, curl and divergence. Stoke's Theorem (proof assuming the general from of Green's Theorem). Examples.
Gauss' Divergence Theorem (proof only in the case of cubical domains). Examples.
Reference Books:

1. Tom M. Apostol; Calculus, Vol. 2; Second Ed., John Wiley, New York, 1969 Section 1.1 to 11.8.

2. James Stewart; Calculus with early transcendental Functions; Cengage Learning India; Section 16.5 to 16.9

3. Marsden and Jerrold E. Tromba; Vector Calculus; Fourth Ed., W.H. Freeman and Co., New York, 1996 Section 6.2 to 6.4.

Other References :

1. Richard Courant and Fritz John; Introduction to Calculus and Analysis; Vol.2, Springer Verlag, New York, 1989.

2. Wendell Fleming; Functions of Several Variables; Second Ed., Springer-Verlag, New York, 1977.

3. Murray Protter and Charles Morrey Jr.; Intermediate Calculus; Second Ed., Springer-Verlag, New York, 1995.

4. George Thomas and Ross Finney; Calculus and Analytic Geometry; Ninth Ed. (ISE Reprint), Addison- Wesley, Reading Mass, 1998.

5. David Widder; Advanced Calculus; Second Ed., Dover Pub., New York. 1989.

Course: Group Theory
Course Code: USMT502/UAMT502

Unit I: Groups and Subgroups (15L)

(1) Definition and elementary properties of a group. Order of a group. Subgroups. Criterion for a subset to be a subgroup. Abelian groups. Center of a group. Homomorphisms and isomorphisms.

(2) Examples of groups including $\mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$, Klein 4-group, symmetric and alternating groups, S^1(= the unit circle in $\mathbb{C}$), $\mathrm{GL}_n(\mathbb{R}), \mathrm{SL}_n(\mathbb{R}), \mathrm{O}_n$ (= the group of $n \times n$ nonsingular upper triangular matrices), B_n (= the group of $n \times n$ nonsingular upper triangular matrices), and groups of symmetries of plane figures.

(3) Order of an element. Subgroup generated by a subset of the group.

Unit II: Normal subgroups, Direct products and Cayley's Theorem (15L)

(1) Cosets of a subgroup in a group. Lagrange's Theorem. Normal subgroups. Alternating group A_n. Listing normal subgroups of A_4, S_3. Quotient (or Factor) groups. Fundamental Theorem of homomorphisms of groups.

(2) External direct products of groups. Examples. Relation with internal products such as HK of subgroups H, K of a group.

(3) Cayley's Theorem for finite groups.

Unit III: Cyclic groups and cyclic subgroups (15L)

(1) Examples of cyclic groups such as $\mathbb{Z}$ and the group μ_n of the $n-$th roots of unity. Properties of cyclic groups and cyclic subgroups.

(2) Finite cyclic groups, infinite cyclic groups and their generators. Properties of generators.

(3) The group $\mathbb{Z}/n\mathbb{Z}$ of residue classes (mod n). Characterization of cyclic groups (as being isomorphic to $\mathbb{Z}$ or $\mathbb{Z}/n\mathbb{Z}$ for some $n \in \mathbb{N}$).

Recommended Books.

1. Israel Herstein; Topics in Algebra; Second edition, Wiley Eastern Limited.
2. P. B. Bhattacharya, S.K. Jain, S. Nagpaul; Abstract Algebra; Second edition, Foundation Books, New Delhi, 1995.
3. N. S. Gopalkrishnan, University Algebra, Wiley Eastern Limited.
4. Michael Artin; Algebra; Prentice Hall of India, New Delhi.
5. John Fraleigh; A first course in Abstract Algebra; third edition, Narosa, New Delhi.
6. Joseph Gallian; Contemporary Abstract Algebra; Narosa, New Delhi.

Additional Reference Books

1. Thomas Hungerford; Algebra; Springer.
2. David Dummit; Richard Foote; Abstract Algebra; John Wiley & Sons, Inc.
3. L.S. Luthar and I.B.S. Passi, Algebra. Vol. I and II, Narosa.

Course: Topology of Metric Spaces
Course Code: USMT503/UAMT503

Unit I: Metric spaces (15 L)
Definition and examples of metric spaces such as $\mathbb{R}, \mathbb{R}^2$, $\mathbb{R}^n$ with its Euclidean, sup and sum metrics. $\mathbb{C}$ (complex numbers). l^1 and l^2 spaces of sequences. $C[a, b]$ the space of real valued continuous functions on $[a, b]$. Discrete metric space. Metric induced by the norm. Translation invariance of the metric induced by the norm. Metric subspaces. Product of two metric spaces. Open balls and open sets in a metric space. Examples of open sets in various metric spaces. Hausdorff property. Interior of a set. Properties of open sets. Structure of an open set in $\mathbb{R}$. Equivalent metrics.
Distance of a point from a set, Distance between sets. Diameter of a set. Bounded sets. Closed balls. Closed sets. Examples. Limit point of a set. Isolated point. Closure of a set. Boundary of a set.

Unit II: Sequences and Complete metric spaces (15L)
Sequences in a metric space. Convergent sequence in metric space. Cauchy sequence in a metric space. Subsequences. Examples of convergent and Cauchy sequences in different metric spaces. Characterization of limit points and closure points in terms of sequences. Definition and examples of relative openness/closeness in subspaces. Dense subsets in a metric space and Separability. Definition of complete metric spaces. Examples of complete metric spaces. Completeness property in subspaces. Nested Interval theorem in $\mathbb{R}$. Cantor's Intersection Theorem. Applications of Cantors Intersection Theorem:

(i) The set of real Numbers is uncountable.

(ii) Density of rational Numbers.

(iii) Intermediate Value theorem.

Unit III: Compact spaces (15L)
Definition of a compact metric space using open cover. Examples of compact sets in different metric spaces such as $\mathbb{R}, \mathbb{R}^2, \mathbb{R}^n$ with Euclidean metric. Properties of compact sets: A compact set is closed and bounded, (Converse is not true). Every infinite bounded subset of compact metric space has a limit point. A closed subset of a compact set is compact. Union and Intersection of Compact sets.
Equivalent statements for compact sets in $\mathbb{R}$ with usual metric:

(i) Sequentially compactness property.

(ii) Heine-Borel property.

(iii) Closed and boundedness property.

(iv) Bolzano-Weierstrass property.

Reference books:

1. S. Kumaresan; Topology of Metric spaces; second edition, Narosa.
2. Edward Copson; Metric Spaces; Universal Book Stall, New Delhi, 1996.
3. Pawan K. Jain, Khalil Ahmad ; Metric Spaces; Narosa, New Delhi, 1996.

Other references :

1. Tom Apostol; Mathematical Analysis, Second edition, Narosa, New Delhi, 1974
2. Richard Goldberg; Methods of Real Analysis; Oxford & IBH Publishing Co Pvt.Ltd.
3. Dhananjay Gopal, Anirudha Deshmukh, Abhaya Ranadive and Shubham Yadav; An Introduction to Metric Spaces; Chapman and Hall/CRC, New York, 2020.
4. Walter Rudin; Principles of Mathematical Analysis; Third Ed, McGraw-Hill, Auckland, 1976.
5. D. Somasundaram, B. Choudhary; A first Course in Mathematical Analysis; Narosa, New Delhi
6. George Simmons; Introduction to Topology and Modern Analysis; McGraw-Hi, New York, 1963.
7. Expository articles of MTTS programme.

Course: Partial Differential Equations (Elective A)
Course Code: USMT5A4/UAMT5A4

Unit I: First Order Partial Differential Equations. (15L)

Curves and Surfaces, Genesis of first order PDE, Classification of first order PDE, Classification of integrals, The Cauchy problem, Linear Equation of first order, Lagrange's equation, Pfaffian differential equations. (Ref Book: An Elementary Course in Partial Differential Equations by T. Amaranath, 2nd edition, Chapter 1: 1.1, 1.2, 1.3, Lemma 1.3.1, 1.3.2, 1.3.3, 1.4, Theorem 1.4.1, 1.4.2, 1.5, Theorem 1.5.1, Lemma 1.5.1, Theorem 1.5.2, Lemma 1.5.2 and related examples)

Unit II: Compatible system of first order Partial Differential Equations. (15L)

Definition, Necessary and sufficient condition for integrability, Charpit's method, Some standard types, Jacobi's method, The Cauchy problem. (Ref Book: An Elementary Course in Partial Differential Equations by T. Amaranath, 2nd edition, Chapter 1: 1.6, Theorem 1.6.1, 1.7, 1.8 Theorem 1.8.1, 1.9 and related examples)

Unit III: Quasi-Linear Partial Differential Equations. (15L)

Semi linear equations, Quasi-linear equations, first order quasi-linear PDE, Initial value problem for quasi-linear equation, Non linear first order PDE, Monge cone, Analytic expression for Monge's cone, Characteristics strip, Initial strip. (Ref Book: An Elementary Course in Partial Differential Equations by T. Amaranath, 2nd edition, Chapter 1: 1.10, Theorem 1.10.1, 1.11, Theorem 1.11.1, Preposition 1.11.1, 1.11.2 and related examples)

Reference Books

1. T. Amaranath; An Elementary Course in Partial Differential Equations; 2nd edition, Narosa Publishing house.

2. Ian Sneddon; Elements of Partial Differential Equations; McGraw Hill book.

3. Ravi P. Agarwal and Donal O'Regan; Ordinary and Partial Differential Equations; Springer, First Edition (2009).

4. William Elwyn Williams; Partial Differential Equations; Clarendon Press, Oxford, (1980).

5. K. Sankara Rao; Introduction to Partial Differential Equations; Third Edition, PHI.

Course: Number Theory and its applications I (Elective B)
Course Code: USMT5B4 / UAMT5B4

Unit I: Congruences and Factorization (15L)

Review of Divisibility, Primes and The fundamental theorem of Arithmetic.
Congruences : Definition and elementary properties, Complete residue system modulo m, Reduced residue system modulo m , Euler's function and its properties, Fermat's little Theorem, Euler's generalization of Fermat's little Theorem, Wilson's theorem, Linear congruence, The

Chinese remainder Theorem, Congruences of Higher degree,

Unit II: Diophantine equations and their solutions (15L)

The linear equations $ax + by = c$. The equations $x^2 + y^2 = p$, where p is a prime. The equation $x^2 + y^2 = z^2$, Pythagorean triples, primitive solutions, The equations $x^4 + y^4 = z^2$ and $x^4 + y^4 = z^4$ have no solutions $(x; y; z)$ with $xyz \neq 0$. Every positive integer n can be expressed as sum of squares of four integers, Universal quadratic forms $x^2+y^2+z^2+t^2$. Assorted examples :section 5.4 of Number theory by Niven- Zuckermann-Montgomery.

Unit III: Primitive Roots and Cryptography (15L)

Order of an integer and Primitive Roots. Basic notions such as encryption (enciphering) and decryption (deciphering), Cryptosystems, symmetric key cryptography, Simple examples such as shift cipher, Affine cipher, Hill cipher, Vigenere cipher. Concept of Public Key Cryptosystem; RSA Algorithm. An application of Primitive Roots to Cryptography.

Reference Books:

1. Ivan Niven, Herbert. Zuckerman and Hugh Montgomery; An Introduction to the Theory of Numbers; John Wiley & Sons. Inc.
2. David Burton; An Introduction to the Theory of Numbers; Tata McGrawHillll Edition.
3. Godfrey Harold Hardy and Edward Wright; An Introduction to the Theory of Numbers; Low priced edition; The English Language Book Society and Oxford University Press, 1981.
4. Neville Robins. Beginning Number Theory; Narosa Publications.
5. Sukumar Adhikarii; An introduction to Commutative Algebra and Number Theory; Narosa Publishing House.
6. Neal Koblitz; A course in Number theory and Cryptography; Springer.
7. Michael Artin; Algebra; Prentice Hall.
8. Kenneth Ireland, Michael Rosen; A classical introduction to Modern Number Theory; Second edition, Springer Verlag.
9. William Stalling; Cryptology and network security; Prentice Hall.

Course: Graph Theory (Elective C)
Course Code: USMT5C4/UAMT5C4

Unit I: Basics of Graphs (15L)

Definition of general graph, Directed and undirected graph, Simple and multiple graph, Types of graphs- Complete graph, Null graph, Complementary graphs, Regular graphs Sub graph of a graph, Vertex and Edge induced sub graphs, Spanning sub graphs. Basic terminology- degree of a vertex, Minimum and maximum degree, Walk, Trail, Circuit, Path, Cycle. Handshaking theorem and its applications, Isomorphism between the graphs and consequences of isomorphism

between the graphs, Self complementary graphs, Connected graphs, Connected components. Matrices associated with the graphs – Adjacency and Incidence matrix of a graph- properties, Bipartite graphs and characterization in terms of cycle lengths. Degree sequence and Havel-Hakimi theorem, Distance in a graph- shortest path problems, Dijkstra's algorithm.

Unit II: Trees (15L)

Cut edges and cut vertices and relevant results, Characterization of cut edge, Definition of a tree and its characterizations, Spanning tree, Recurrence relation of spanning trees and Cayley formula for spanning trees of K_n , Algorithms for spanning tree-BFS and DFS, Binary and m-ary tree, Prefix codes and Huffman coding, Weighted graphs and minimal spanning trees - Kruskal's algorithm for minimal spanning trees.

Unit III: Eulerian and Hamiltonian graphs (15L)

Eulerian graph and its characterization- Fleury's Algorithm-(Chinese postman problem), Hamiltonian graph, Necessary condition for Hamiltonian graphs using $G \setminus S$ where S is a proper subset of $V(G)$, Sufficient condition for Hamiltonian graphs- Ore's theorem and Dirac's theorem, Hamiltonian closure of a graph, Cube graphs and properties like regular, bipartite, Connected and Hamiltonian nature of cube graph, Line graph of graph and simple results.

Reference Books:

1. John Adrian Bondy, U.S.R. Murty; Graph Theory with Applications; NORfH-HOLLAND, New York, Amsterdam, Oxford.
2. Balkrishnan and Ranganathan; Graph theory and applications; Springer.
3. Douglas B. West; Introduction to Graph Theory; 2nd Ed., Pearson, 2000

Additional Reference Book:

1. Mehdi Behzad, Gary Chartrand; An Introduction to the Theory of Graphs; Allyn and Bacon.
2. Sheshayya Choudam; A first course in Graph Theory; Macmillian India Ltd-new Delhi.

Course: Basic Concepts of Probability and Random Variables (Elective D)
Course Code: USMT5D4 / UAMT5D4

Unit I: Basic Concepts of Probability and Random Variables.(15 L)

Basic Concepts: Algebra of events including countable unions and intersections, Sigma field $\mathcal{F}$, Probability measure$P$ on $\mathcal{F}$, Probability Space as a triple $(\Omega, \mathcal{F}, P)$, Properties of P including Subadditivity. Discrete Probability Space, Independence and Conditional Probability, Theorem of Total Probability. Random Variable on $(\Omega, \mathcal{F}, P)$ – Definition as a measurable function, Classification of random variables - Discrete Random variable, Probability function, Distribution function, Density function and Probability measure on Borel subsets of $\mathbb{R}$, Absolutely continuous random variable. Function of a random variable; Result on a random variable R with distribution function F to be absolutely continuous, Assume F is continuous everywhere and

has a continuous derivative at all points except possibly at finite number of points, Result on density function f_2 of R_2 where $R_2 = g(R_1), h_j$ is inverse of g over a 'suitable' subinterval $f_2(y) + \sum_{i=1}^{n} f_1(h_j(y))|h_j'(y)|$ under suitable conditions.

Reference for Unit I, Sections 1.1-1.6, 2.1-2.5 of Basic Probability theory by Robert Ash, Dover Publication, 2008.

Unit II: Properties of Distribution function, Joint Density function (15L)

Properties of distribution function F, F is non-decreasing, $\lim_{x \longrightarrow \infty} F(x) = 1$, $\lim_{x \longrightarrow -\infty} F(x) = 0$, Right continuity of F, $\lim_{x \longrightarrow x_0} F(x) = P(\{R < x_o\}, P(\{R = x_o\}) = F(x_o) - F(\overline{x_0})$. Joint distribution, Joint Density, Results on Relationship between Joint and Individual densities, Related result for Independent random variables. Examples of distributions like Binomial, Poisson and Normal distribution. Expectation and $k-$th moments of a random variable with properties.

Reference for Unit II:
Sections 2.5-2.7, 2.9, 3.2-3.3,3.6 of Basic Probability theory by Robert Ash, Dover Publication, 2008.

Unit III: Weak Law of Large Numbers

Joint Moments, Joint Central Moments, Schwarz Inequality, Bounds on Correlation Coefficient ρ ,Result on ρ as a measure of linear dependence, $\text{Var}\Big(\sum_{i=1}^{n} R_i\Big) = \sum_{i=1}^{n} Var(R_i) + 2 \sum_{i=1 \leq i < j \leq n}^{n} \text{Cov}(R_i, R_j)$, Method of Indicators to find expectation of a random variable, Chebyshev's Inequality, Weak law of Large numbers.

Reference for Unit III
Robert Ash; Basic Probability theory; Dover Publication, 2008; Sections 3.4, 3.5, 3.7, 4.1-4.4

Additional Reference Books. Marek Capinski; Probability through Problems, Springer.

Course: Practicals (Based on USMT501 / UAMT501 and USMT502 / UAMT502)
Course Code: USMTP05 / UAMTP05

Suggested Practicals (Based on USMT501 / UAMT501)

1. Evaluation of double and triple integrals.
2. Change of variables in double and triple integrals and applications
3. Line integrals of scalar and vector fields
4. Green's theorem, conservative field and applications
5. Evaluation of surface integrals
6. Stoke's and Gauss divergence theorem
7. Miscellaneous theory questions on units 1, 2 and 3.

Suggested Practicals (Based on USMT502 / UAMT502)

1. Examples of groups and groups of symmetries of equilateral triangle, square and rectangle.
2. Examples of determining centers of different groups. Examples of subgroups of various groups and orders of elements in a group.
3. Left and right cosets of a group and Lagrange's theorem.
4. Normal subgroups and quotient groups. Direct products of groups.
5. Finite cyclic groups and their generators
6. Infinite cyclic groups and their properties.
7. Miscellaneous Theory Questions

Course: Practicals (Based on USMT503 / UAMT503 and USMT5A4 OR USMT5B4 OR USMT5C4 OR USMT5D4)
Course Code: USMTP06 / UAMTP06

Suggested Practicals USMT503 / UAMT503:

1. Examples of Metric Spaces, Normed Linear Spaces,
2. Sketching of Open Balls in $\mathbb{R}^2$, Open and Closed sets, Equivalent Metrics
3. Subspaces, Interior points, Limit Points, Dense Sets and Separability, Diameter of a set, Closure.
4. Limit Points ,Sequences, Bounded sequences, Convergent and Cauchy Sequences in a Metric Space.
5. Complete Metric Spaces and Applications.
6. Examples of Compact Sets.
7. Miscellaneous Theory Questions.

Suggested Practicals on USMT5A4/UAMT5A4

1. Find general solution of Langrange's equation.
2. Show that Pfaffian differential equation are exact and find corresponding integrals.
3. Find complete integral of first order PDE using Charpit's Method.
4. Find complete integral using Jacobi's Method.
5. Solve initial value problem for quasi-linear PDE.
6. Find the integral surface by the method of characteristics.
7. Miscellaneous Theory Questions.

Suggested Practicals based on USMT5B4/UAMT5B4

1. Congruences.
2. Linear congruences and congruences of Higher degree.
3. Linear diophantine equation.
4. Pythagorean triples and sum of squares.
5. Cryptosystems (Private Key).
6. Cryptosystems (Public Key) and primitive roots.
7. Miscellaneous theoretical questions based on full USMT5B4 .

Suggested Practicals based on USMT5C4/UAMT5C4

1. Handshaking Lemma and Isomorphism.
2. Degree sequence and Dijkstra's algorithm
3. Trees, Cayley Formula
4. Applications of Trees
5. Eulerian Graphs.
6. Hamiltonian Graphs.
7. Miscellaneous Problems.

Suggested Practicals based on USMT5D4/UAMT5D4

1. Basic concepts of Probability (Algebra of events, Probability space, Probability measure, combinatorial problems)
2. Conditional Probability, Random variable (Independence of events. Definition, Classification and function of a random variable)
3. Distribution function, Joint Density function.
4. Expectation of a random variable, Normal distribution.
5. Method of Indicators, Weak law of large numbers.
6. Conditional density, Conditional expectation.
7. Miscellaneous Theoretical questions based on full paper.

SEMESTER VI
BASIC COMPLEX ANALYSIS
Course Code: USMT601/UAMT601

Unit I: Introduction to Complex Analysis (15 L)
Review of complex numbers: Complex plane, polar coordinates, exponential map, powers and roots of complex numbers, De Moivre's formula, $\mathbb{C}$ as a metric space, bounded and unbounded sets, point at infinity-extended complex plane, sketching of set in complex plane (No questions to be asked).
convergence of sequences of complex numbers and related results. Limit of a function $f : \mathbb{C} \longrightarrow \mathbb{C}$, real and imaginary part of functions, continuity at a point and algebra of continuous functions. Derivative of $f : \mathbb{C} \longrightarrow \mathbb{C}$, comparison between differentiability in real and complex sense, Cauchy-Riemann equations, sufficient conditions for differentiability, analytic function, if f, g analytic then $f + g, f - g, fg$ and f/g are analytic, chain rule.
Theorem: If $f(z) = 0$ everywhere in a domain D, then $f(z)$ must be constant throughout D.
Harmonic functions and harmonic conjugate.

Unit II: Cauchy Integral Formula (15 L)
Evaluation the line integral $\int f(z)\, dz$ over $|z - z_0| = r$ and Cauchy integral formula.
Taylor's theorem for analytic function. Mobius transformations: definition and examples.
Exponential function, its properties. trigonometric functions and hyperbolic functions.

Unit III: Complex power series, Laurent series and isolated singularities. (15 L)
Power series of complex numbers and related results. Radius of convergences, disc of convergence, uniqueness of series representation, examples.
Definition of Laurent series , Definition of isolated singularity, statement (without proof) of existence of Laurent series expansion in neighbourhood of an isolated singularity, type of isolated singularities viz. removable, pole and essential defined using Laurent series expansion, examples
Statement of Residue theorem and calculation of residue.

Reference Books:

1. James Brown, Ruel Churchill; Complex variables and Applications; Mc Graw Hill.

Other References:

1. Robert E. Greene and Steven G. Krantz, Function theory of one complex variable; American Mathematical Society.
2. Theodore W. Gamelin; Complex analysis; Springer.

Course: Ring Theory
Course Code: USMT602 / UAMT602

Unit I. Rings (15L)

(1) Definition and elementary properties of rings (where the definition should include the existence of unity), commutative rings, integral domains and fields. Examples, including $\mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{Z}/n\mathbb{Z}, \mathbb{C}, M_n(\mathbb{R}), \mathbb{Z}[i], \mathbb{Z}[\sqrt{2}], \mathbb{Z}[\sqrt{-5}], \mathbb{Z}[X], \mathbb{R}[X], \mathbb{C}[X], (\mathbb{Z}/n\mathbb{Z})[X]$.

(2) Units in a ring. The multiplicative group of units in a ring R [and, in particular, the multiplicative group F^* of nonzero elemets of a field F]. Description of the units in $\mathbb{Z}/n\mathbb{Z}$. Results such as: A finite integral domain is a field. $\mathbb{Z}/p\mathbb{Z}$, where p is a prime, as an example of a finite field.

(3) Characteristic of a ring. Examples. Elementary facts such as: the characteristic of an itegral domain is either 0 or a prime number.

(Note: From here on all rings are assumed to be commutative with unity).

Unit II. Ideals and special rings(15L)

(1) Ideals in a ring. Sums and products of ideals. Quotient rings. Examples. Prime ideals and maximal ideals. Characterization of prime ideals and maximal ideals in a commutative ring in terms of their quotient rings. Description of the ideals and the prime ideals in $\mathbb{Z}, \mathbb{R}[X]$ and $\mathbb{C}[X]$.

(2) Homomorphisms and isomorphism of rings. Kernel and the image of a homomorphism. Fundamental Theorem of homomorphism of a ring.

(3) Construction of the quotient field of an integral domain (Emphasis on $\mathbb{Z}, \mathbb{Q}$). A field contains a subfield isomorphic to $\mathbb{Z}/p\mathbb{Z}$ or $\mathbb{Q}$.

(4) Notions of euclidean domain (ED), principal ideal domain (PID). Examples such as $\mathbb{Z}, \mathbb{Z}[i]$, and polynomial rings. Relation between these two notions (ED $\Longrightarrow$ PID).

Unit III. Factorization (15L)

(1) Divisibility in a ring. Irreducible and prime elements. Examples.

(2) Division algorithm in $F[X]$ (where F is a field). Monic polynomials, greatest common divisor of $f(x), g(x) \in F[X]$ (not both 0). Theorem: Given $f(x)$ and $g(x) \neq 0$, in $F[X]$ then their greatest common divisor $d(x) \in F[X]$ exists; moreover, $d(x) = a(x)f(x) + b(x)g(x)$ for some $a(x), b(x) \in F[X]$. Relatively prime polynomials in $F[X]$, irreducible polynomial in $F[X]$. Examples of irreducible polynomials in $(\mathbb{Z}/p\mathbb{Z})[X]$ (p prime), Eisenstein Criterion (without proof).

(3) Notion of unique factorization domain (UFD). Elementary properties. Example of a non-UFD is $\mathbb{Z}[\sqrt{-5}]$ (without proof). Theorem (without proof). Relation between the three notions (ED $\Longrightarrow$ PID $\Longrightarrow$ UFD). Examples such as $\mathbb{Z}[X]$ of UFD that are not PID. Theorem (without proof): If R is a UFD, then $R[X]$ is a UFD.

Reference Books

1. Israel Herstein; Topics in Algebra; Second edition, Wiley Eastern Limited, Second edition.
2. P. B. Bhattacharya, S. K. Jain, and S. R. Nagpaul; Abstract Algebra; Second edition, Foundation Books, New Delhi, 1995.
3. N. S. Gopalakrishnan; University Algebra; Wiley Eastern Limited.
4. Michael Artin; Algebra; Prentice Hall of India, New Delhi.
5. John. B. Fraleigh; A First course in Abstract Algebra; Third edition, Narosa, New Delhi.

6. Joseph A. Gallian; Contemporary Abstract Algebra; Narosa, New Delhi.

Additional Reference Books:

1. Sukumar Das Adhikari; An Introduction to Commutative Algebra and Number theory; Narosa Publishing House.
2. Thomas W. Hungerford; Algebra; Springer.
3. David S. Dummit, Richard Foote; Abstract Algebra; John Wiley & Sons, Inc.
4. L.S. Luthar and I.B.S. Passi, Algebra. Vol. I and II, Narosa.
5. U. M. Swamy, A. V. S. N. Murthy; Algebra Abstract and Modern; Pearson.
6. Charles Lanski; Concepts Abstract Algebra; American Mathematical Society.
7. Sen, Ghosh and Mukhopadhyay; Topics in Abstract Algebra; Universities press.

Course: Topology of Metric Spaces and Real Analysis
Course Code: USMT603/ UAMT603

Unit I: Continuous functions on metric spaces (15 L)

Epsilon-delta definition of continuity of a function at a point from one metric space to another. Characterization of continuity at a point in terms of sequences, open sets and closed sets and examples. Algebra of continuous real valued functions on a metric space. Continuity of composite function. Continuous image of compact set is compact, Uniform continuity in a metric space, examples (emphasis on $\mathbb{R}$). Results such as: every continuous functions from a compact metric space is uniformly continuous. Contraction mapping and fixed point theorem. Applications.

Unit II: Connected spaces (15L)

Separated sets- Definition and examples. Connected and disconnected sets. Connected and disconnected metric spaces. Results such as: A subset of $\mathbb{R}$ is connected if and only if it is an interval. A continuous image of a connected set is connected.
Characterization of a connected space, viz. a metric space is connected if and only if every continuous function from X to $\{1, -1\}$ is a constant function. Path connectedness in $\mathbb{R}^n$, definition and examples. A path connected subset of $\mathbb{R}^n$ is connected, convex sets are path connected. Connected components. An example of a connected subset of Rn which is not path connected.

Unit III : Sequence and series of functions(15 lectures)

Sequence of functions - pointwise and uniform convergence of sequences of real- valued functions, examples. Uniform convergence implies pointwise convergence, example to show converse not true, series of functions, convergence of series of functions, Weierstrass M-test (statement only). Examples. Properties of uniform convergence: Continuity of the uniform limit of a sequence of continuous function, conditions under which integral and the derivative of sequence of functions converge to the integral and derivative of uniform limit on a closed and bounded interval (statements only). Examples. Consequences of these properties for series of functions, term by term differentiation and integration(statements only). Power series in $\mathbb{R}$ centered at origin and at

some point in $\mathbb{R}$, radius of convergence, region (interval) of convergence, uniform convergence, term by-term differentiation and integration of power series, Examples. Uniqueness of series representation, functions represented by power series, classical functions defined by power series such as exponential, cosine and sine functions, the basic properties of these functions.

Reference books:

1. Richard Goldberg; Methods of Real Analysis; Oxford & IBH Publishing Co Pvt.Ltd.
2. S. Kumaresan; Topology of Metric spaces.
3. Edward Copson; Metric Spaces; Universal Book Stall, New Delhi, 1996.
4. Robert Bartle and Donald R. Sherbert; Introduction to Real Analysis; Second Edition, John Wiley and Sons.

Other references:

1. Tom Apostol; Mathematical Analysis; Second edition, Narosa, New Delhi, 1974
2. P. K. Jain., K. Ahmed, Metric Spaces; Narosa, New Delhi, 1996.
3. Walter Rudin; Principles of Mathematical Analysis; Third Ed, McGraw-Hill, Auckland, 1976.
4. D. Somasundaram, B. Choudhary; A first Course in Mathematical Analysis. Narosa, New Delhi
5. George Simmons; Introduction to Topology and Modern Analysis, McGraw-Hi, New York, 1963.

Course: Intergral Transforms(Elective A)
Course Code: USMT6A4/ UAMT6A4

Unit I: The Laplace Transform (15L)

Definition of Laplace Transform, theorem, Laplace transforms of some elementary functions, Properties of Laplace transform, LT of derivatives and integrals, Initial and final value theorem, Inverse Laplace Transform, Properties of Inverse Laplace Transform, Convolution Theorem, Inverse LT by partial fraction method, Laplace transform of special functions: Heaviside unit step function, Dirac-delta function and Periodic function.

Unit II: The Fourier Transform

Fourier integral representation, Fourier integral theorem, Fourier Sine & Cosine integral representation, Fourier Sine & Cosine transform pairs, Fourier transform of elementary functions, Properties of Fourier Transform, Convolution Theorem, Parseval's Identity.

Unit III: Applications of Integral Transforms

Relation between the Fourier and Laplace Transform. Application of Laplace transform to evaluation of integrals and solutions of higher order linear ODE. Applications of LT to solution

of one dimensional heat equation & wave equation. Application of Fourier transforms to the solution of initial and boundary value problems, Heat conduction in solids (one dimensional problems in infinite & semi infinite domain).

Reference Books:

1. Lokenath Debnath and Dambaru Bhatta, Integral Transforms and their Applications, CRC Press Taylor & Francis.

2. I. N. Sneddon;Use of Integral Transforms, Tata-McGraw Hill.

3. Larry Andrews and Bhimsen K. Shivamoggi; Integral Transforms for Engineers; Prentice Hall of India.

Course: Number Theory and its applications II (Elective B)
Course Code: USMT6B4/ UAMT6B4

Unit I: Quadratic Reciprocity (15 L)

Quadratic residues and Legendre Symbol, Gauss's Lemma, Theorem on Legendre Symbol $\left(\frac{2}{p}\right)$, the result: If p is an odd prime and a is an odd integer with $(a, p) = 1$ then

$\left(\frac{a}{p}\right) = (-1)^t$ where $t = \sum_{k=1}^{\frac{p-1}{2}} \left[\frac{ka}{p}\right]$, Quadratic Reciprocity law. Theorem on Legendre Symbol $\left(\frac{3}{p}\right)$. The Jacobi Symbol and law of reciprocity for Jacobi Symbol. Quadratic Congruences with Composite moduli.

Unit II: Continued Fractions (15 L)

Finite continued fractions. Infinite continued fractions and representation of an irrational number by an infinite simple continued fraction, Rational approximations to irrational numbers and order of convergence, Best possible approximations. Periodic continued fractions.

Unit III: Pell's equation, Arithmetic function and Special numbers (15 L)

Pell's equation $x^2 - dy^2 = n$, where d is not a square of an integer. Solutions of Pell's equation (The proofs of convergence theorems to be omitted). Arithmetic functions of number theory: $d(n)$ (or $\tau(n)$,) $\sigma(n), \sigma_k(n), \omega(n)$) and their properties, $\mu(n)$ and the Möbius inversion formula. Special numbers: Fermat numbers, Mersenne numbers, Perfect numbers, Amicable numbers, Pseudo primes, Carmichael numbers.

Reference Books:

1. Ivan Niven, Herbert. Zuckerman and Hugh Montgomery; An Introduction to the Theory of Numbers; John Wiley & Sons. Inc.

2. David M. Burton; An Introduction to the Theory of Numbers; Tata McGraw-Hill Edition.

3. Godfrey Harold Hardy and Edward Wright; An Introduction to the Theory of Numbers; Low priced edition; The English Language Book Society and Oxford University Press, 1981.

4. Neville Robins; Beginning Number Theory; Narosa Publications.

5. Sukumar Das Adhikari; An introduction to Commutative Algebra and Number Theory; Narosa Publishing House

6. Neal Koblitz; A course in Number theory and Crytopgraphy. Springer.

7. Michael Artin; Algebra; Prentice Hall.

8. Kenneth Ireland, M. Rosen; A classical introduction to Modern Number Theory; second edition, Springer Verlag.

9. William Stalling; Cryptology and network security; Prentice Hall.

Course: Graph Theory and Combinatorics (Elective C)
Course Code: USMT6C4 /UAMT6C4

Unit I: Colorings of graph (15L)

Vertex coloring- evaluation of vertex chromatic number of some standard graphs, critical graph. Upper and lower bounds of Vertex chromatic Number- Statement of Brooks theorem. Edge colouring- Evaluation of edge chromatic number of standard graphs such as complete graph, complete bipartite graph, cycle. Statement of Vizing Theorem. Chromatic polynomial of graphs- Recurrence Relation and properties of Chromatic polynomials. Vertex and edge cuts, vertex and edge connectivity and the relation between vertex and edge connectivity. Equality of vertex and edge connectivity of cubic graphs. Whitney's theorem on 2-vertex connected graphs.

Unit II: Planar graph (15L)

Definition of planar graph. Euler formula and its consequences. Non planarity of $K_5; K_(3;3)$. Dual of a graph. Polyhedran in $\mathbb{R}^3$ and existence of exactly five regular polyhedron- (Platonic solids) Colorabilty of planar graphs- 5 color theorem for planar graphs, statement of 4 color theorem. flows in Networks, and cut in a network- value of a flow and the capacity of cut in a network, relation between flow and cut. Maximal flow and minimal cut in a network and Ford-Fulkerson theorem.

Unit III: Combinatorics (15L)

Applications of Inclusion Exclusion Principle- Rook polynomial, Forbidden position problems. Introduction to partial fractions and Newton's binomial theorem for real power series, series expansion of some standard functions. Forming recurrence relation and getting a generating function. Solving a recurrence relation using ordinary generating functions. System of Distinct Representatives and Hall's theorem of SDR.

Recommended Books.

1. John Adrian Bondy, U.S.R. Murty; Graph Theory with Applications; NORfH-HOLLAND, New York, Amsterdam, Oxford.
2. Balkrishnan and Ranganathan; Graph theory and applications; Springer.
3. Douglas B. West, Introduction to Graph Theory, 2nd Ed., Pearson, 2000
4. Richard Brualdi; Introductory Combinatorics; Pearson Education Asia Limited and China Machine Press.

Additional Reference Book.

1. Mehdi Behzad, Gary Chartrand; An Introduction to the Theory of Graphs; Allyn and Bacon.
2. Sheshayya Choudam; A first course in Graph Theory; Macmillian India Ltd-new Delhi

Course: Operations Research (Elective D)
Course Code: USMT6D4 / UAMT6D4

Unit I: Linear Programming-I (15L)

Prerequisites: Vector Space, Linear independence and dependence, Basis, Convex sets, Dimension of polyhedron, Faces.
Formation of LPP, Graphical Method. Theory of the Simplex Method- Standard form of LPP, Feasible solution to basic feasible solution, Improving BFS, Optimality Condition, Unbounded solution, Alternative optima, Correspondence between BFS and extreme points. Simplex Method – Simplex Algorithm, Simplex Tableau.

Unit II: Linear programming-II (15L)
Simplex Method – Case of Degeneracy, Big-M Method, Infeasible solution, Alternate solution, Solution of LPP for unrestricted variable. Transportation Problem: Formation of TP, Concepts of solution, feasible solution, Finding Initial Basic Feasible Solution by North West Corner Method, Matrix Minima Method, Vogel's Approximation Method. Optimal Solution by MODI method, Unbalanced and maximization type of TP.

Unit III: Queuing Systems (15L)
Elements of Queuing Model, Role of Exponential Distribution. Pure Birth and Death Models; Generalized Poisson Queuing Model. Specialized Poisson Queues: Steady- state Measures of Performance, Single Server Models, Multiple Server Models, Self- service Model, Machine-servicing Model.

Reference for Unit III:

1. George Francis Hadley; Linear Programming; Narosa Publishing.
2. J. K. Sharma; Operations Research- Theory and Applications; Trinity press.
3. Hamdy A. Taha; Operations Research; Prentice Hall of India.

Additional Reference Books:

1. Hillier and Lieberman, Introduction to Operations Research; McGraw-Hill Series in Industrial Engineering and Management Science

2. Richard Broson, Schaum Series Book in Operations Research, Tata McGrawHill Publishing Company Ltd.

Course: Practicals (Based on USMT601 / UAMT601 and USMT602 / UAMT602)
Course Code: USMTP07 / UAMTP07
Suggested Practicals (Based on USMT601 / UAMT601):

1. Limit continuity and derivatives of functions of complex variables.

2. Steriographic Projection , Analytic function, finding harmonic conjugate.

3. Contour Integral, Cauchy Integral Formula ,Mobius transformations.

4. Taylors Theorem , Exponential , Trigonometric, Hyperbolic functions.

5. Power Series , Radius of Convergence, Laurents Series.

6. Finding isolated singularities- removable, pole and essential, Cauchy Residue theorem.

7. Miscellaneous theory questions.

Suggested Practicals (Based on USMT602 / UAMT602)

1. Examples of rings (commutative and non-commutative), integral domains and fields

2. Units in various rings. Determining characteristics of rings.

3. Prime Ideals and Maximal Ideals, examples on various rings.

4. Euclidean domains and principal ideal domains (examples and non-examples)

5. Examples if irreducible and prime elements.

6. Applications of division algorithm and Eisenstein's criterion.

7. Miscellaneous Theoretical questions on Unit 1, 2 and 3.

Course: Practicals (Based on USMT603 / UAMT603 and USMT6A4 / UAMT6A4 OR USMT6B4 / UAMT6B4 OR USMT6C4 / UAMT6C4 OR USMT6D4 / UAMT6D4)
Course Code: USMTP08 / UAMTP08

Suggested practicals Based on USMT603 / UAMT603:

1 Continuity in a Metric Spaces

2 Uniform Continuity, Contraction maps, Fixed point theorem

3 Connected Sets , Connected Metric Spaces

4 Path Connectedness, Convex sets, Continuity and Connectedness

5 Pointwise and uniform convergence of sequence functions, properties

6 Point wise and uniform convergence of series of functions and properties

7 Miscellaneous Theory Questions.

Suggested Practicals based on USMT6A4 / UAMT6A4

1 Find the Laplace transform of differential and integral equations.

2 Find the inverse Laplace transform by the partial fraction method.

3 Find the Fourier integral representation of given functions.

4 Find the Fourier Sine / Cosine integral representation of given functions.

5 Solve higher order ODE using Laplace transform.

6 Solve one dimensional heat and wave equation using Laplace transform. Solve initial and boundary value problems using Fourier transform.

7 Miscellaneous Theory Questions.

Suggested Practicals based on USMT6B4 / UAMT6B4

1 Legendre Symbol.

2 Jacobi Symbol and Quadratic congruences with composite moduli.

3 Finite continued fractions.

4 Infinite continued fractions.

5 Pell's equations and Arithmetic functions of number theory.

6 Special Numbers.

7 Miscellaneous Theoretical questions.

Suggested Practicals based on USMT6C4 / UAMT6C4

1 Coloring of Graphs

2 Chromatic polynomials and connectivity.

3 Planar graphs

4 Flow theory.

5 Application of Inclusion Exclusion Principle, rook polynomial. Recurrence relation.

6 Generating function and SDR.

7 Miscellaneous theoretical questions.

Suggested Practicals based on USMT6D4 / UAMT6D4
All practicals to be done manually as well as using software TORA / EXCEL solver.

1 LPP formation, graphical method and simple problems on theory of simplex method

2 LPP Simplex Method

3 Big-M method, special cases of solutions.

4 Transportation Problem

5 Queuing Theory; single server models

6 Queuing Theory; multiple server models

7 Miscellaneous Theory Questions.

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(8) Scheme of Evaluation

Scheme of Examination (75:25)

The performance of the learners shall be evaluated into two parts.

- Internal Assessment of 25 percent marks for each paper.
- Semester End Examination of 75 percent marks for each paper.

I. **Internal Evaluation of 25 Marks:**

T.Y.B.Sc. :

(i) One class Test on unit I of 20 marks of duration one hour to be conducted during Practical session.
Paper pattern of the Test:
Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).
Q2: Multiple choice 5 questions. (10 Marks: 5×2)
Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

(ii) Active participation in routine class: 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

T.Y.B.A. :

(i) One class Test on unit I of 20 marks to be conducted during Tutorial session.
Paper pattern of the Test:
Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).
Q2: Multiple choice 5 questions. (10 Marks: 5×2)
Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

(ii) Journal : 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

II. **Semester End Theory Examinations :** There will be a Semester-end external Theory examination of 75 marks for each of the courses USMT501/UAMT501, USMT502/UAMT502, USMT503 and USMT5A4 OR USMT5B4 OR USMT5C4 OR USMT 5D4 of Semester V and USMT601/UAMT601, USMT602/UAMT602, USMT603 and USMT6A4 OR USMT6B4 OR USMT 6C4 OR USMT 6D4 of semester VI to be conducted by the University.

1. Duration: The examinations shall be of $2\frac{1}{2}$ Hours duration.
2. Theory Question Paper Pattern:
   a) There shall be FOUR questions. The first three questions Q1, Q2, Q3 shall be of 20 marks, each based on the units I, II, III respectively. The fourth question Q4 shall be of 15 marks based on the entire syllabus.
   b) All the questions shall be compulsory. The questions Q1, Q2, Q3, Q4 shall have internal choices within the questions. Including the choices, the marks for each question shall be 30-32.
   c) The questions Q1, Q2, Q3, Q4 may be subdivided into sub-questions as a, b, c, d & e, etc and the allocation of marks depends on the weightage of the topic.

III. **Semester End Practical Examinations :**
There shall be a Semester-end practical examinations of three hours duration and 100 marks for each of the courses USMTP05/UAMTP05, USMTP06/UAMTP056 of Semester V and USMTP07/UAMTP07, USMTP08/UAMTP08 of semester VI.

In semester V, the Practical examinations for USMTP05/UAPTP05 and USMTP06/UAMTP06 are conducted by the college.

In semester VI, the Practical examinations for USMTP07/UAMTP07 and USMTP08/UAMTP08 are conducted by the University.
Question Paper pattern:

Paper pattern: The question paper shall have two parts A, B.
Each part shall have two Sections.

Section I Objective in nature: Attempt any Eight out of Twelve multiple choice questions. ($8 \times 3 = 24$ Marks)

Section II Problems: Attempt any Two out of Three. ($8 \times 2 = 16$ Marks)

Practical Course	Part A	Part B	Marks out of	duration
USMTP05/UAMTP05	Questions from USMT501/UAMT501	Questions from USMT502/UAMT502	80	3 hours
USMTP06/UAMTP06	Questions from USMT503/UAMT503	Questions from USMT504/UAMT504	80	3 hours
USMTP07/UAMTP07	Questions from USMT601/UAMT601	Questions from USMT602/UAMT602	80	3 hours
USMTP08/UAMTP08	Questions from USMT603/UAMT603	Questions from USMT604/UAMT604	80	3 hours

Marks for Journals and Viva:
For each course USMT501/UAMT501, USMT502/UAMT502, USMT503/UAMT503, USMT504/UAMT504, USMT601/UAMT601, USMT602/UAMT602 USMT603/UAMT603, and USMT604/UAMT604:

1. Journals: 5 marks.
2. Viva: 5 marks.

Each Practical of every course of Semester V and VI shall contain 10 (ten) problems out of which minimum 05 (five) have to be written in the certified journal.

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Academic Council
Item No: _____

UNIVERSITY OF MUMBAI

Syllabus for SemV&VI
Program: Bachelor of Science
Course: Computer Science

Credit Based Semester and Grading System with effect from
Academic Year 2018-2019

Preamble

This is the third year curriculum in the subject of Computer Science. The revised structure is designed to transform students into technically competent, socially responsible and ethical Computer Science professionals. In these Semesters we have made the advancements in the subject based on the previous Semesters Knowledge.

In the first year basic foundation of important skills required for software development is laid. Second year of this course is about studying core computer science subjects. The third year is the further advancement which covers developing capabilities to design formulations of computing models and its applications in diverse areas.

The proposed curriculum contains two semesters, each Semester contains two Electives: Elective-I and II. Every Elective contains three papers based on specific areas of Computer Science. It also includes one Skill Enhancement paper per semester, helps the student to evaluate his/her computer science domain specific skills and also to meet industry expectations. This revised curriculum has not only taken the specific areas of computer science into consideration but will also give the opportunity to the student to prove his/her ability in the subject practically through the Project Implementation. In Semester V and Semester VI student has to undertake a Project. It can boost his/her confidence and also can encourage the student to perform innovations in the subject as the choice of the Project topic is kept open covering most of the areas of Computer Science subject as per the students interest and the subject they have learned during the Course.

Proposed Curriculum contains challenging and varied subjects aligned with the current trend with the introduction of Machine Intelligence specific subject such as Artificial Intelligence, Information Retrieval. Data Management related subjects such as Cloud Computing and Data Science. Image processing topics such as Game Programming, Digital Image Processing. Introduction of physical world through Architecting of IoT and Wireless Sensor Networks and Mobile Communication. Security domain is also evolved by the introduction of Ethical Hacking, Cyber Forensic and Information and Network Security. To get the hands on experience Linux Server Administration and Web Services topics are included.

In essence, the objective of this syllabus is to create a pool of technologically savvy, theoretically strong, innovatively skilled and ethically responsible generation of computer science professionals. Hope that the teacher and student community of University of Mumbai will accept and appreciate the efforts.

T.Y.B.Sc. (Semester V and VI)
Computer Science Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2018-2019

SEMESTER V			
Course	**TOPICS**	**Credits**	**L / Week**
	Elective-I (Select Any Two)		
USCS501	Artificial Intelligence	3	3
USCS502	Linux Server Administration	3	3
USCS503	Software Testing and Quality Assurance	3	3
	Elective-II (Select Any Two)		
USCS504	Information and Network Security	3	3
USCS505	Architecting of IoT	3	3
USCS506	Web Services	3	3
	Skill Enhancement		
USCS507	Game Programming	2	3
	Practical		
USCSP501	Practical of Elective-I	2	6
USCSP502	Practical of Elective-II	2	6
USCSP503	Project Implementation	1	3
USCSP504	Practical of Skill Enhancement : USCS507	1	3

SEMESTER VI			
Course	**TOPICS**	**Credits**	**L / Week**
	Elective-I (Select Any Two)		
USCS601	Wireless Sensor Networks and Mobile Communication	3	3
USCS602	Cloud Computing	3	3
USCS603	Cyber Forensics	3	3
	Elective-II (Select Any Two)		

USCS604	Information Retrieval	3	3
USCS605	Digital Image Processing	3	3
USCS606	Data Science	3	3
	Skill Enhancement		
USCS607	Ethical Hacking	2	3
	Practical		
USCSP601	Practical of Elective-I	2	6
USCSP602	Practical of Elective-II	2	6
USCSP603	Project Implementation	1	3
USCSP604	Practical of Skill Enhancement : USCS607	1	3

SEMESTER V

THEORY

Course: USCS501	TOPICS (Credits : 03 Lectures/Week:03) Artificial Intelligence	
Objectives: Artificial Intelligence (AI) and accompanying tools and techniques bring transformational changes in the world. Machines capability to match, and sometimes even surpass human capability, make AI a hot topic in Computer Science. This course aims to introduce the learner to this interesting area. **Expected Learning Outcomes:** After completion of this course, learner should get a clear understanding of AI and different search algorithms used for solving problems. The learner should also get acquainted with different learning algorithms and models used in machine learning.		
Unit I	**What Is AI:** Foundations, History and State of the Art of AI. **Intelligent Agents:** Agents and Environments, Nature of Environments, Structure of Agents. **Problem Solving by searching:** Problem-Solving Agents, Example Problems, Searching for Solutions, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions.	**15L**
Unit II	**Learning from Examples:** Forms of Learning, Supervised Learning, Learning Decision Trees, Evaluating and Choosing the Best Hypothesis, Theory of Learning, Regression and Classification with Linear Models, Artificial Neural Networks, Nonparametric Models, Support Vector Machines, Ensemble Learning, Practical Machine Learning	**15L**

Unit III	**Learning probabilistic models:** Statistical Learning, Learning with Complete Data, Learning with Hidden Variables: The EM Algorithm. Reinforcement learning: Passive Reinforcement Learning, Active Reinforcement Learning, Generalization in Reinforcement Learning, Policy Search, Applications of Reinforcement Learning.	**15L**

Textbook(s):

1) Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig,3rd Edition, Pearson, 2010.

Additional Reference(s):

1) Artificial Intelligence: Foundations of Computational Agents, David L Poole,Alan K. Mackworth, 2nd Edition, Cambridge University Press ,2017.
2) Artificial Intelligence, Kevin Knight and Elaine Rich, 3rd Edition, 2017
3) The Elements of Statistical Learning, Trevor Hastie, Robert Tibshirani and Jerome Friedman, Springer, 2013

Course:	**TOPICS (Credits : 03 Lectures/Week:03)**
USCS502	**Linux Server Administration**

Objectives:

Demonstrate proficiency with the Linux command line interface, directory & file management techniques, file system organization, and tools commonly found on most Linux distributions. Effectively operate a Linux system inside of a network environment to integrate with existing service solutions. Demonstrate the ability to troubleshoot challenging technical problems typically encountered when operating and administering Linux systems.

Expected Learning Outcomes:

Learner will be able to develop Linux based systems and maintain. Learner will be able to install appropriate service on Linux server as per requirement. Learner will have proficiency in Linux server administration.

Unit I	**Introduction:** Technical Summary of Linux Distributions, Managing Software **Single-Host Administration:** Managing Users and Groups, Booting and shutting down processes, File Systems, Core System Services, Process of configuring, compiling, Linux Kernel **Networking and Security:** TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security	**15L**
Unit II	**Internet Services:** Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMTP), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network Authentication, OpenLDAP Server, Samba and LDAP, Network authentication system (Kerberos), Domain Name Service (DNS), Security	**15L**
Unit III	**Intranet Services:** Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS), Lightweight Directory Access Protocol (LDAP), Dynamic Host Configuration Protocol (DHCP), MySQL, LAMP Applications File Servers, Email Services, Chat Applications, Virtual Private Networking.	**15L**

Textbook(s):

1) Linux Administration: A Beginner's Guide, Wale Soyinka, Seventh Edition, McGraw-Hill Education, 2016
2) Ubuntu Server Guide, Ubuntu Documentation Team, 2016

Additional Reference(s):

1) Mastering Ubuntu Server, Jay LaCroix, PACKT Publisher, 2016

Course: USCS503	TOPICS (Credits : 03 Lectures/Week:03) Software Testing and Quality Assurance	
Objectives: To provide learner with knowledge in Software Testing techniques. To understand how testing methods can be used as an effective tools in providing quality assurance concerning for software. To provide skills to design test case plan for testing software **Expected Learning Outcomes:** Understand various software testing methods and strategies. Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.		
Unit I	**Software Testing and Introduction to quality :** Introduction, Nature of errors, an example for Testing, Definition of Quality , QA, QC, QM and SQA , Software Development Life Cycle, Software Quality Factors **Verification and Validation :** Definition of V &V , Different types of V & V Mechanisms, Concepts of Software Reviews, Inspection and Walkthrough **Software Testing Techniques :** Testing Fundamentals, Test Case Design, White Box Testing and its types, Black Box Testing and its types	**15L**
Unit II	**Software Testing Strategies :** Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing **Software Metrics :** Concept and Developing Metrics, Different types of Metrics, Complexity metrics **Defect Management:** Definition of Defects, Defect Management Process, Defect Reporting, Metrics Related to Defects, Using Defects for Process Improvement.	**15L**
Unit III	**Software Quality Assurance :** Quality Concepts, Quality Movement, Background Issues, SQA activities, Software Reviews, Formal Technical Reviews, Formal approaches to SQA, Statistical Quality Assurance, Software Reliability, The ISO 9000 Quality Standards, , SQA Plan , Six sigma, Informal Reviews	**15L**

	Quality Improvement : Introduction, Pareto Diagrams, Cause-effect Diagrams, Scatter Diagrams, Run charts **Quality Costs :** Defining Quality Costs, Types of Quality Costs, Quality Cost Measurement, Utilizing Quality Costs for Decision-Making	

Textbook(s):

1. Software Engineering for Students, A Programming Approach, Douglas Bell, 4th Edition,, Pearson Education, 2005
2. Software Engineering – A Practitioners Approach, Roger S. Pressman, 5th Edition, Tata McGraw Hill, 2001
3. Quality Management, Donna C. S. Summers, 5th Edition, Prentice-Hall, 2010.
4. Total Quality Management, Dale H. Besterfield, 3rd Edition, Prentice Hall, 2003.

Additional Reference(s):

1. Software engineering: An Engineering approach, J.F. Peters, W. Pedrycz , John Wiley,2004
2. Software Testing and Quality Assurance Theory and Practice, Kshirsagar Naik, Priyadarshi Tripathy , John Wiley & Sons, Inc. , Publication, 2008
3. Software Engineering and Testing, B. B. Agarwal, S. P. Tayal, M. Gupta, Jones and Bartlett Publishers, 2010

Course: **USCS504**	**TOPICS (Credits : 03 Lectures/Week:03)** **Information and Network Security**

Objectives:

To provide students with knowledge of basic concepts of computer security including network security and cryptography.

Expected Learning Outcomes:

Understand the principles and practices of cryptographic techniques. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. Understand various protocols for network security to protect against the threats in a network

Unit I	**Introduction:** Security Trends, The OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms **Classical Encryption Techniques:** Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers **Public-Key Cryptography and RSA:** Principles of Public-Key Cryptosystems, The RSA Algorithm	**15L**
Unit II	**Key Management:** Public-Key Cryptosystems, Key Management, Diffie-Hellman Key Exchange **Message Authentication and Hash Functions**: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC **Digital Signatures and Authentication:** Digital Signatures, Authentication Protocols, Digital Signature Standard **Authentication Applications:** Kerberos, X.509 Authentication, Public-Key Infrastructure	**15L**
Unit III	**Electronic Mail Security:** Pretty Good Privacy, S/MIME **IP Security:** Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management **Web Security:** Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction **Intrusion:** Intruders, Intrusion Techniques, Intrusion Detection **Malicious Software:** Viruses and Related Threats, Virus Countermeasures, DDOS **Firewalls:** Firewall Design Principles, Types of Firewalls	**15L**

Textbook(s):

1) Cryptography and Network Security: Principles and Practice 5th Edition, William

Stallings, Pearson,2010

Additional Reference(s):

1) Cryptography and Network Security, Atul Kahate, Tata McGraw-Hill, 2013.
2) Cryptography and Network, Behrouz A Fourouzan, Debdeep Mukhopadhyay, 2nd Edition,TMH,2011

Course: **USCS505**	**TOPICS (Credits : 03 Lectures/Week:03)** **Architecting of IoT**	
Objectives: Discovering the interconnection and integration of the physical world. Learner should get knowledge of the architecture of IoT. **Expected Learning Outcomes:** Learners are able to design & develop IoT Devices. They should also be aware of the evolving world of M2M Communications and IoT analytics.		
Unit I	**IoT-An Architectural Overview**: Building architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations. **IoT Architecture-State of the Art** : Introduction, State of the art, Reference Model and architecture, IoT reference Model - IoT Reference Architecture Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views	**15L**
Unit II	**IoT Data Link Layer and Network Layer Protocols:** PHY/MAC Layer(3GPP MTC, IEEE 802.11, IEEE 802.15), Wireless HART,Z-Wave, Bluetooth Low Energy, Zigbee Smart Energy DASH7 **Network Layer**:IPv4, IPv6, 6LoWPAN, 6TiSCH,ND, DHCP, ICMP, RPL, CORPL, CARP	**15L**

Unit III	**Transport layer protocols :** Transport Layer (TCP, MPTCP, UDP, DCCP, SCTP)-(TLS, DTLS) **Session layer:** Session Layer-HTTP, CoAP, XMPP, AMQP, MQTT **Service layer protocols:** Service Layer -oneM2M, ETSI M2M, OMA, BBF	**15L**

Textbook(s):

1. From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence, Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle,1st Edition, Academic Press, 2014.
2. Learning Internet of Things, Peter Waher, PACKT publishing, BIRMINGHAM – MUMBAI,2015

Additional References(s):

1. Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications, Daniel Minoli, Wiley Publications,2013
2. Internet of Things (A Hands-onApproach), Vijay Madisetti and ArshdeepBahga,1st Edition, VPT, 2014.
3. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

Course: **USCS506**	**TOPICS (Credits : 03 Lectures/Week:03)** **Web Services**

Objectives:

To understand the details of web services technologies like SOAP, WSDL, and UDDI. To learn how to implement and deploy web service client and server. To understand the design principles and application of SOAP and REST based web services (JAX-Ws and JAX-RS).To understand WCF service. To design secure web services and QoS of Web Services

Expected Learning Outcomes:

Emphasis on SOAP based web services and associated standards such as WSDL. Design SOAP based / RESTful / WCF services Deal with Security and QoS issues of Web Services

Unit I	**Web services basics :** What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Services across platform	**15L**
Unit II	**The REST Architectural style :** Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services	**15L**
Unit III	**Developing Service-Oriented Applications with WCF :** What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details. Web Service QoS	**15L**

Textbook(s):

1) Web Services: Principles and Technology, Michael P. Papazoglou, Pearson Education Limited, 2008
2) RESTful Java Web Services, Jobinesh Purushothaman, PACKT Publishing,2nd Edition, 2015
3) Developing Service-Oriented Applications with WCF, Microsoft, 2017 https://docs.microsoft.com/en-us/dotnet/framework/wcf/index

Additional Reference(s):

1) Leonard Richardson and Sam Ruby, RESTful Web Services, O'Reilly, 2007
2) The Java EE 6Tutorial, Oracle, 2013

Course: **USCS507**	**TOPICS (Credits : 03 Lectures/Week: 03)** **Game Programming**	
Objectives: Learner should get the understanding computer Graphics programming using Directx or Opengl. Along with the VR and AR they should also aware of GPU, newer technologies and programming using most important API for windows. **Expected Learning Outcomes:** Learner should study Graphics and gamming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community and learn.		
Unit I	**Mathematics for Computer Graphics, DirectX Kickstart:** **Cartesian Coordinate system:** The Cartesian XY-plane, Function Graphs, Geometric Shapes, Polygonal Shapes, Areas of Shapes, Theorem of Pythagoras in 2D, Coordinates, Theorem of Pythagoras in 3D, 3D Polygons, Euler's Rule **Vectors:** Vector Manipulation, multiplying a Vector by a Scalar, Vector Addition and Subtraction, Position Vectors, Unit Vectors, Cartesian Vectors, Vector Multiplication, Scalar Product, Example of the Dot Product, The Dot Product in Lighting Calculations, The Dot Product in Back-Face Detection, The Vector Product, The Right-Hand Rule, deriving a Unit Normal Vector for a Triangle Areas, Calculating 2D Areas **Transformations:** 2D Transformations, Matrices, Homogeneous Coordinates, 3D Transformations, Change of Axes, Direction Cosines, rotating a Point about an Arbitrary Axis, Transforming Vectors, Determinants, Perspective Projection, Interpolation **DirectX:** Understanding GPU and GPU architectures. How they are different from CPU Architectures? Understanding how to solve by GPU?	**15L**

Unit II	**DirectX Pipeline and Programming:** **Introduction To DirectX 11:** COM, Textures and Resources Formats, The swap chain and Page flipping, Depth Buffering, Texture Resource Views, Multisampling Theory and MS in Direct3D, Feature Levels **Direct3D 11 Rendering Pipeline:** Overview, Input Assembler Stage (IA), Vertex Shader Stage (VS), The Tessellation Stage (TS), Geometry Shader Stage (GS), Pixel Shader Stage (PS), Output merger Stage (OM) Understanding Meshes or Objects, Texturing, Lighting, Blending. **Interpolation and Character Animation:** **Trigonometry:** The Trigonometric Ratios, Inverse Trigonometric Ratios, Trigonometric Relationships, The Sine Rule, The Cosine Rule, Compound Angles, Perimeter Relationships **Interpolation**: Linear Interpolant, Non-Linear Interpolation, Trigonometric Interpolation, Cubic Interpolation, Interpolating Vectors, Interpolating Quaternions **Curves:** Circle, Bezier, B-Splines **Analytic Geometry:** Review of Geometry, 2D Analytic Geometry, Intersection Points, Point in Triangle, and Intersection of circle with straight line.	**15L**
Unit III	**Introduction to Rendering Engines:** Understanding the current market Rendering Engines. Understanding AR, VR and MR.Depth Mappers, Mobile Phones, Smart Glasses, HMD's **Unity Engine: Multi-platform publishing, VR + AR:** Introduction and working in Unity, 2D, Graphics, Physics, Scripting, Animation, Timeline, Multiplayer and Networking, UI, Navigation and Pathfinding, XR, Publishing. **Scripting:** Scripting Overview, Scripting Tools and Event Overview **XR:** VR, AR, MR, Conceptual Differences. SDK, Devices	**15L**

Text Book(s):

1) Mathematics for Computer Graphics, John Vince, Springer-Verlag London, 5th Edition,2017
2) Mathematics for 3D Game Programming and Computer Graphic, Eric Lengyel, Delmar

Cengage Learning, Delmar Cengage Learning,2011

3) Introduction To 3D Game Programming With Directx® 11,Frank D Luna, Mercury Learning And Information,2012.
4) https://docs.unity3d.com/Manual/index.html - Free

Additional Reference(s):

1) Computer Graphics, C Version, Donald Hern and Pauline Baker, Pearson Education, 2nd Edition, 1997
2) HLSL Development Cookbook, Doron Feinstein, PACKT Publishing,2013

Suggested List of Practical- SEMESTER V

Course: **USCSP501**	**(Credits : 02 Lectures/Week: 06)** **Practical of Elective-I**	

USCS501: Artificial Intelligence

Practical shall be implemented in LISP

1. Implement Breadth first search algorithm for Romanian map problem.
2. Implement Iterative deep depth first search for Romanian map problem.
3. Implement A* search algorithm for Romanian map problem.
4. Implement recursive best-first search algorithm for Romanian map problem.
5. Implement decision tree learning algorithm for the restaurant waiting problem.
6. Implement feed forward back propagation neural network learning algorithm for the restaurant waiting problem.
7. Implement Adaboost ensemble learning algorithm for the restaurant waiting problem.
8. Implement Naive Bayes' learning algorithm for the restaurant waiting problem.
9. Implement passive reinforcement learning algorithm based on adaptive dynamic programming (ADP) for the 3 by 4 world problem
10. Implement passive reinforcement learning algorithm based on temporal differences (TD) for 3 by 4 world problem.

USCS502: Linux Server Administration

- Practical shall be performed using any Linux Server (with 8GB RAM).

- Internet connection will be required so that Linux server (command line mode) can be connected to Internet.

1. Install DHCP Server in Ubuntu 16.04
2. Initial settings: Add a User, Network Settings, Change to static IP address, Disable IPv6 if not needed, Configure Services, display the list of services which are running, Stop and turn OFF auto-start setting for a service if you don't need it, Sudo Settings
3. Configure NTP Server (NTPd), Install and Configure NTPd, Configure NTP Client (Ubuntu and Windows)
4. SSH Server : Password Authentication

Configure SSH Server to manage a server from the remote computer, SSH Client : (Ubuntu and Windows)

5. Install DNS Server BIND, Configure DNS server which resolves domain name or IP address, Install BIND 9, Configure BIND, Limit ranges you allow to access if needed.
6. Configure DHCP Server, Configure DHCP (Dynamic Host Configuration Protocol) Server, Configure NFS Server to share directories on your Network, Configure NFS Client. (Ubuntu and Windows Client OS)
7. Configure LDAP Server, Configure LDAP Server in order to share users' accounts in your local networks, Add LDAP User Accounts in the OpenLDAP Server, Configure LDAP Client in order to share users' accounts in your local networks. Install phpLDAPadmin to operate LDAP server via Web browser.
8. Configure NIS Server in order to share users' accounts in your local networks, Configure NIS Client to bind NIS Server.
9. Install MySQL to configure database server, Install phpMyAdmin to operate MySQL on web browser from Clients.
10. Install Samba to share folders or files between Windows and Linux.

USCS503: Software Testing and Quality Assurance

1. Install Selenium IDE; Write a test suite containing minimum 4 test cases for different formats.
2. Conduct a test suite for any two web sites.
3. Install Selenium server (Selenium RC) and demonstrate it using a script in Java/PHP.
4. Write and test a program to login a specific web page.
5. Write and test a program to update 10 student records into table into Excel file
6. Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects).
7. Write and test a program to provide total number of objects present / available on the page.
8. Write and test a program to get the number of items in a list / combo box.
9. Write and test a program to count the number of check boxes on the page checked and unchecked count.
10. Load Testing using JMeter, Android Application testing using Appium Tools, Bugzilla Bug tracking tools.

Course: USCSP502	(Credits : 02 Lectures/Week: 06) Practical of Elective-II	

USCS504: Information and Network security

1.Write programs to implement the following Substitution Cipher Techniques:

- Caesar Cipher
- Monoalphabetic Cipher

2 Write programs to implement the following Substitution Cipher Techniques:

- Vernam Cipher
- Playfair Cipher

3 Write programs to implement the following Transposition Cipher Techniques:

- Rail Fence Cipher
- Simple Columnar Technique

4 Write program to encrypt and decrypt strings using

- DES Algorithm
- AES Algorithm

5 Write a program to implement RSA algorithm to perform encryption / decryption of a given string.

6 Write a program to implement the Diffie-Hellman Key Agreement algorithm to generate symmetric keys.

7 Write a program to implement the MD5 algorithm compute the message digest.

8 Write a program to calculate HMAC-SHA1 Signature

9 Write a program to implement SSL.

10 Configure Windows Firewall to block:

- A port
- An Program
- A website

USCS505: Architecting of IoT

1. a) Edit text files with nano and cat editor, Learn sudo privileges and Unix shell commands such as cd , ls , cat, etc

b) Learn to set dynamic and static IP. Connect to and Ethernet and WiFi network. Learn to vnc and ssh into a raspberry pi using vnc and putty from a different computer on the network.

c) Write a basic bash script to open programs in kiosk mode. Learn how to autostart programs on boot.

2. Run the node red editor and run simple programs and trigger gpios. Use basic nodes such as inject, debug, gpio
3. Open the python idle editor and run simple Python scripts such as to print Fibonacci numbers, string functions. Learn how to install modules using Pip and write functions
4. Setup a physical button switch and trigger an led in node red and python w debounce
5. Write simple JavaScript functions in Node-Red simple HTTP server page using node red
6. Setup a TCP server and client on a raspberry pi using Python modules to send messages and execute shell commands from within python such as starting another application
7. Trigger a set of led Gpios on the pi via a Python Flask web server
8. Interface the raspberry pi with a 16x2 LCD display and print values.
9. Setup a Mosquitto MQTT server and client and write a Python script to communicate data between Pi's.
10. Interface with an Accelerometer Gyro Mpu6050 on the i2c bus and send sensor values over the internet via mqtt.

USCS506: Web Services

1. Write a program to implement to create a simple web service that converts the temperature from Fahrenheit to Celsius and vice a versa.
2. Write a program to implement the operation can receive request and will return a response in two ways. a) One - Way operation b) Request –Response
3. Write a program to implement business UDDI Registry entry.
4. Develop client which consumes web services developed in different platform.
5. Write a JAX-WS web service to perform the following operations. Define a Servlet / JSP that consumes the web service.
6. Define a web service method that returns the contents of a database in a JSON string. The contents should be displayed in a tabular format.
7. Define a RESTful web service that accepts the details to be stored in a database and performs

CRUD operation.

8. Implement a typical service and a typical client using WCF.
9. Use WCF to create a basic ASP.NET Asynchronous JavaScript and XML (AJAX) service.
10. Demonstrates using the binding attribute of an endpoint element in WCF.

Course: **USCSP503**	**(Credits : 01 Lectures/Week: 03)** **Project Implementation**	
Please Refer to Project Implementation Guidelines		
Course: **USCSP504**	**(Credits : 01 Lectures/Week: 03)** **Practical of Skill Enhancement**	

USCS507 : Game Programming

1. Setup DirectX 11, Window Framework and Initialize Direct3D Device
2. Buffers, Shaders and HLSL (Draw a triangle using Direct3D 11)
3. Texturing (Texture the Triangle using Direct 3D 11)
4. Lightning (Programmable Diffuse Lightning using Direct3D 11)
5. Specular Lightning (Programmable Spot Lightning using Direct3D 11)
6. Loading models into DirectX 11 and rendering.

Perform following Practical using online content from the Unity Tutorials Web--sites: https://unity3d.com/learn/tutorials/s/interactive-tutorials

7. https://unity3d.com/learn/tutorials/s/2d-ufo-tutorial
8. https://unity3d.com/learn/tutorials/s/space-shooter-tutorial
9. https://unity3d.com/learn/tutorials/s/roll-ball-tutorial
10. https://unity3d.com/learn/tutorials/topics/vr/introduction?playlist=22946

SEMESTER VI

THEORY

Course: USCS601	TOPICS (Credits : 03 Lectures/Week: 03) Wireless Sensor Networks and Mobile Communication	
Objectives: In this era of wireless and adhoc network, connecting different wireless devices and understanding their compatibility is very important. Information is gathered in many different ways from these devices. Learner should be able to conceptualize and understand the framework. On completion, will be able to have a firm grip over this very important segment of wireless network. **Expected Learning Outcomes:** After completion of this course, learner should be able to list various applications of wireless sensor networks, describe the concepts, protocols, design, implementation and use of wireless sensor networks. Also implement and evaluate new ideas for solving wireless sensor network design issues.		
Unit I	**Introduction:** Introduction to Sensor Networks, unique constraints and challenges. Advantage of Sensor Networks, Applications of Sensor Networks, Mobile Adhoc NETworks (MANETs) and Wireless Sensor Networks, Enabling technologies for Wireless Sensor Networks. **Sensor Node Hardware and Network Architecture:** Single-node architecture, Hardware components & design constraints, Operating systems and execution environments, introduction to TinyOS and nesC. Network architecture, Optimization goals and figures of merit, Design principles for WSNs, Service interfaces of WSNs, Gateway concepts.	**15L**
Unit II	**Medium Access Control Protocols:** Fundamentals of MAC Protocols, MAC Protocols for WSNs, Sensor-MAC Case Study. **Routing Protocols** : Data Dissemination and Gathering, Routing Challenges and Design Issues in Wireless Sensor Networks, Routing Strategies in Wireless Sensor Networks. **Transport Control Protocols :** Traditional Transport Control Protocols,	**15L**

	Transport Protocol Design Issues, Examples of Existing Transport Control Protocols, Performance of Transport Control Protocols.	
Unit III	**Introduction, Wireless Transmission and Medium Access Control:** Applications, A short history of wireless communication. **Wireless Transmission:** Frequency for radio transmission, Signals, Antennas, Signal propagation, Multiplexing, Modulation, Spread spectrum, Cellular systems. **Telecommunication, Satellite and Broadcast Systems: GSM:** Mobile services, System architecture, Radio interface, Protocols, Localization And Calling, Handover, security, New data services; DECT: System architecture, Protocol architecture; ETRA, UMTS and IMT- 2000. Satellite Systems: History, Applications, Basics: GEO, LEO, MEO; Routing, Localization, Handover.	**15L**

Textbook(s):

1) Protocols and Architectures for Wireless Sensor Network, Holger Kerl, Andreas Willig, John Wiley and Sons, 2005
2) Wireless Sensor Networks Technology, Protocols, and Applications ,Kazem Sohraby, Daniel Minoli and TaiebZnati, John Wiley & Sons, 2007
3) Mobile communications, Jochen Schiller,2nd Edition, Addison wisely , Pearson Education,2012

Additional Reference(s):

1) Fundamentals of Wireless Sensor Networks, Theory and Practice, Waltenegus Dargie, Christian Poellabauer , Wiley Series on wireless Communication and Mobile Computing, 2011
2) Networking Wireless Sensors, Bhaskar Krishnamachari , Cambridge University Press, 2005

Course: USCS602	TOPICS (Credits : 03 Lectures/Week: 03) **Cloud Computing**	

Objectives:

To provide learners with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture, implantations and applications. To expose the learners to frontier areas of Cloud Computing, while providing sufficient foundations to enable further study and research.

Expected Learning Outcomes:

After successfully completion of this course, learner should be able to articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing using open source technology. Learner should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc. They should explain the core issues of cloud computing such as security, privacy, and interoperability.

Unit I	Introduction to Cloud Computing, Characteristics and benefits of Cloud Computing, Basic concepts of Distributed Systems, Web 2.0, Service-Oriented Computing, Utility-Oriented Computing. Elements of Parallel Computing. Elements of Distributed Computing. Technologies for Distributed Computing. Cloud Computing Architecture. The cloud reference model. Infrastructure as a service. Platform as a service. Software as a service. Types of clouds.	**15L**
Unit II	Characteristics of Virtualized Environments. Taxonomy of Virtualization Techniques. Virtualization and Cloud Computing. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management tool for virtualization environment. Open challenges of Cloud Computing	**15L**
Unit III	Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat	**15L**

Textbook(s):

1) Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, S Thamarai Selvi, Tata McGraw Hill Education Private Limited, 2013
2) OpenStack in Action, V. K. CODY BUMGARDNER, Manning Publications Co, 2016

Additional Reference(s)*:*

1) OpenStack Essentials, Dan Radez, PACKT Publishing, 2015
2) OpenStack Operations Guide, Tom Fifield, Diane Fleming, Anne Gentle, Lorin Hochstein, Jonathan Proulx, Everett Toews, and Joe Topjian, O'Reilly Media, Inc., 2014
3) https://www.openstack.org

Course: **USCS603**	**TOPICS (Credits :03 Lectures/Week:03)** **Cyber Forensics**	

Objectives:

To understand the procedures for identification, preservation, and extraction of electronic evidence, auditing and investigation of network and host system intrusions, analysis and documentation of information gathered

Expected Learning Outcomes :

The student will be able to plan and prepare for all stages of an investigation - detection, initial response and management interaction, investigate various media to collect evidence, report them in a way that would be acceptable in the court of law.

Unit I	**Computer Forensics :** Introduction to Computer Forensics and standard procedure, Incident Verification and System Identification ,Recovery of Erased and damaged data, Disk Imaging and Preservation, Data Encryption and Compression, Automated Search Techniques, Forensics Software **Network Forensic :** Introduction to Network Forensics and tracking network traffic, Reviewing Network Logs, Network Forensics Tools, Performing Live Acquisitions, Order of Volatility, Standard Procedure **Cell Phone and Mobile Device Forensics:** Overview, Acquisition Procedures for Cell Phones and Mobile Devices	**15L**

Unit II	**Internet Forensic :** **Introduction** to Internet Forensics, World Wide Web Threats, Hacking and Illegal access, Obscene and Incident transmission, Domain Name Ownership Investigation, Reconstructing past internet activities and events **E-mail Forensics :** e-mail analysis, e-mail headers and spoofing, Laws against e-mail Crime, **Messenger Forensics:** Yahoo Messenger **Social Media Forensics:** Social Media Investigations **Browser Forensics:** Cookie Storage and Analysis, Analyzing Cache and temporary internet files, Web browsing activity reconstruction	**15L**
Unit III	**Investigation, Evidence presentation and Legal aspects of Digital Forensics:** Authorization to collect the evidence , Acquisition of Evidence, Authentication of the evidence, Analysis of the evidence, Reporting on the findings, Testimony **Introduction to Legal aspects of Digital Forensics:** Laws & regulations, Information Technology Act, Giving Evidence in court, Case Study – Cyber Crime cases, Case Study – Cyber Crime cases	**15L**

Textbook(s):

1. Guide to computer forensics and investigations, Bill Nelson, Amelia Philips and Christopher Steuart, course technology,5th Edition,2015

Additional Reference(s)*:*

2. Incident Response and computer forensics, Kevin Mandia, Chris Prosise, Tata McGrawHill,2nd Edition,2003

Course: **USCS604**	**TOPICS (Credits : 03 Lectures/Week: 03)** **Information Retrieval**	

Objectives:

To provide an overview of the important issues in classical and web information retrieval. The focus is to give an up-to- date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents and of methods for evaluating systems.

Expected Learning Outcomes:

After completion of this course, learner should get an understanding of the field of information retrieval and its relationship to search engines. It will give the learner an understanding to apply information retrieval models.		
Unit I	**Introduction to Information Retrieval:** Introduction, History of IR, Components of IR, and Issues related to IR, Boolean retrieval, Dictionaries and tolerant retrieval.	**15L**
Unit II	**Link Analysis and Specialized Search:** Link Analysis, hubs and authorities, Page Rank and HITS algorithms, Similarity, Hadoop & Map Reduce, Evaluation, Personalized search, Collaborative filtering and content-based recommendation of documents and products, handling "invisible" Web, Snippet generation, Summarization, Question Answering, Cross- Lingual Retrieval.	**15L**
Unit III	**Web Search Engine:** Web search overview, web structure, the user, paid placement, search engine optimization/spam, Web size measurement, search engine optimization/spam, Web Search Architectures. **XML retrieval:** Basic XML concepts, Challenges in XML retrieval, A vector space model for XML retrieval, Evaluation of XML retrieval, Text-centric versus data-centric XML retrieval.	**15L**

Text book(s):

1) Introduction to Information Retrieval, C. Manning, P. Raghavan, and H. Schütze, Cambridge University Press, 2008
2) Modern Information Retrieval: The Concepts and Technology behind Search, Ricardo Baeza -Yates and Berthier Ribeiro – Neto, 2nd Edition, ACM Press Books 2011.
3) Search Engines: Information Retrieval in Practice, Bruce Croft, Donald Metzler and Trevor Strohman, 1st Edition, Pearson, 2009.

Additional Reference(s):

1) Information Retrieval Implementing and Evaluating Search Engines, Stefan Büttcher, Charles L. A. Clarke and Gordon V. Cormack, The MIT Press; Reprint edition (February 12, 2016)

Course: USCS605	TOPICS (Credits : 03 Lectures/Week: 03) **Digital Image Processing**	

Objectives:

To study two-dimensional Signals and Systems. To understand image fundamentals and transforms necessary for image processing. To study the image enhancement techniques in spatial and frequency domain. To study image segmentation and image compression techniques.

Expected Learning Outcomes:

Learner should review the fundamental concepts of a digital image processing system. Analyze the images in the frequency domain using various transforms. Evaluate the techniques for image enhancement and image segmentation. Apply various compression techniques. They will be familiar with basic image processing techniques for solving real problems.

Unit I	**Introduction to Image-processing System :** Introduction, Image Sampling, Quantization, Resolution, Human Visual Systems, Elements of an Image-processing System, Applications of Digital Image Processing **2D Signals and Systems :** 2D signals, separable sequence, periodic sequence, 2D systems, classification of 2D systems, 2D Digital filter **Convolution and Correlation :** 2D Convolution through graphical method, Convolution through 2D Z—transform, 2D Convolution through matrix analysis, Circular Convolution, Applications of Circular Convolution, 2D Correlation **Image Transforms:** Need for transform, image transforms, Fourier transform, 2D Discrete Fourier Transform, Properties of 2D DFT, Importance of Phase, Walsh transform, Hadamard transform, Haar transform, Slant transform, Discrete Cosine transform, KL transform	**15L**
Unit II	**Image Enhancement :**Image Enhancement in spatial domain, Enhancement trough Point operations, Histogram manipulation, Linear and nonlinear Gray Level Transformation, local or neighborhood operation, Median Filter, Spatial domain High pass filtering, Bit-plane slicing, Image Enhancement in frequency domain, Homomorphic filter, Zooming operation, Image Arithmetic	**15L**

	Binary Image processing : Mathematical morphology, Structuring elements, Morphological image processing, Logical operations, Morphological operations, Dilation and Erosion, Distance Transform **Colour Image processing :**Colour images, Colour Model, Colour image quantization, Histogram of a colour image	
Unit III	**Image Segmentation:** Image segmentation techniques, Region approach, Clustering techniques, Thresholding, Edge-based segmentation, Edge detection, Edge Linking, Hough Transform **Image Compression:** Need for image compression, Redundancy in images, Image-compression scheme, Fundamentals of Information Theory, Run-length coding, Shannon-Fano coding, Huffman Coding, Arithmetic Coding, Transform-based compression, Image-compression standard	**15L**

Textbook(s):

1) Digital Image Processing, S Jayaraman, S Esakkirajan, T Veerakumar,Tata McGraw-Hill Education Pvt. Ltd., 2009

Additional Reference(s)*:*

1) Digital Image Processing 3rd Edition, Rafael C Gonzalez, Richard E Woods, Pearson, 2008
2) Scilab Textbook Companion for Digital Image Processing, S. Jayaraman, S. Esakkirajan And T. Veerakumar, 2016 (https://scilab.in/textbook_companion/generate_book/125)

Course: **USCS606**	**TOPICS (Credits : 03 Lectures/Week: 03)** **Data Science**	

Objectives:

Understanding basic data science concepts. Learning to detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization. Making aware of how to address advanced statistical situations, Modeling and Machine Learning.

Expected Learning Outcomes:

After completion of this course, the students should be able to understand & comprehend the problem; and should be able to define suitable statistical method to be adopted.

Unit I	**Introduction to Data Science:** What is Data? Different kinds of data,	**15L**

	Introduction to high level programming language + Integrated Development Environment (IDE), Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, **Data Management**: Data Collection, Data cleaning/extraction, Data analysis & Modeling	
Unit II	**Data Curation:** Query languages and Operations to specify and transform data, Structured/schema based systems as users and acquirers of data Semi-structured systems as users and acquirers of data, Unstructured systems in the acquisition and structuring of data, Security and ethical considerations in relation to authenticating and authorizing access to data on remote systems, Software development tools, Large scale data systems, Amazon Web Services (AWS)	**15L**
Unit III	**Statistical Modelling and Machine Learning:** Introduction to model selection: Regularization, bias/variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO **Data transformations**: Dimension reduction, Feature extraction, Smoothing and aggregating **Supervised Learning**: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification: classification trees, Logistic regression, separating hyperplanes, k-NN **Unsupervised Learning**: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods	**15L**

Textbook(s):

1) Doing Data Science, Rachel Schutt and Cathy O'Neil, O'Reilly,2013
2) Mastering Machine Learning with R, Cory Lesmeister, PACKT Publication,2015

Additional Reference(s):

1) Hands-On Programming with R, Garrett Grolemund,1st Edition, 2014
2) An Introduction to Statistical Learning, James, G., Witten, D., Hastie, T., Tibshirani, R.,Springer,2015

Course: USCS607	TOPICS (Credits : 02 Lectures/Week: 03) Ethical Hacking	
Objectives: To understand the ethics, legality, methodologies and techniques of hacking. **Expected Learning Outcomes:** Learner will know to identify security vulnerabilities and weaknesses in the target applications. They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.		
Unit I	**Information Security : Attacks and Vulnerabilities** **Introduction to information security** : Asset, Access Control, CIA, Authentication, Authorization, Risk, Threat, Vulnerability, Attack, Attack Surface, Malware, Security-Functionality-Ease of Use Triangle **Types of malware** :Worms, viruses, Trojans, Spyware, Rootkits **Types of vulnerabilities** : OWASP Top 10 : cross-site scripting (XSS), cross site request forgery (CSRF/XSRF), SQL injection, input parameter manipulation, broken authentication, sensitive information disclosure, XML External Entities, Broken access control, Security Misconfiguration, Using components with known vulnerabilities, Insufficient Logging and monitoring, OWASP Mobile Top 10, CVE Database **Types of attacks and their common prevention mechanisms** : Keystroke Logging, Denial of Service (DoS /DDoS), Waterhole attack, brute force, phishing and fake WAP, Eavesdropping, Man-in-the-middle, Session Hijacking, Clickjacking, Cookie Theft, URL Obfuscation, buffer overflow, DNS poisoning, ARP poisoning, Identity Theft, IoT Attacks, BOTs and BOTNETs **Case-studies** : Recent attacks – Yahoo, Adult Friend Finder, eBay, Equifax, WannaCry, Target Stores, Uber, JP Morgan Chase, Bad Rabbit	**15L**
Unit II	**Ethical Hacking – I (Introduction and pre-attack)** **Introduction**: Black Hat vs. Gray Hat vs. White Hat (Ethical) hacking, Why is Ethical hacking needed?, How is Ethical hacking different from security auditing and digital forensics?, Signing NDA, Compliance and Regulatory	**15L**

	concerns, Black box vs. White box vs. Black box, Vulnerability assessment and Penetration Testing. **Approach : Planning -** Threat Modeling, set up security verification standards, Set up security testing plan – When, which systems/apps, understanding functionality, black/gray/white, authenticated vs. unauthenticated, internal vs. external PT, Information gathering, Perform Manual and automated (Tools: WebInspect/Qualys, Nessus, Proxies, Metasploit) VA and PT, How WebInspect/Qualys tools work: Crawling/Spidering, requests forging, pattern matching to known vulnerability database and Analyzing results, Preparing report, Fixing security gaps following the report **Enterprise strategy** : Repeated PT, approval by security testing team, Continuous Application Security Testing, **Phases:** Reconnaissance/foot-printing/Enumeration, **Phases**: Scanning, Sniffing	
Unit III	**Ethical Hacking :Enterprise Security** **Phases : Gaining and Maintaining Access** : **Systems hacking** – Windows and Linux – Metasploit and Kali Linux, Keylogging, Buffer Overflows, Privilege Escalation, Network hacking - ARP Poisoning, Password Cracking, WEP Vulnerabilities, MAC Spoofing, MAC Flooding, IPSpoofing, SYN Flooding, Smurf attack, **Applications hacking** : SMTP/Email-based attacks, VOIP vulnerabilities, Directory traversal, Input Manipulation, Brute force attack, Unsecured login mechanisms, SQL injection, XSS, Mobile apps security, **Malware analysis** : Netcat Trojan, wrapping definition, reverse engineering **Phases :** Covering your tracks : Steganography, Event Logs alteration **Additional Security Mechanisms** : IDS/IPS, Honeypots and evasion techniques, Secure Code Reviews (Fortify tool, OWASP Secure Coding Guidelines)	**15L**

Textbook(s):

1) Certified Ethical Hacker Study Guide v9, Sean-Philip Oriyano, Sybex; Study Guide Edition,2016
2) CEH official Certified Ethical Hacking Review Guide, Wiley India Edition, 2007

Additional Reference(s):

1) Certified Ethical Hacker: Michael Gregg, Pearson Education,1st Edition, 2013
2) Certified Ethical Hacker: Matt Walker, TMH,2011
3) http://www.pentest-standard.org/index.php/PTES_Technical_Guidelines
4) https://www.owasp.org/index.php/Category:OWASP_Top_Ten_2017_Project
5) https://www.owasp.org/index.php/Mobile_Top_10_2016-Top_10
6) https://www.owasp.org/index.php/OWASP_Testing_Guide_v4_Table_of_Contents
7) https://www.owasp.org/index.php/OWASP_Secure_Coding_Practices_-_Quick_Reference_Guide
8) https://cve.mitre.org/
9) https://access.redhat.com/blogs/766093/posts/2914051
10) http://resources.infosecinstitute.com/applications-threat-modeling/#gref
11) http://www.vulnerabilityassessment.co.uk/Penetration%20Test.html

Suggested List of Practical – SEMESTER VI

Course: **USCSP601**	**(Credits : 02 Lectures/Week:06)** **Practical of Elective-I**	

USCS601: Wireless Sensor Networks and Mobile Communication

Practical experiments require software tools like INET Framework for OMNeT++, NetSim , TOSSIM, Cisco packet tracer 6.0 and higher version.

1. Understanding the Sensor Node Hardware. (For Eg. Sensors, Nodes(Sensor mote), Base Station, Graphical User Interface.)
2. Exploring and understanding TinyOS computational concepts:- Events, Commands and Task.
   - nesC model
   - nesC Components
3. Understanding TOSSIM for
   - Mote-mote radio communication
   - Mote-PC serial communication
4. Create and simulate a simple adhoc network
5. Understanding, Reading and Analyzing Routing Table of a network.
6. Create a basic MANET implementation simulation for Packet animation and Packet Trace.
7. Implement a Wireless sensor network simulation.
8. Create MAC protocol simulation implementation for wireless sensor Network.
9. Simulate Mobile Adhoc Network with Directional Antenna
10. Create a mobile network using Cell Tower, Central Office Server, Web browser and Web Server. Simulate connection between them.

USCS602: Cloud Computing

1. Study and implementation of Infrastructure as a Service.
2. Installation and Configuration of virtualization using KVM.
3. Study and implementation of Infrastructure as a Service
4. Study and implementation of Storage as a Service
5. Study and implementation of identity management
6. Study Cloud Security management

7. Write a program for web feed.
8. Study and implementation of Single-Sing-On.
9. User Management in Cloud.
10. Case study on Amazon EC2/Microsoft Azure/Google Cloud Platform

USCS603: Cyber Forensics

1. Creating a Forensic Image using FTK Imager/Encase Imager :

- Creating Forensic Image
- Check Integrity of Data
- Analyze Forensic Image

2. Data Acquisition:

- Perform data acquisition using:
- USB Write Blocker + Encase Imager
- SATA Write Blocker + Encase Imager
- Falcon Imaging Device

3. Forensics Case Study:

- Solve the Case study (image file) provide in lab using Encase Investigator or Autopsy

4. Capturing and analyzing network packets using Wireshark (Fundamentals) :

- Identification the live network
- Capture Packets
- Analyze the captured packets

5. Analyze the packets provided in lab and solve the questions using Wireshark :

- What web server software is used by www.snopes.com?
- About what cell phone problem is the client concerned?
- According to Zillow, what instrument will Ryan learn to play?
- How many web servers are running Apache?
- What hosts (IP addresses) think that jokes are more entertaining when they are explained?

6. Using Sysinternals tools for Network Tracking and Process Monitoring :

- Check Sysinternals tools

- Monitor Live Processes
- Capture RAM
- Capture TCP/UDP packets
- Monitor Hard Disk
- Monitor Virtual Memory
- Monitor Cache Memory

7. Recovering and Inspecting deleted files

- Check for Deleted Files
- Recover the Deleted Files
- Analyzing and Inspecting the recovered files

  Perform this using recovery option in ENCASE and also Perform manually through command line

8. Acquisition of Cell phones and Mobile devices
9. Email Forensics

- Mail Service Providers
- Email protocols
- Recovering emails
- Analyzing email header

10. Web Browser Forensics

- Web Browser working
- Forensics activities on browser
- Cache / Cookies analysis
- Last Internet activity

Course: **USCSP602**	**(Credits : 02 Lectures/Week:06)** **Practical of Elective-II**	
USCS604: Information Retrieval		

Practical may be done using software/tools like Python / Java / Hadoop

1. Write a program to demonstrate bitwise operation.
2. Implement Page Rank Algorithm.
3. Implement Dynamic programming algorithm for computing the edit distance between

strings s1 and s2. (Hint. Levenshtein Distance)

4. Write a program to Compute Similarity between two text documents.
5. Write a map-reduce program to count the number of occurrences of each alphabetic character in the given dataset. The count for each letter should be case-insensitive (i.e., include both upper-case and lower-case versions of the letter; Ignore non-alphabetic characters).
6. Implement a basic IR system using Lucene.
7. Write a program for Pre-processing of a Text Document: stop word removal.
8. Write a program for mining Twitter to identify tweets for a specific period and identify trends and named entities.
9. Write a program to implement simple web crawler.
10. Write a program to parse XML text, generate Web graph and compute topic specific page rank.

USCS605: Digital Image Processing

Practical need to be performed using Scilab under Linux or Windows

1. 2D Linear Convolution, Circular Convolution between two 2D matrices
2. Circular Convolution expressed as linear convolution plus alias
3. Linear Cross correlation of a 2D matrix, Circular correlation between two signals and Linear auto correlation of a 2D matrix, Linear Cross correlation of a 2D matrix
4. DFT of 4x4 gray scale image
5. Compute discrete cosine transform, Program to perform KL transform for the given 2D matrix
6. Brightness enhancement of an image, Contrast Manipulation, image negative
7. Perform threshold operation, perform gray level slicing without background
8. Image Segmentation
9. Image Compression
10. Binary Image Processing and Colour Image processing

USCS606:Data Science

Practical shall be performed using R

1. Practical of Data collection, Data curation and management for Unstructured data (NoSQL)

2. Practical of Data collection, Data curation and management for Large-scale Data system (such as MongoDB)
3. Practical of Principal Component Analysis
4. Practical of Clustering
5. Practical of Time-series forecasting
6. Practical of Simple/Multiple Linear Regression
7. Practical of Logistics Regression
8. Practical of Hypothesis testing
9. Practical of Analysis of Variance
10. Practical of Decision Tree

Course: **USCSP603**	**(Credits : 01 Lectures/Week: 03)** **Project Implementation**	
Please Refer to Project Implementation Guidelines		
Course: **USCSP604**	**(Credits : 01 Lectures/Week: 03)** **Practical of Skill Enhancement**	

USCS607 : Ethical Hacking

1. Use Google and Whois for Reconnaissance
2. a) Use CrypTool to encrypt and decrypt passwords using RC4 algorithm
   b) Use Cain and Abel for cracking Windows account password using Dictionary attack and to decode wireless network passwords
3. a) Run and analyze the output of following commands in Linux – ifconfig, ping, netstat, traceroute
   b) Perform ARP Poisoning in Windows
4. Use NMap scanner to perform port scanning of various forms – ACK, SYN, FIN, NULL, XMAS
5. a) Use Wireshark (Sniffer) to capture network traffic and analyze
   b) Use Nemesy to launch DoS attack
6. Simulate persistent cross-site scripting attack
7. Session impersonation using Firefox and Tamper Data add-on

8. Perform SQL injection attack 9. Create a simple keylogger using python 10. Using Metasploit to exploit (Kali Linux)

Project Implementation Guidelines

1. A learner is expected to carry out two different projects: one in Semester V and another in Semester VI.
2. A learner can choose any topic which is covered in Semester I- semester VI or any other topic with the prior approval from head of the department/ project in charge.
3. The Project has to be performed individually.
4. A learner is expected to devote around three months of efforts in the project.
5. The project can be application oriented/web-based/database/research based.
6. It has to be an implemented work; just theoretical study will not be acceptable.
7. A learner can choose any programming language, computational techniques and tools which have been covered during BSc course or any other with the prior permission of head of the department/ project guide.
8. A project guide should be assigned to a learner. He/she will assign a schedule for the project and hand it over to a learner. The guide should oversee the project progress on a weekly basis by considering the workload of 3 lectures as assigned.
9. The quality of the project will be evaluated based on the novelty of the topic, scope of the work, relevance to the computer science, adoption of emerging techniques/technologies and its real-world application.
10. A learner has to maintain a project report with the following subsections
    a) Title Page
    b) Certificate

    A certificate should contain the following information –

    - The fact that the student has successfully completed the project as per the syllabus and that it forms a part of the requirements for completing the BSc degree in computer science of University of Mumbai.
    - The name of the student and the project guide
    - The academic year in which the project is done
    - Date of submission,
    - Signature of the project guide and the head of the department with date along with the department stamp,

- Space for signature of the university examiner and date on which the project is evaluated.

c) Self-attested copy of Plagiarism Report from any open source tool.

d) Index Page detailing description of the following with their subsections:

- Title: A suitable title giving the idea about what work is proposed.
- Introduction: An introduction to the topic giving proper back ground of the topic.
- Requirement Specification: Specify Software/hardware/data requirements.
- System Design details : Methodology/Architecture/UML/DFD/Algorithms/protocols etc. used(whichever is applicable)
- System Implementation: Code implementation
- Results: Test Cases/Tables/Figures/Graphs/Screen shots/Reports etc.
- Conclusion and Future Scope: Specify the Final conclusion and future scope
- References: Books, web links, research articles, etc.

11. The size of the project report shall be around twenty to twenty five pages, excluding the code.
12. The Project report should be submitted in a spiral bound form
13. The Project should be certified by the concerned Project guide and Head of the department.
14. A learner has to make a presentation of working project and will be evaluated as per the Project evaluation scheme

Scheme of Examination

1. Theory:

I. Internal 25 Marks :

a) Test – 20 Marks

20 marks Test – Duration 40 mins It will be conducted either using any open source learning management system like Moodle (Modular object-oriented dynamic learning environment) **OR** A test based on an equivalent online course on the contents of the concerned course (subject) offered by or build using MOOC (Massive Open Online Course) platform.

b) 5 Marks – Active participation in routine class instructional deliveries
Overall conduct as a responsible student, manners, skill in articulation, leadership qualities demonstrated through organizing co-curricular activities, etc.

II. External 75 Marks as per University Guidelines

11. Practical and Project Examination:

There will be separate Practical examination for Elective-I, II, Skill enhansement and project of these Elective-I 100, Elective-II: 100 and Skill Enhansement: 50 and Project Implementation: 50.

In the Practical Examination of Elective-I and II, the student has to perform practical on each of the subjects chosen. The Marking Scheme for each of the Elective is given below:

	Subject Code	**Experiment-I**	**Experiment-II**	**Total Marks**
Elective-I	**USCSP501/ USCSP601**	Experiment-40+Journal-5 +viva-5 Total:50M	Experiment-40+Journal-5+viva-5 Total:50M	100 M
Elective-II	**USCSP502/ USCSP602**	Experiment-40+Journal-5 +viva-5 Total:50M	Experiment-40+Journal-5+viva-5 Total:50M	100 M

Project Implementation	**USCSP503/ USCSP603**	****Project Evaluation Scheme**	**50M**
Skill Enhancement	**USCSP504/ USCSP604**	Experiment-40+Journal:5+viva-5 Total-50M	**50M**
Total Marks			**300M**

(Certified Journal is compulsory for appearing at the time of Practical Examination)

****Project Evaluation Scheme:**

Presentation	**Working of the Project**	**Quality of the Project**	**Viva**	**Documentation**
10Marks	10 Marks	10 Marks	10 Marks	10Marks

(Certified Project Document is compulsory for appearing at the time of Project Presentation)

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Academic Council
Item No: _____

UNIVERSITY OF MUMBAI

Syllabus for SemV&VI
Program: Bachelor of Science
Course: Computer Science

Credit Based Semester and Grading System with effect from
Academic Year 2018-2019

Preamble

This is the third year curriculum in the subject of Computer Science. The revised structure is designed to transform students into technically competent, socially responsible and ethical Computer Science professionals. In these Semesters we have made the advancements in the subject based on the previous Semesters Knowledge.

In the first year basic foundation of important skills required for software development is laid. Second year of this course is about studying core computer science subjects. The third year is the further advancement which covers developing capabilities to design formulations of computing models and its applications in diverse areas.

The proposed curriculum contains two semesters, each Semester contains two Electives: Elective-I and II. Every Elective contains three papers based on specific areas of Computer Science. It also includes one Skill Enhancement paper per semester, helps the student to evaluate his/her computer science domain specific skills and also to meet industry expectations. This revised curriculum has not only taken the specific areas of computer science into consideration but will also give the opportunity to the student to prove his/her ability in the subject practically through the Project Implementation. In Semester V and Semester VI student has to undertake a Project. It can boost his/her confidence and also can encourage the student to perform innovations in the subject as the choice of the Project topic is kept open covering most of the areas of Computer Science subject as per the students interest and the subject they have learned during the Course.

Proposed Curriculum contains challenging and varied subjects aligned with the current trend with the introduction of Machine Intelligence specific subject such as Artificial Intelligence, Information Retrieval. Data Management related subjects such as Cloud Computing and Data Science. Image processing topics such as Game Programming, Digital Image Processing. Introduction of physical world through Architecting of IoT and Wireless Sensor Networks and Mobile Communication. Security domain is also evolved by the introduction of Ethical Hacking, Cyber Forensic and Information and Network Security. To get the hands on experience Linux Server Administration and Web Services topics are included.

In essence, the objective of this syllabus is to create a pool of technologically savvy, theoretically strong, innovatively skilled and ethically responsible generation of computer science professionals. Hope that the teacher and student community of University of Mumbai will accept and appreciate the efforts.

T.Y.B.Sc. (Semester V and VI)
Computer Science Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2018-2019

SEMESTER V			
Course	**TOPICS**	**Credits**	**L / Week**
	Elective-I (Select Any Two)		
USCS501	Artificial Intelligence	3	3
USCS502	Linux Server Administration	3	3
USCS503	Software Testing and Quality Assurance	3	3
	Elective-II (Select Any Two)		
USCS504	Information and Network Security	3	3
USCS505	Architecting of IoT	3	3
USCS506	Web Services	3	3
	Skill Enhancement		
USCS507	Game Programming	2	3
	Practical		
USCSP501	Practical of Elective-I	2	6
USCSP502	Practical of Elective-II	2	6
USCSP503	Project Implementation	1	3
USCSP504	Practical of Skill Enhancement : USCS507	1	3

SEMESTER VI			
Course	**TOPICS**	**Credits**	**L / Week**
	Elective-I (Select Any Two)		
USCS601	Wireless Sensor Networks and Mobile Communication	3	3
USCS602	Cloud Computing	3	3
USCS603	Cyber Forensics	3	3
	Elective-II (Select Any Two)		

USCS604	Information Retrieval	3	3
USCS605	Digital Image Processing	3	3
USCS606	Data Science	3	3
	Skill Enhancement		
USCS607	Ethical Hacking	2	3
	Practical		
USCSP601	Practical of Elective-I	2	6
USCSP602	Practical of Elective-II	2	6
USCSP603	Project Implementation	1	3
USCSP604	Practical of Skill Enhancement : USCS607	1	3

SEMESTER V

THEORY

Course: USCS501	TOPICS (Credits : 03 Lectures/Week:03) Artificial Intelligence	
Objectives: Artificial Intelligence (AI) and accompanying tools and techniques bring transformational changes in the world. Machines capability to match, and sometimes even surpass human capability, make AI a hot topic in Computer Science. This course aims to introduce the learner to this interesting area. **Expected Learning Outcomes:** After completion of this course, learner should get a clear understanding of AI and different search algorithms used for solving problems. The learner should also get acquainted with different learning algorithms and models used in machine learning.		
Unit I	**What Is AI:** Foundations, History and State of the Art of AI. **Intelligent Agents:** Agents and Environments, Nature of Environments, Structure of Agents. **Problem Solving by searching:** Problem-Solving Agents, Example Problems, Searching for Solutions, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions.	**15L**
Unit II	**Learning from Examples:** Forms of Learning, Supervised Learning, Learning Decision Trees, Evaluating and Choosing the Best Hypothesis, Theory of Learning, Regression and Classification with Linear Models, Artificial Neural Networks, Nonparametric Models, Support Vector Machines, Ensemble Learning, Practical Machine Learning	**15L**

Unit III	**Learning probabilistic models:** Statistical Learning, Learning with Complete Data, Learning with Hidden Variables: The EM Algorithm. Reinforcement learning: Passive Reinforcement Learning, Active Reinforcement Learning, Generalization in Reinforcement Learning, Policy Search, Applications of Reinforcement Learning.	**15L**

Textbook(s):

1) Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig,3rd Edition, Pearson, 2010.

Additional Reference(s):

1) Artificial Intelligence: Foundations of Computational Agents, David L Poole,Alan K. Mackworth, 2nd Edition, Cambridge University Press ,2017.
2) Artificial Intelligence, Kevin Knight and Elaine Rich, 3rd Edition, 2017
3) The Elements of Statistical Learning, Trevor Hastie, Robert Tibshirani and Jerome Friedman, Springer, 2013

Course:	**TOPICS (Credits : 03 Lectures/Week:03)**
USCS502	**Linux Server Administration**

Objectives:

Demonstrate proficiency with the Linux command line interface, directory & file management techniques, file system organization, and tools commonly found on most Linux distributions. Effectively operate a Linux system inside of a network environment to integrate with existing service solutions. Demonstrate the ability to troubleshoot challenging technical problems typically encountered when operating and administering Linux systems.

Expected Learning Outcomes:

Learner will be able to develop Linux based systems and maintain. Learner will be able to install appropriate service on Linux server as per requirement. Learner will have proficiency in Linux server administration.

Unit I	**Introduction:** Technical Summary of Linux Distributions, Managing Software **Single-Host Administration:** Managing Users and Groups, Booting and shutting down processes, File Systems, Core System Services, Process of configuring, compiling, Linux Kernel **Networking and Security:** TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security	**15L**
Unit II	**Internet Services:** Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMTP), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network Authentication, OpenLDAP Server, Samba and LDAP, Network authentication system (Kerberos), Domain Name Service (DNS), Security	**15L**
Unit III	**Intranet Services:** Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS), Lightweight Directory Access Protocol (LDAP), Dynamic Host Configuration Protocol (DHCP), MySQL, LAMP Applications File Servers, Email Services, Chat Applications, Virtual Private Networking.	**15L**

Textbook(s):

1) Linux Administration: A Beginner's Guide, Wale Soyinka, Seventh Edition, McGraw-Hill Education, 2016
2) Ubuntu Server Guide, Ubuntu Documentation Team, 2016

Additional Reference(s):

1) Mastering Ubuntu Server, Jay LaCroix, PACKT Publisher, 2016

Course: USCS503	TOPICS (Credits : 03 Lectures/Week:03) Software Testing and Quality Assurance	
Objectives: To provide learner with knowledge in Software Testing techniques. To understand how testing methods can be used as an effective tools in providing quality assurance concerning for software. To provide skills to design test case plan for testing software **Expected Learning Outcomes:** Understand various software testing methods and strategies. Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.		
Unit I	**Software Testing and Introduction to quality :** Introduction, Nature of errors, an example for Testing, Definition of Quality , QA, QC, QM and SQA , Software Development Life Cycle, Software Quality Factors **Verification and Validation :** Definition of V &V , Different types of V & V Mechanisms, Concepts of Software Reviews, Inspection and Walkthrough **Software Testing Techniques :** Testing Fundamentals, Test Case Design, White Box Testing and its types, Black Box Testing and its types	**15L**
Unit II	**Software Testing Strategies :** Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing **Software Metrics :** Concept and Developing Metrics, Different types of Metrics, Complexity metrics **Defect Management:** Definition of Defects, Defect Management Process, Defect Reporting, Metrics Related to Defects, Using Defects for Process Improvement.	**15L**
Unit III	**Software Quality Assurance :** Quality Concepts, Quality Movement, Background Issues, SQA activities, Software Reviews, Formal Technical Reviews, Formal approaches to SQA, Statistical Quality Assurance, Software Reliability, The ISO 9000 Quality Standards, , SQA Plan , Six sigma, Informal Reviews	**15L**

	Quality Improvement : Introduction, Pareto Diagrams, Cause-effect Diagrams, Scatter Diagrams, Run charts **Quality Costs :** Defining Quality Costs, Types of Quality Costs, Quality Cost Measurement, Utilizing Quality Costs for Decision-Making	

Textbook(s):

1. Software Engineering for Students, A Programming Approach, Douglas Bell, 4th Edition,, Pearson Education, 2005
2. Software Engineering – A Practitioners Approach, Roger S. Pressman, 5th Edition, Tata McGraw Hill, 2001
3. Quality Management, Donna C. S. Summers, 5th Edition, Prentice-Hall, 2010.
4. Total Quality Management, Dale H. Besterfield, 3rd Edition, Prentice Hall, 2003.

Additional Reference(s):

1. Software engineering: An Engineering approach, J.F. Peters, W. Pedrycz , John Wiley,2004
2. Software Testing and Quality Assurance Theory and Practice, Kshirsagar Naik, Priyadarshi Tripathy , John Wiley & Sons, Inc. , Publication, 2008
3. Software Engineering and Testing, B. B. Agarwal, S. P. Tayal, M. Gupta, Jones and Bartlett Publishers, 2010

Course: **USCS504**	**TOPICS (Credits : 03 Lectures/Week:03)** **Information and Network Security**

Objectives:

To provide students with knowledge of basic concepts of computer security including network security and cryptography.

Expected Learning Outcomes:

Understand the principles and practices of cryptographic techniques. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. Understand various protocols for network security to protect against the threats in a network

Unit I	**Introduction:** Security Trends, The OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms **Classical Encryption Techniques:** Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers **Public-Key Cryptography and RSA:** Principles of Public-Key Cryptosystems, The RSA Algorithm	**15L**
Unit II	**Key Management:** Public-Key Cryptosystems, Key Management, Diffie-Hellman Key Exchange **Message Authentication and Hash Functions**: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC **Digital Signatures and Authentication:** Digital Signatures, Authentication Protocols, Digital Signature Standard **Authentication Applications:** Kerberos, X.509 Authentication, Public-Key Infrastructure	**15L**
Unit III	**Electronic Mail Security:** Pretty Good Privacy, S/MIME **IP Security:** Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management **Web Security:** Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction **Intrusion:** Intruders, Intrusion Techniques, Intrusion Detection **Malicious Software:** Viruses and Related Threats, Virus Countermeasures, DDOS **Firewalls:** Firewall Design Principles, Types of Firewalls	**15L**

Textbook(s):

1) Cryptography and Network Security: Principles and Practice 5th Edition, William

Stallings, Pearson,2010

Additional Reference(s):

1) Cryptography and Network Security, Atul Kahate, Tata McGraw-Hill, 2013.
2) Cryptography and Network, Behrouz A Fourouzan, Debdeep Mukhopadhyay, 2nd Edition,TMH,2011

Course: **USCS505**	**TOPICS (Credits : 03 Lectures/Week:03)** **Architecting of IoT**	
Objectives: Discovering the interconnection and integration of the physical world. Learner should get knowledge of the architecture of IoT. **Expected Learning Outcomes:** Learners are able to design & develop IoT Devices. They should also be aware of the evolving world of M2M Communications and IoT analytics.		
Unit I	**IoT-An Architectural Overview**: Building architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations. **IoT Architecture-State of the Art** : Introduction, State of the art, Reference Model and architecture, IoT reference Model - IoT Reference Architecture Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views	**15L**
Unit II	**IoT Data Link Layer and Network Layer Protocols:** PHY/MAC Layer(3GPP MTC, IEEE 802.11, IEEE 802.15), Wireless HART,Z-Wave, Bluetooth Low Energy, Zigbee Smart Energy DASH7 **Network Layer**:IPv4, IPv6, 6LoWPAN, 6TiSCH,ND, DHCP, ICMP, RPL, CORPL, CARP	**15L**

Unit III	**Transport layer protocols :** Transport Layer (TCP, MPTCP, UDP, DCCP, SCTP)-(TLS, DTLS) **Session layer:** Session Layer-HTTP, CoAP, XMPP, AMQP, MQTT **Service layer protocols:** Service Layer -oneM2M, ETSI M2M, OMA, BBF	**15L**

Textbook(s):

1. From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence, Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle,1st Edition, Academic Press, 2014.
2. Learning Internet of Things, Peter Waher, PACKT publishing, BIRMINGHAM – MUMBAI,2015

Additional References(s):

1. Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications, Daniel Minoli, Wiley Publications,2013
2. Internet of Things (A Hands-onApproach), Vijay Madisetti and ArshdeepBahga,1st Edition, VPT, 2014.
3. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

Course: **USCS506**	**TOPICS (Credits : 03 Lectures/Week:03)** **Web Services**

Objectives:

To understand the details of web services technologies like SOAP, WSDL, and UDDI. To learn how to implement and deploy web service client and server. To understand the design principles and application of SOAP and REST based web services (JAX-Ws and JAX-RS).To understand WCF service. To design secure web services and QoS of Web Services

Expected Learning Outcomes:

Emphasis on SOAP based web services and associated standards such as WSDL. Design SOAP based / RESTful / WCF services Deal with Security and QoS issues of Web Services

Unit I	**Web services basics :** What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Services across platform	**15L**
Unit II	**The REST Architectural style :** Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services	**15L**
Unit III	**Developing Service-Oriented Applications with WCF :** What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details. Web Service QoS	**15L**

Textbook(s):

1) Web Services: Principles and Technology, Michael P. Papazoglou, Pearson Education Limited, 2008
2) RESTful Java Web Services, Jobinesh Purushothaman, PACKT Publishing,2nd Edition, 2015
3) Developing Service-Oriented Applications with WCF, Microsoft, 2017 https://docs.microsoft.com/en-us/dotnet/framework/wcf/index

Additional Reference(s):

1) Leonard Richardson and Sam Ruby, RESTful Web Services, O'Reilly, 2007
2) The Java EE 6Tutorial, Oracle, 2013

Course: **USCS507**	**TOPICS (Credits : 03 Lectures/Week: 03)** **Game Programming**	
Objectives: Learner should get the understanding computer Graphics programming using Directx or Opengl. Along with the VR and AR they should also aware of GPU, newer technologies and programming using most important API for windows. **Expected Learning Outcomes:** Learner should study Graphics and gamming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community and learn.		
Unit I	**Mathematics for Computer Graphics, DirectX Kickstart:** **Cartesian Coordinate system:** The Cartesian XY-plane, Function Graphs, Geometric Shapes, Polygonal Shapes, Areas of Shapes, Theorem of Pythagoras in 2D, Coordinates, Theorem of Pythagoras in 3D, 3D Polygons, Euler's Rule **Vectors:** Vector Manipulation, multiplying a Vector by a Scalar, Vector Addition and Subtraction, Position Vectors, Unit Vectors, Cartesian Vectors, Vector Multiplication, Scalar Product, Example of the Dot Product, The Dot Product in Lighting Calculations, The Dot Product in Back-Face Detection, The Vector Product, The Right-Hand Rule, deriving a Unit Normal Vector for a Triangle Areas, Calculating 2D Areas **Transformations:** 2D Transformations, Matrices, Homogeneous Coordinates, 3D Transformations, Change of Axes, Direction Cosines, rotating a Point about an Arbitrary Axis, Transforming Vectors, Determinants, Perspective Projection, Interpolation **DirectX:** Understanding GPU and GPU architectures. How they are different from CPU Architectures? Understanding how to solve by GPU?	**15L**

Unit II	**DirectX Pipeline and Programming:** **Introduction To DirectX 11:** COM, Textures and Resources Formats, The swap chain and Page flipping, Depth Buffering, Texture Resource Views, Multisampling Theory and MS in Direct3D, Feature Levels **Direct3D 11 Rendering Pipeline:** Overview, Input Assembler Stage (IA), Vertex Shader Stage (VS), The Tessellation Stage (TS), Geometry Shader Stage (GS), Pixel Shader Stage (PS), Output merger Stage (OM) Understanding Meshes or Objects, Texturing, Lighting, Blending. **Interpolation and Character Animation:** **Trigonometry:** The Trigonometric Ratios, Inverse Trigonometric Ratios, Trigonometric Relationships, The Sine Rule, The Cosine Rule, Compound Angles, Perimeter Relationships **Interpolation**: Linear Interpolant, Non-Linear Interpolation, Trigonometric Interpolation, Cubic Interpolation, Interpolating Vectors, Interpolating Quaternions **Curves:** Circle, Bezier, B-Splines **Analytic Geometry:** Review of Geometry, 2D Analytic Geometry, Intersection Points, Point in Triangle, and Intersection of circle with straight line.	**15L**
Unit III	**Introduction to Rendering Engines:** Understanding the current market Rendering Engines. Understanding AR, VR and MR.Depth Mappers, Mobile Phones, Smart Glasses, HMD's **Unity Engine: Multi-platform publishing, VR + AR:** Introduction and working in Unity, 2D, Graphics, Physics, Scripting, Animation, Timeline, Multiplayer and Networking, UI, Navigation and Pathfinding, XR, Publishing. **Scripting:** Scripting Overview, Scripting Tools and Event Overview **XR:** VR, AR, MR, Conceptual Differences. SDK, Devices	**15L**

Text Book(s):

1) Mathematics for Computer Graphics, John Vince, Springer-Verlag London, 5th Edition,2017
2) Mathematics for 3D Game Programming and Computer Graphic, Eric Lengyel, Delmar

Cengage Learning, Delmar Cengage Learning,2011

3) Introduction To 3D Game Programming With Directx® 11,Frank D Luna, Mercury Learning And Information,2012.
4) https://docs.unity3d.com/Manual/index.html - Free

Additional Reference(s):

1) Computer Graphics, C Version, Donald Hern and Pauline Baker, Pearson Education, 2nd Edition, 1997
2) HLSL Development Cookbook, Doron Feinstein, PACKT Publishing,2013

Suggested List of Practical- SEMESTER V

Course: **USCSP501**	**(Credits : 02 Lectures/Week: 06)** **Practical of Elective-I**	

USCS501: Artificial Intelligence

Practical shall be implemented in LISP

1. Implement Breadth first search algorithm for Romanian map problem.
2. Implement Iterative deep depth first search for Romanian map problem.
3. Implement A* search algorithm for Romanian map problem.
4. Implement recursive best-first search algorithm for Romanian map problem.
5. Implement decision tree learning algorithm for the restaurant waiting problem.
6. Implement feed forward back propagation neural network learning algorithm for the restaurant waiting problem.
7. Implement Adaboost ensemble learning algorithm for the restaurant waiting problem.
8. Implement Naive Bayes' learning algorithm for the restaurant waiting problem.
9. Implement passive reinforcement learning algorithm based on adaptive dynamic programming (ADP) for the 3 by 4 world problem
10. Implement passive reinforcement learning algorithm based on temporal differences (TD) for 3 by 4 world problem.

USCS502: Linux Server Administration

- Practical shall be performed using any Linux Server (with 8GB RAM).

- Internet connection will be required so that Linux server (command line mode) can be connected to Internet.

1. Install DHCP Server in Ubuntu 16.04
2. Initial settings: Add a User, Network Settings, Change to static IP address, Disable IPv6 if not needed, Configure Services, display the list of services which are running, Stop and turn OFF auto-start setting for a service if you don't need it, Sudo Settings
3. Configure NTP Server (NTPd), Install and Configure NTPd, Configure NTP Client (Ubuntu and Windows)
4. SSH Server : Password Authentication

Configure SSH Server to manage a server from the remote computer, SSH Client : (Ubuntu and Windows)

5. Install DNS Server BIND, Configure DNS server which resolves domain name or IP address, Install BIND 9, Configure BIND, Limit ranges you allow to access if needed.
6. Configure DHCP Server, Configure DHCP (Dynamic Host Configuration Protocol) Server, Configure NFS Server to share directories on your Network, Configure NFS Client. (Ubuntu and Windows Client OS)
7. Configure LDAP Server, Configure LDAP Server in order to share users' accounts in your local networks, Add LDAP User Accounts in the OpenLDAP Server, Configure LDAP Client in order to share users' accounts in your local networks. Install phpLDAPadmin to operate LDAP server via Web browser.
8. Configure NIS Server in order to share users' accounts in your local networks, Configure NIS Client to bind NIS Server.
9. Install MySQL to configure database server, Install phpMyAdmin to operate MySQL on web browser from Clients.
10. Install Samba to share folders or files between Windows and Linux.

USCS503: Software Testing and Quality Assurance

1. Install Selenium IDE; Write a test suite containing minimum 4 test cases for different formats.
2. Conduct a test suite for any two web sites.
3. Install Selenium server (Selenium RC) and demonstrate it using a script in Java/PHP.
4. Write and test a program to login a specific web page.
5. Write and test a program to update 10 student records into table into Excel file
6. Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects).
7. Write and test a program to provide total number of objects present / available on the page.
8. Write and test a program to get the number of items in a list / combo box.
9. Write and test a program to count the number of check boxes on the page checked and unchecked count.
10. Load Testing using JMeter, Android Application testing using Appium Tools, Bugzilla Bug tracking tools.

Course: USCSP502	(Credits : 02 Lectures/Week: 06) Practical of Elective-II	

USCS504: Information and Network security

1.Write programs to implement the following Substitution Cipher Techniques:

- Caesar Cipher
- Monoalphabetic Cipher

2 Write programs to implement the following Substitution Cipher Techniques:

- Vernam Cipher
- Playfair Cipher

3 Write programs to implement the following Transposition Cipher Techniques:

- Rail Fence Cipher
- Simple Columnar Technique

4 Write program to encrypt and decrypt strings using

- DES Algorithm
- AES Algorithm

5 Write a program to implement RSA algorithm to perform encryption / decryption of a given string.

6 Write a program to implement the Diffie-Hellman Key Agreement algorithm to generate symmetric keys.

7 Write a program to implement the MD5 algorithm compute the message digest.

8 Write a program to calculate HMAC-SHA1 Signature

9 Write a program to implement SSL.

10 Configure Windows Firewall to block:

- A port
- An Program
- A website

USCS505: Architecting of IoT

1. a) Edit text files with nano and cat editor, Learn sudo privileges and Unix shell commands such as cd , ls , cat, etc

b) Learn to set dynamic and static IP. Connect to and Ethernet and WiFi network. Learn to vnc and ssh into a raspberry pi using vnc and putty from a different computer on the network.

c) Write a basic bash script to open programs in kiosk mode. Learn how to autostart programs on boot.

2. Run the node red editor and run simple programs and trigger gpios. Use basic nodes such as inject, debug, gpio
3. Open the python idle editor and run simple Python scripts such as to print Fibonacci numbers, string functions. Learn how to install modules using Pip and write functions
4. Setup a physical button switch and trigger an led in node red and python w debounce
5. Write simple JavaScript functions in Node-Red simple HTTP server page using node red
6. Setup a TCP server and client on a raspberry pi using Python modules to send messages and execute shell commands from within python such as starting another application
7. Trigger a set of led Gpios on the pi via a Python Flask web server
8. Interface the raspberry pi with a 16x2 LCD display and print values.
9. Setup a Mosquitto MQTT server and client and write a Python script to communicate data between Pi's.
10. Interface with an Accelerometer Gyro Mpu6050 on the i2c bus and send sensor values over the internet via mqtt.

USCS506: Web Services

1. Write a program to implement to create a simple web service that converts the temperature from Fahrenheit to Celsius and vice a versa.
2. Write a program to implement the operation can receive request and will return a response in two ways. a) One - Way operation b) Request –Response
3. Write a program to implement business UDDI Registry entry.
4. Develop client which consumes web services developed in different platform.
5. Write a JAX-WS web service to perform the following operations. Define a Servlet / JSP that consumes the web service.
6. Define a web service method that returns the contents of a database in a JSON string. The contents should be displayed in a tabular format.
7. Define a RESTful web service that accepts the details to be stored in a database and performs

CRUD operation.

8. Implement a typical service and a typical client using WCF.
9. Use WCF to create a basic ASP.NET Asynchronous JavaScript and XML (AJAX) service.
10. Demonstrates using the binding attribute of an endpoint element in WCF.

Course: **USCSP503**	**(Credits : 01 Lectures/Week: 03)** **Project Implementation**	
Please Refer to Project Implementation Guidelines		
Course: **USCSP504**	**(Credits : 01 Lectures/Week: 03)** **Practical of Skill Enhancement**	

USCS507 : Game Programming

1. Setup DirectX 11, Window Framework and Initialize Direct3D Device
2. Buffers, Shaders and HLSL (Draw a triangle using Direct3D 11)
3. Texturing (Texture the Triangle using Direct 3D 11)
4. Lightning (Programmable Diffuse Lightning using Direct3D 11)
5. Specular Lightning (Programmable Spot Lightning using Direct3D 11)
6. Loading models into DirectX 11 and rendering.

Perform following Practical using online content from the Unity Tutorials Web--sites: https://unity3d.com/learn/tutorials/s/interactive-tutorials

7. https://unity3d.com/learn/tutorials/s/2d-ufo-tutorial
8. https://unity3d.com/learn/tutorials/s/space-shooter-tutorial
9. https://unity3d.com/learn/tutorials/s/roll-ball-tutorial
10. https://unity3d.com/learn/tutorials/topics/vr/introduction?playlist=22946

SEMESTER VI

THEORY

Course: USCS601	TOPICS (Credits : 03 Lectures/Week: 03) Wireless Sensor Networks and Mobile Communication	
Objectives: In this era of wireless and adhoc network, connecting different wireless devices and understanding their compatibility is very important. Information is gathered in many different ways from these devices. Learner should be able to conceptualize and understand the framework. On completion, will be able to have a firm grip over this very important segment of wireless network. **Expected Learning Outcomes:** After completion of this course, learner should be able to list various applications of wireless sensor networks, describe the concepts, protocols, design, implementation and use of wireless sensor networks. Also implement and evaluate new ideas for solving wireless sensor network design issues.		
Unit I	**Introduction:** Introduction to Sensor Networks, unique constraints and challenges. Advantage of Sensor Networks, Applications of Sensor Networks, Mobile Adhoc NETworks (MANETs) and Wireless Sensor Networks, Enabling technologies for Wireless Sensor Networks. **Sensor Node Hardware and Network Architecture:** Single-node architecture, Hardware components & design constraints, Operating systems and execution environments, introduction to TinyOS and nesC. Network architecture, Optimization goals and figures of merit, Design principles for WSNs, Service interfaces of WSNs, Gateway concepts.	**15L**
Unit II	**Medium Access Control Protocols:** Fundamentals of MAC Protocols, MAC Protocols for WSNs, Sensor-MAC Case Study. **Routing Protocols** : Data Dissemination and Gathering, Routing Challenges and Design Issues in Wireless Sensor Networks, Routing Strategies in Wireless Sensor Networks. **Transport Control Protocols :** Traditional Transport Control Protocols,	**15L**

	Transport Protocol Design Issues, Examples of Existing Transport Control Protocols, Performance of Transport Control Protocols.	
Unit III	**Introduction, Wireless Transmission and Medium Access Control:** Applications, A short history of wireless communication. **Wireless Transmission:** Frequency for radio transmission, Signals, Antennas, Signal propagation, Multiplexing, Modulation, Spread spectrum, Cellular systems. **Telecommunication, Satellite and Broadcast Systems: GSM:** Mobile services, System architecture, Radio interface, Protocols, Localization And Calling, Handover, security, New data services; DECT: System architecture, Protocol architecture; ETRA, UMTS and IMT- 2000. Satellite Systems: History, Applications, Basics: GEO, LEO, MEO; Routing, Localization, Handover.	**15L**

Textbook(s):

1) Protocols and Architectures for Wireless Sensor Network, Holger Kerl, Andreas Willig, John Wiley and Sons, 2005
2) Wireless Sensor Networks Technology, Protocols, and Applications ,Kazem Sohraby, Daniel Minoli and TaiebZnati, John Wiley & Sons, 2007
3) Mobile communications, Jochen Schiller,2nd Edition, Addison wisely , Pearson Education,2012

Additional Reference(s):

1) Fundamentals of Wireless Sensor Networks, Theory and Practice, Waltenegus Dargie, Christian Poellabauer , Wiley Series on wireless Communication and Mobile Computing, 2011
2) Networking Wireless Sensors, Bhaskar Krishnamachari , Cambridge University Press, 2005

Course: USCS602	TOPICS (Credits : 03 Lectures/Week: 03) **Cloud Computing**	

Objectives:

To provide learners with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture, implantations and applications. To expose the learners to frontier areas of Cloud Computing, while providing sufficient foundations to enable further study and research.

Expected Learning Outcomes:

After successfully completion of this course, learner should be able to articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing using open source technology. Learner should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc. They should explain the core issues of cloud computing such as security, privacy, and interoperability.

Unit I	Introduction to Cloud Computing, Characteristics and benefits of Cloud Computing, Basic concepts of Distributed Systems, Web 2.0, Service-Oriented Computing, Utility-Oriented Computing. Elements of Parallel Computing. Elements of Distributed Computing. Technologies for Distributed Computing. Cloud Computing Architecture. The cloud reference model. Infrastructure as a service. Platform as a service. Software as a service. Types of clouds.	**15L**
Unit II	Characteristics of Virtualized Environments. Taxonomy of Virtualization Techniques. Virtualization and Cloud Computing. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management tool for virtualization environment. Open challenges of Cloud Computing	**15L**
Unit III	Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat	**15L**

Textbook(s):

1) Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, S Thamarai Selvi, Tata McGraw Hill Education Private Limited, 2013
2) OpenStack in Action, V. K. CODY BUMGARDNER, Manning Publications Co, 2016

Additional Reference(s)*:*

1) OpenStack Essentials, Dan Radez, PACKT Publishing, 2015
2) OpenStack Operations Guide, Tom Fifield, Diane Fleming, Anne Gentle, Lorin Hochstein, Jonathan Proulx, Everett Toews, and Joe Topjian, O'Reilly Media, Inc., 2014
3) https://www.openstack.org

Course: **USCS603**	**TOPICS (Credits :03 Lectures/Week:03)** **Cyber Forensics**	

Objectives:

To understand the procedures for identification, preservation, and extraction of electronic evidence, auditing and investigation of network and host system intrusions, analysis and documentation of information gathered

Expected Learning Outcomes :

The student will be able to plan and prepare for all stages of an investigation - detection, initial response and management interaction, investigate various media to collect evidence, report them in a way that would be acceptable in the court of law.

Unit I	**Computer Forensics :** Introduction to Computer Forensics and standard procedure, Incident Verification and System Identification ,Recovery of Erased and damaged data, Disk Imaging and Preservation, Data Encryption and Compression, Automated Search Techniques, Forensics Software **Network Forensic :** Introduction to Network Forensics and tracking network traffic, Reviewing Network Logs, Network Forensics Tools, Performing Live Acquisitions, Order of Volatility, Standard Procedure **Cell Phone and Mobile Device Forensics:** Overview, Acquisition Procedures for Cell Phones and Mobile Devices	**15L**

Unit II	**Internet Forensic :** **Introduction** to Internet Forensics, World Wide Web Threats, Hacking and Illegal access, Obscene and Incident transmission, Domain Name Ownership Investigation, Reconstructing past internet activities and events **E-mail Forensics :** e-mail analysis, e-mail headers and spoofing, Laws against e-mail Crime, **Messenger Forensics:** Yahoo Messenger **Social Media Forensics:** Social Media Investigations **Browser Forensics:** Cookie Storage and Analysis, Analyzing Cache and temporary internet files, Web browsing activity reconstruction	**15L**
Unit III	**Investigation, Evidence presentation and Legal aspects of Digital Forensics:** Authorization to collect the evidence , Acquisition of Evidence, Authentication of the evidence, Analysis of the evidence, Reporting on the findings, Testimony **Introduction to Legal aspects of Digital Forensics:** Laws & regulations, Information Technology Act, Giving Evidence in court, Case Study – Cyber Crime cases, Case Study – Cyber Crime cases	**15L**

Textbook(s):

1. Guide to computer forensics and investigations, Bill Nelson, Amelia Philips and Christopher Steuart, course technology,5th Edition,2015

Additional Reference(s)*:*

2. Incident Response and computer forensics, Kevin Mandia, Chris Prosise, Tata McGrawHill,2nd Edition,2003

Course: **USCS604**	**TOPICS (Credits : 03 Lectures/Week: 03)** **Information Retrieval**	

Objectives:

To provide an overview of the important issues in classical and web information retrieval. The focus is to give an up-to- date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents and of methods for evaluating systems.

Expected Learning Outcomes:

After completion of this course, learner should get an understanding of the field of information retrieval and its relationship to search engines. It will give the learner an understanding to apply information retrieval models.		
Unit I	**Introduction to Information Retrieval:** Introduction, History of IR, Components of IR, and Issues related to IR, Boolean retrieval, Dictionaries and tolerant retrieval.	**15L**
Unit II	**Link Analysis and Specialized Search:** Link Analysis, hubs and authorities, Page Rank and HITS algorithms, Similarity, Hadoop & Map Reduce, Evaluation, Personalized search, Collaborative filtering and content-based recommendation of documents and products, handling "invisible" Web, Snippet generation, Summarization, Question Answering, Cross- Lingual Retrieval.	**15L**
Unit III	**Web Search Engine:** Web search overview, web structure, the user, paid placement, search engine optimization/spam, Web size measurement, search engine optimization/spam, Web Search Architectures. **XML retrieval:** Basic XML concepts, Challenges in XML retrieval, A vector space model for XML retrieval, Evaluation of XML retrieval, Text-centric versus data-centric XML retrieval.	**15L**

Text book(s):

1) Introduction to Information Retrieval, C. Manning, P. Raghavan, and H. Schütze, Cambridge University Press, 2008
2) Modern Information Retrieval: The Concepts and Technology behind Search, Ricardo Baeza -Yates and Berthier Ribeiro – Neto, 2nd Edition, ACM Press Books 2011.
3) Search Engines: Information Retrieval in Practice, Bruce Croft, Donald Metzler and Trevor Strohman, 1st Edition, Pearson, 2009.

Additional Reference(s):

1) Information Retrieval Implementing and Evaluating Search Engines, Stefan Büttcher, Charles L. A. Clarke and Gordon V. Cormack, The MIT Press; Reprint edition (February 12, 2016)

Course: USCS605	TOPICS (Credits : 03 Lectures/Week: 03) **Digital Image Processing**	

Objectives:

To study two-dimensional Signals and Systems. To understand image fundamentals and transforms necessary for image processing. To study the image enhancement techniques in spatial and frequency domain. To study image segmentation and image compression techniques.

Expected Learning Outcomes:

Learner should review the fundamental concepts of a digital image processing system. Analyze the images in the frequency domain using various transforms. Evaluate the techniques for image enhancement and image segmentation. Apply various compression techniques. They will be familiar with basic image processing techniques for solving real problems.

Unit I	**Introduction to Image-processing System :** Introduction, Image Sampling, Quantization, Resolution, Human Visual Systems, Elements of an Image-processing System, Applications of Digital Image Processing **2D Signals and Systems :** 2D signals, separable sequence, periodic sequence, 2D systems, classification of 2D systems, 2D Digital filter **Convolution and Correlation :** 2D Convolution through graphical method, Convolution through 2D Z—transform, 2D Convolution through matrix analysis, Circular Convolution, Applications of Circular Convolution, 2D Correlation **Image Transforms:** Need for transform, image transforms, Fourier transform, 2D Discrete Fourier Transform, Properties of 2D DFT, Importance of Phase, Walsh transform, Hadamard transform, Haar transform, Slant transform, Discrete Cosine transform, KL transform	**15L**
Unit II	**Image Enhancement :**Image Enhancement in spatial domain, Enhancement trough Point operations, Histogram manipulation, Linear and nonlinear Gray Level Transformation, local or neighborhood operation, Median Filter, Spatial domain High pass filtering, Bit-plane slicing, Image Enhancement in frequency domain, Homomorphic filter, Zooming operation, Image Arithmetic	**15L**

	Binary Image processing : Mathematical morphology, Structuring elements, Morphological image processing, Logical operations, Morphological operations, Dilation and Erosion, Distance Transform **Colour Image processing :**Colour images, Colour Model, Colour image quantization, Histogram of a colour image	
Unit III	**Image Segmentation:** Image segmentation techniques, Region approach, Clustering techniques, Thresholding, Edge-based segmentation, Edge detection, Edge Linking, Hough Transform **Image Compression:** Need for image compression, Redundancy in images, Image-compression scheme, Fundamentals of Information Theory, Run-length coding, Shannon-Fano coding, Huffman Coding, Arithmetic Coding, Transform-based compression, Image-compression standard	**15L**

Textbook(s):

1) Digital Image Processing, S Jayaraman, S Esakkirajan, T Veerakumar,Tata McGraw-Hill Education Pvt. Ltd., 2009

Additional Reference(s)*:*

1) Digital Image Processing 3rd Edition, Rafael C Gonzalez, Richard E Woods, Pearson, 2008
2) Scilab Textbook Companion for Digital Image Processing, S. Jayaraman, S. Esakkirajan And T. Veerakumar, 2016 (https://scilab.in/textbook_companion/generate_book/125)

Course: **USCS606**	**TOPICS (Credits : 03 Lectures/Week: 03)** **Data Science**	

Objectives:

Understanding basic data science concepts. Learning to detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization. Making aware of how to address advanced statistical situations, Modeling and Machine Learning.

Expected Learning Outcomes:

After completion of this course, the students should be able to understand & comprehend the problem; and should be able to define suitable statistical method to be adopted.

Unit I	**Introduction to Data Science:** What is Data? Different kinds of data,	**15L**

	Introduction to high level programming language + Integrated Development Environment (IDE), Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, **Data Management**: Data Collection, Data cleaning/extraction, Data analysis & Modeling	
Unit II	**Data Curation:** Query languages and Operations to specify and transform data, Structured/schema based systems as users and acquirers of data Semi-structured systems as users and acquirers of data, Unstructured systems in the acquisition and structuring of data, Security and ethical considerations in relation to authenticating and authorizing access to data on remote systems, Software development tools, Large scale data systems, Amazon Web Services (AWS)	**15L**
Unit III	**Statistical Modelling and Machine Learning:** Introduction to model selection: Regularization, bias/variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO **Data transformations**: Dimension reduction, Feature extraction, Smoothing and aggregating **Supervised Learning**: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification: classification trees, Logistic regression, separating hyperplanes, k-NN **Unsupervised Learning**: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods	**15L**

Textbook(s):

1) Doing Data Science, Rachel Schutt and Cathy O'Neil, O'Reilly,2013
2) Mastering Machine Learning with R, Cory Lesmeister, PACKT Publication,2015

Additional Reference(s):

1) Hands-On Programming with R, Garrett Grolemund,1st Edition, 2014
2) An Introduction to Statistical Learning, James, G., Witten, D., Hastie, T., Tibshirani, R.,Springer,2015

Course: USCS607	TOPICS (Credits : 02 Lectures/Week: 03) Ethical Hacking	
Objectives: To understand the ethics, legality, methodologies and techniques of hacking. **Expected Learning Outcomes:** Learner will know to identify security vulnerabilities and weaknesses in the target applications. They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.		
Unit I	**Information Security : Attacks and Vulnerabilities** **Introduction to information security** : Asset, Access Control, CIA, Authentication, Authorization, Risk, Threat, Vulnerability, Attack, Attack Surface, Malware, Security-Functionality-Ease of Use Triangle **Types of malware** :Worms, viruses, Trojans, Spyware, Rootkits **Types of vulnerabilities** : OWASP Top 10 : cross-site scripting (XSS), cross site request forgery (CSRF/XSRF), SQL injection, input parameter manipulation, broken authentication, sensitive information disclosure, XML External Entities, Broken access control, Security Misconfiguration, Using components with known vulnerabilities, Insufficient Logging and monitoring, OWASP Mobile Top 10, CVE Database **Types of attacks and their common prevention mechanisms** : Keystroke Logging, Denial of Service (DoS /DDoS), Waterhole attack, brute force, phishing and fake WAP, Eavesdropping, Man-in-the-middle, Session Hijacking, Clickjacking, Cookie Theft, URL Obfuscation, buffer overflow, DNS poisoning, ARP poisoning, Identity Theft, IoT Attacks, BOTs and BOTNETs **Case-studies** : Recent attacks – Yahoo, Adult Friend Finder, eBay, Equifax, WannaCry, Target Stores, Uber, JP Morgan Chase, Bad Rabbit	**15L**
Unit II	**Ethical Hacking – I (Introduction and pre-attack)** **Introduction**: Black Hat vs. Gray Hat vs. White Hat (Ethical) hacking, Why is Ethical hacking needed?, How is Ethical hacking different from security auditing and digital forensics?, Signing NDA, Compliance and Regulatory	**15L**

	concerns, Black box vs. White box vs. Black box, Vulnerability assessment and Penetration Testing. **Approach : Planning -** Threat Modeling, set up security verification standards, Set up security testing plan – When, which systems/apps, understanding functionality, black/gray/white, authenticated vs. unauthenticated, internal vs. external PT, Information gathering, Perform Manual and automated (Tools: WebInspect/Qualys, Nessus, Proxies, Metasploit) VA and PT, How WebInspect/Qualys tools work: Crawling/Spidering, requests forging, pattern matching to known vulnerability database and Analyzing results, Preparing report, Fixing security gaps following the report **Enterprise strategy** : Repeated PT, approval by security testing team, Continuous Application Security Testing, **Phases:** Reconnaissance/foot-printing/Enumeration, **Phases**: Scanning, Sniffing	
Unit III	**Ethical Hacking :Enterprise Security** **Phases : Gaining and Maintaining Access** : **Systems hacking** – Windows and Linux – Metasploit and Kali Linux, Keylogging, Buffer Overflows, Privilege Escalation, Network hacking - ARP Poisoning, Password Cracking, WEP Vulnerabilities, MAC Spoofing, MAC Flooding, IPSpoofing, SYN Flooding, Smurf attack, **Applications hacking** : SMTP/Email-based attacks, VOIP vulnerabilities, Directory traversal, Input Manipulation, Brute force attack, Unsecured login mechanisms, SQL injection, XSS, Mobile apps security, **Malware analysis** : Netcat Trojan, wrapping definition, reverse engineering **Phases :** Covering your tracks : Steganography, Event Logs alteration **Additional Security Mechanisms** : IDS/IPS, Honeypots and evasion techniques, Secure Code Reviews (Fortify tool, OWASP Secure Coding Guidelines)	**15L**

Textbook(s):

1) Certified Ethical Hacker Study Guide v9, Sean-Philip Oriyano, Sybex; Study Guide Edition,2016
2) CEH official Certified Ethical Hacking Review Guide, Wiley India Edition, 2007

Additional Reference(s):

1) Certified Ethical Hacker: Michael Gregg, Pearson Education,1st Edition, 2013
2) Certified Ethical Hacker: Matt Walker, TMH,2011
3) http://www.pentest-standard.org/index.php/PTES_Technical_Guidelines
4) https://www.owasp.org/index.php/Category:OWASP_Top_Ten_2017_Project
5) https://www.owasp.org/index.php/Mobile_Top_10_2016-Top_10
6) https://www.owasp.org/index.php/OWASP_Testing_Guide_v4_Table_of_Contents
7) https://www.owasp.org/index.php/OWASP_Secure_Coding_Practices_-_Quick_Reference_Guide
8) https://cve.mitre.org/
9) https://access.redhat.com/blogs/766093/posts/2914051
10) http://resources.infosecinstitute.com/applications-threat-modeling/#gref
11) http://www.vulnerabilityassessment.co.uk/Penetration%20Test.html

Suggested List of Practical – SEMESTER VI

Course: **USCSP601**	**(Credits : 02 Lectures/Week:06)** **Practical of Elective-I**	

USCS601: Wireless Sensor Networks and Mobile Communication

Practical experiments require software tools like INET Framework for OMNeT++, NetSim , TOSSIM, Cisco packet tracer 6.0 and higher version.

1. Understanding the Sensor Node Hardware. (For Eg. Sensors, Nodes(Sensor mote), Base Station, Graphical User Interface.)
2. Exploring and understanding TinyOS computational concepts:- Events, Commands and Task.
   - nesC model
   - nesC Components
3. Understanding TOSSIM for
   - Mote-mote radio communication
   - Mote-PC serial communication
4. Create and simulate a simple adhoc network
5. Understanding, Reading and Analyzing Routing Table of a network.
6. Create a basic MANET implementation simulation for Packet animation and Packet Trace.
7. Implement a Wireless sensor network simulation.
8. Create MAC protocol simulation implementation for wireless sensor Network.
9. Simulate Mobile Adhoc Network with Directional Antenna
10. Create a mobile network using Cell Tower, Central Office Server, Web browser and Web Server. Simulate connection between them.

USCS602: Cloud Computing

1. Study and implementation of Infrastructure as a Service.
2. Installation and Configuration of virtualization using KVM.
3. Study and implementation of Infrastructure as a Service
4. Study and implementation of Storage as a Service
5. Study and implementation of identity management
6. Study Cloud Security management

7. Write a program for web feed.
8. Study and implementation of Single-Sing-On.
9. User Management in Cloud.
10. Case study on Amazon EC2/Microsoft Azure/Google Cloud Platform

USCS603: Cyber Forensics

1. Creating a Forensic Image using FTK Imager/Encase Imager :

- Creating Forensic Image
- Check Integrity of Data
- Analyze Forensic Image

2. Data Acquisition:

- Perform data acquisition using:
- USB Write Blocker + Encase Imager
- SATA Write Blocker + Encase Imager
- Falcon Imaging Device

3. Forensics Case Study:

- Solve the Case study (image file) provide in lab using Encase Investigator or Autopsy

4. Capturing and analyzing network packets using Wireshark (Fundamentals) :

- Identification the live network
- Capture Packets
- Analyze the captured packets

5. Analyze the packets provided in lab and solve the questions using Wireshark :

- What web server software is used by www.snopes.com?
- About what cell phone problem is the client concerned?
- According to Zillow, what instrument will Ryan learn to play?
- How many web servers are running Apache?
- What hosts (IP addresses) think that jokes are more entertaining when they are explained?

6. Using Sysinternals tools for Network Tracking and Process Monitoring :

- Check Sysinternals tools

- Monitor Live Processes
- Capture RAM
- Capture TCP/UDP packets
- Monitor Hard Disk
- Monitor Virtual Memory
- Monitor Cache Memory

7. Recovering and Inspecting deleted files

- Check for Deleted Files
- Recover the Deleted Files
- Analyzing and Inspecting the recovered files

  Perform this using recovery option in ENCASE and also Perform manually through command line

8. Acquisition of Cell phones and Mobile devices
9. Email Forensics

- Mail Service Providers
- Email protocols
- Recovering emails
- Analyzing email header

10. Web Browser Forensics

- Web Browser working
- Forensics activities on browser
- Cache / Cookies analysis
- Last Internet activity

Course: **USCSP602**	**(Credits : 02 Lectures/Week:06)** **Practical of Elective-II**	
USCS604: Information Retrieval		

Practical may be done using software/tools like Python / Java / Hadoop

1. Write a program to demonstrate bitwise operation.
2. Implement Page Rank Algorithm.
3. Implement Dynamic programming algorithm for computing the edit distance between

strings s1 and s2. (Hint. Levenshtein Distance)

4. Write a program to Compute Similarity between two text documents.
5. Write a map-reduce program to count the number of occurrences of each alphabetic character in the given dataset. The count for each letter should be case-insensitive (i.e., include both upper-case and lower-case versions of the letter; Ignore non-alphabetic characters).
6. Implement a basic IR system using Lucene.
7. Write a program for Pre-processing of a Text Document: stop word removal.
8. Write a program for mining Twitter to identify tweets for a specific period and identify trends and named entities.
9. Write a program to implement simple web crawler.
10. Write a program to parse XML text, generate Web graph and compute topic specific page rank.

USCS605: Digital Image Processing

Practical need to be performed using Scilab under Linux or Windows

1. 2D Linear Convolution, Circular Convolution between two 2D matrices
2. Circular Convolution expressed as linear convolution plus alias
3. Linear Cross correlation of a 2D matrix, Circular correlation between two signals and Linear auto correlation of a 2D matrix, Linear Cross correlation of a 2D matrix
4. DFT of 4x4 gray scale image
5. Compute discrete cosine transform, Program to perform KL transform for the given 2D matrix
6. Brightness enhancement of an image, Contrast Manipulation, image negative
7. Perform threshold operation, perform gray level slicing without background
8. Image Segmentation
9. Image Compression
10. Binary Image Processing and Colour Image processing

USCS606:Data Science

Practical shall be performed using R

1. Practical of Data collection, Data curation and management for Unstructured data (NoSQL)

2. Practical of Data collection, Data curation and management for Large-scale Data system (such as MongoDB)
3. Practical of Principal Component Analysis
4. Practical of Clustering
5. Practical of Time-series forecasting
6. Practical of Simple/Multiple Linear Regression
7. Practical of Logistics Regression
8. Practical of Hypothesis testing
9. Practical of Analysis of Variance
10. Practical of Decision Tree

Course: **USCSP603**	**(Credits : 01 Lectures/Week: 03)** **Project Implementation**	
Please Refer to Project Implementation Guidelines		
Course: **USCSP604**	**(Credits : 01 Lectures/Week: 03)** **Practical of Skill Enhancement**	

USCS607 : Ethical Hacking

1. Use Google and Whois for Reconnaissance
2. a) Use CrypTool to encrypt and decrypt passwords using RC4 algorithm
   b) Use Cain and Abel for cracking Windows account password using Dictionary attack and to decode wireless network passwords
3. a) Run and analyze the output of following commands in Linux – ifconfig, ping, netstat, traceroute
   b) Perform ARP Poisoning in Windows
4. Use NMap scanner to perform port scanning of various forms – ACK, SYN, FIN, NULL, XMAS
5. a) Use Wireshark (Sniffer) to capture network traffic and analyze
   b) Use Nemesy to launch DoS attack
6. Simulate persistent cross-site scripting attack
7. Session impersonation using Firefox and Tamper Data add-on

8. Perform SQL injection attack 9. Create a simple keylogger using python 10. Using Metasploit to exploit (Kali Linux)

Project Implementation Guidelines

1. A learner is expected to carry out two different projects: one in Semester V and another in Semester VI.
2. A learner can choose any topic which is covered in Semester I- semester VI or any other topic with the prior approval from head of the department/ project in charge.
3. The Project has to be performed individually.
4. A learner is expected to devote around three months of efforts in the project.
5. The project can be application oriented/web-based/database/research based.
6. It has to be an implemented work; just theoretical study will not be acceptable.
7. A learner can choose any programming language, computational techniques and tools which have been covered during BSc course or any other with the prior permission of head of the department/ project guide.
8. A project guide should be assigned to a learner. He/she will assign a schedule for the project and hand it over to a learner. The guide should oversee the project progress on a weekly basis by considering the workload of 3 lectures as assigned.
9. The quality of the project will be evaluated based on the novelty of the topic, scope of the work, relevance to the computer science, adoption of emerging techniques/technologies and its real-world application.
10. A learner has to maintain a project report with the following subsections
    a) Title Page
    b) Certificate

    A certificate should contain the following information –

    - The fact that the student has successfully completed the project as per the syllabus and that it forms a part of the requirements for completing the BSc degree in computer science of University of Mumbai.
    - The name of the student and the project guide
    - The academic year in which the project is done
    - Date of submission,
    - Signature of the project guide and the head of the department with date along with the department stamp,

- Space for signature of the university examiner and date on which the project is evaluated.

c) Self-attested copy of Plagiarism Report from any open source tool.

d) Index Page detailing description of the following with their subsections:

- Title: A suitable title giving the idea about what work is proposed.
- Introduction: An introduction to the topic giving proper back ground of the topic.
- Requirement Specification: Specify Software/hardware/data requirements.
- System Design details : Methodology/Architecture/UML/DFD/Algorithms/protocols etc. used(whichever is applicable)
- System Implementation: Code implementation
- Results: Test Cases/Tables/Figures/Graphs/Screen shots/Reports etc.
- Conclusion and Future Scope: Specify the Final conclusion and future scope
- References: Books, web links, research articles, etc.

11. The size of the project report shall be around twenty to twenty five pages, excluding the code.
12. The Project report should be submitted in a spiral bound form
13. The Project should be certified by the concerned Project guide and Head of the department.
14. A learner has to make a presentation of working project and will be evaluated as per the Project evaluation scheme

Scheme of Examination

1. Theory:

I. Internal 25 Marks :

a) Test – 20 Marks

20 marks Test – Duration 40 mins It will be conducted either using any open source learning management system like Moodle (Modular object-oriented dynamic learning environment) **OR** A test based on an equivalent online course on the contents of the concerned course (subject) offered by or build using MOOC (Massive Open Online Course) platform.

b) 5 Marks – Active participation in routine class instructional deliveries
Overall conduct as a responsible student, manners, skill in articulation, leadership qualities demonstrated through organizing co-curricular activities, etc.

II. External 75 Marks as per University Guidelines

11. Practical and Project Examination:

There will be separate Practical examination for Elective-I, II, Skill enhansement and project of these Elective-I 100, Elective-II: 100 and Skill Enhansement: 50 and Project Implementation: 50.

In the Practical Examination of Elective-I and II, the student has to perform practical on each of the subjects chosen. The Marking Scheme for each of the Elective is given below:

	Subject Code	**Experiment-I**	**Experiment-II**	**Total Marks**
Elective-I	**USCSP501/ USCSP601**	Experiment-40+Journal-5 +viva-5 Total:50M	Experiment-40+Journal-5+viva-5 Total:50M	100 M
Elective-II	**USCSP502/ USCSP602**	Experiment-40+Journal-5 +viva-5 Total:50M	Experiment-40+Journal-5+viva-5 Total:50M	100 M

Project Implementation	**USCSP503/ USCSP603**	****Project Evaluation Scheme**	**50M**
Skill Enhancement	**USCSP504/ USCSP604**	Experiment-40+Journal:5+viva-5 Total-50M	**50M**
Total Marks			**300M**

(Certified Journal is compulsory for appearing at the time of Practical Examination)

****Project Evaluation Scheme:**

Presentation	**Working of the Project**	**Quality of the Project**	**Viva**	**Documentation**
10Marks	10 Marks	10 Marks	10 Marks	10Marks

(Certified Project Document is compulsory for appearing at the time of Project Presentation)

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UNIVERSITY OF MUMBAI

Syllabus for

Program: Bachelor of Science

Course: Computer Science

Choice Based Credit System (CBCS)
(Revised)

with effect from

Academic Year 2021-2022

Preamble

The rise of Information and Communication Technology (ICT) has profoundly affected modern society. Increasing applications of computers in almost all areas of human endeavor has led to vibrant industries with concurrent rapid change in technology.

As the computing field advances at a rapid pace, the students must possess a solid foundation that allows and encourages them to maintain relevant skills as the field evolves. Specific languages and technology platforms change over time. Thus students must continue to learn and adapt their skills throughout their careers. To develop this ability, students will be exposed to multiple programming languages, tools, paradigms and technologies as well as the fundamental underlying principles throughout this programme.

The programme offers required courses such as programming languages, data structures, computer architecture and organization, algorithms, database systems, operating systems, and software engineering; as well as specialized courses in artificial intelligence, computer-based communication networks, distributed computing, information security, graphics, human-computer interaction, multimedia, scientific computing, web technology, and other current topics in computer science.

The core philosophy of this programme is to –

- Form strong foundations of Computer Science
- Nurture programming, analytical & design skills for the real world problems.
- Introduce emerging trends to the students in gradual way.
- Groom the students for the challenges of ICT industry

The students these days not only aspire for a career in the industry but also look for research opportunities. The main aim of this programme is to deliver a modern curriculum that will equip graduates with strong theoretical and practical backgrounds to enable them to excel in the workplace and to be lifelong learners. Not only does it prepares the students for a career in Software industry, it also motivates them towards further studies and research opportunities. Graduating students, can thus take up postgraduate programmes in CS leading to research as well as R&D, can be employable at IT industries, or can adopt a business management career.

In the first year i.e. for semester I & II, basic foundation of important skills required for software development is laid. The syllabus proposes to have four core subjects of Computer science and two core courses of Mathematics-Statistics. All core subjects are proposed to have theory as well as practical tracks. While the Computer Science courses will form fundamental skills for solving computational problems, the Mathematics & Statistics course will inculcate research-oriented acumen. Ability Enhancement Courses on Soft Skill Development will ensure an overall and holistic development of the students. The syllabus design for further semesters encompasses more advanced and specialized courses of Computer Science.

We sincerely believe that any student taking this programme will get very strong foundation and exposure to basics, advanced and emerging trends of the subject. We hope that the students' community and teachers' fraternity will appreciate the treatment given to the courses in the syllabus.

We wholeheartedly thank all experts who shared their valuable feedbacks and suggestions in order to improvise the contents, we have sincerely attempted to incorporate each of them. We further thank Chairperson and members of Board of Studies for their confidence in us.

Special thanks to Department of Computer Science and colleagues from various colleges, who volunteered or have indirectly helped designing certain specialized courses and the syllabus as a whole.

Programme Structure for B.Sc. Computer Science

Programme Duration	06 Semesters *spread across 3 years*
Total Credits required for successful completion of the Course	120
Credits required from the Core Courses	76
Credits required for the Ability Enhancement Courses	04
Credits required for Skills Enhancement Courses	32
Credits for General Elective Courses	08
Minimum Attendance per Semester	75%

Progamme Objectives

The objectives of the 3 year B.Sc. Computer Science programme are as follows:

- To develop an understanding and knowledge of the basic theory of Computer Science with good foundation on theory, systems and applications.
- To fosternecessary skills and analytical abilities for developing computer based solutions of real-life problems.
- To provide training in emergent computing technologies which lead to innovative solutions for industry and academia.
- To develop the necessary study skills and knowledge to pursue further post-graduate study in computer science or other related fields.
- To develop the professional skillset required for a career in an information technology oriented business or industry.
- To enable students to work independently and collaboratively, communicate effectively, and become responsible, competent, confident, insightful, and creative users of computing technology

Progamme Learning Outcomes

At the end of three year Bachelor of Computer Science the students will be able:

- To formulate, to model, to design solutions, procedure and to use software tools to solve real world problems.
- To design and develop computer programs/computer -based systems in the areas such as networking, web design, security, cloud computing, IoT, data science and other emerging technologies.
- To familiarize with the modern-day trends in industry and research based settings and thereby innovate novel solutions to existing problems.
- To apply concepts, principles, and theories relating to computer science to new situations.
- To use current techniques, skills, and tools necessary for computing practice
- To apply standard Software Engineering practices and strategies in real-time software project development
- To pursue higher studies of specialization and to take up technical employment.
- To work independently or collaboratively as an effective tame member on a substantial software project.
- To communicate and present their work effectively and coherently.
- To display ethical code of conduct in usage of Internet and Cyber systems.
- To engage in independent and life-long learning in the background of rapid changing IT industry.

F.Y.B.Sc. Computer Science Syllabus

Choice Based Credit System (CBCS)

with effect from

Academic year 2021-2022

Semester – I				
Course Code	**Course Type**	**Course Title**	**Credits**	**Lectures/Week**
USCS101	Core Subject	Digital Systems & Architecture	2	3
USCSP101	Core Subject Practical	Digital Systems & Architecture – Practical	1	3
USCS102	Core Subject	Introduction to Programming with Python	2	3
USCSP102	Core Subject Practical	Introduction to Programming with Python – Practical	1	3
USCS103	Core Subject	LINUX Operating System	2	3
USCSP103	Core Subject Practical	LINUX Operating System – Practical	1	3
USCS104	Core Subject	Open Source Technologies	2	3
USCSP104	Core Subject Practical	Open Source Technologies – Practical	1	3
USCS105	Core Subject	Discrete Mathematics	2	3
USCSP105	Core Subject Practical	Discrete Mathematics – Practical	1	3
USCS106	Core Subject	Descriptive Statistics	2	3
USCSP106	Core Subject Practical	Descriptive Statistics – Practical	1	3
USCS107	Ability Enhancement Course	Soft Skills	2	3

F.Y.B.Sc. Computer Science Syllabus

Choice Based Credit System (CBCS)

with effect from

Academic year 2021-2022

Semester – II				
Course Code	**Course Type**	**Course Title**	**Credits**	**Lectures/Week**
USCS201	Core Subject	Design & Analysis of Algorithms	2	3
USCSP201	Core Subject Practical	Design & Analysis of Algorithms – Practical	1	3
USCS202	Core Subject	Advanced Python Programming	2	3
USCSP202	Core Subject Practical	Advanced Python Programming – Practical	1	3
USCS203	Core Subject	Introduction to OOPs using C++	2	3
USCSP203	Core Subject Practical	Introduction to OOPs using C++ – Practical	1	3
USCS204	Core Subject	Database Systems	2	3
USCSP204	Core Subject Practical	Database Systems – Practical	1	3
USCS205	Core Subject	Calculus	2	3
USCSP205	Core Subject Practical	Calculus – Practical	1	3
USCS206	Core Subject	Statistical Methods	2	3
USCSP206	Core Subject Practical	Statistical Methods – Practical	1	3
USCS207	Ability Enhancement Course	E-Commerce & Digital Marketing	2	3

Semester I

Course Code	Course Title	Credits	Lectures /Week
USCS101	**Digital Systems & Architecture**	**2**	**3**

About the Course:
This course introduces the principles of computer organization and the basic architecture concepts.The course emphasizes performance and cost analysis, instruction set design, pipelining, memory technology, memory hierarchy, virtual memory management, and I/O systems.

Course Objectives:

- To have an understanding of Digital systems and operation of a digital computer.
- To learn different architectures & organizations of memory systems, processor organization and control unit.
- To understand the working principles of multiprocessor and parallel organization's as advanced computer architectures

Learning Outcomes:
After successful completion of this course, students would be able to

- To learn about how computer systems work and underlying principles
- To understand the basics of digital electronics needed for computers
- To understand the basics of instruction set architecture for reduced and complex instruction sets
- To understand the basics of processor structure and operation
- To understand how data is transferred between the processor and I/O devices

Unit	Topics	No of Lectures
I	**Fundamentals of Digital Logic:** Boolean algebra, Logic Gates, Simplification of Logic Circuits: Algebraic Simplification, Karnaugh Maps. Combinational Circuits: Adders, Mux, De-Mux, Sequential Circuits: Flip-Flops (SR, JK & D), Counters: synchronous and asynchronous Counter **Computer System:** Comparison of Computer Organization & Architecture, Computer Components and Functions, Interconnection Structures. Bus Interconnections, Input / Output: I/O Module, Programmed I/O, Interrupt Driven I/O, Direct Memory Access	**15**
II	**Memory System Organization:** Classification and design parameters, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Interleaved and Associative Memory. Cache Memory: Design Principles, Memory mappings, Replacement Algorithms, Cache performance, Cache Coherence. Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories, RAID Levels **Processor Organization:** Instruction Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU], Processor Organization, Structure and Function. Register	**15**

	Organization, Basic Microprocessor operations: Data Transfer (Register / Memory) Operations, Arithmetic & Logical Operations, Instruction Cycle, Instruction Pipelining. Introduction to RISC and CISC Architecture, Instruction Level Parallelism and Superscalar Processors: Design Issues	
III	**Control Unit:** Micro-Operations, Functional Requirements, Processor Control, Hardwired Implementation, Micro-programmed Control**.** **Fundamentals of Advanced Computer Architecture:** Parallel Architecture: Classification of Parallel Systems, Flynn's Taxonomy, Array Processors, Clusters, and NUMA Computers. Multiprocessor Systems: Structure & Interconnection Networks, Multi-Core Computers: Introduction, Organization and Performance.	**15**

Textbooks:

1. M. Mano, Computer System Architecture 3rd edition, Pearson
2. Carl Hamacher et al., Computer Organization and Embedded Systems, 6 ed., McGraw-Hill 2012
3. R P Jain, Modern Digital Electronics, Tata McGraw Hill Education Pvt. Ltd. , 4th Edition, 2010

Additional References:

1. William Stallings (2010), Computer Organization and Architecture- designing for performance,8th edition, Prentice Hall, New Jersy.
2. Anrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, PearsonEducation Inc,
3. John P. Hayes (1998), Computer Architecture and Organization, 3rd edition, Tata McGrawHill

Course Code	**Course Title**	**Credits**	**Lectures /Week**
USCSP101	**Digital Systems & Architecture – Practical**	**1**	**3**
1	Study and verify the truth table of various logic gates (NOT, AND, OR, NAND, NOR, EX-OR, and EX-NOR).		
2	Simplify given Boolean expression and realize it.		
3	Design and verify a half/full adder		
4	Design and verify half/full subtractor		
5	Design a 4 bit magnitude comparator using combinational circuits.		
6	Design and verify the operation of flip-flops using logic gates.		
7	Verify the operation of a counter.		
8	Verify the operation of a 4 bit shift register		
9	Design and implement expression using multiplexers / demultiplexers.		
10	Design and implement 3-bit binary ripple counter using JK flip flops.		
11	Simple microprocessor programs for data transfer operations		
12	Simple microprocessor programs for arithmetic & logical transfer operations		
Note	Practical 1 – 10 can be performed using any open source simulator (like Logisim) (Download it from https://sourceforge.net/projects/circuit/)		

	Practical 11 – 12 can be performed on any simulation software like Jubin's 8085 simulator		
Course Code	**Course Title**	**Credits**	**Lectures /Week**
USCS102	**Introduction to Programming with Python**	**2**	**3**

About the Course:
This course is aims at introducing one of the fastest growing programming language of current time and enables learners to understand the fundamentals of programming with Python. Learners will be able to write programs to solve real-world problems, and produce quality code. It will help to develop strong skills of programming for implementing applications for emerging fields including data science and machine learning.

Course Objectives:

- To learn how to design and program Python applications.
- To explore the innards of Python Programming and understand components of Python Program
- To define the structure and components of a Python program.
- To learn how to write loops and decision statements in Python
- To learn about inbuilt input/output operations and compound data types in Python

Learning Outcomes:
After successful completion of this course, students would be able to:

- Ability to store, manipulate and access data in Python
- Ability to implement basic Input / Output operations in Python
- Ability to define the structure and components of a Python program.
- Ability to learn how to write loops and decision statements in Python.
- Ability to learn how to write functions and pass arguments in Python.
- Ability to create and use Compound data types in Python

Unit	Topics	No of Lectures
I	**Overview of Python:** History & Versions, Features of Python, Execution of a Python Program, Flavours of Python, Innards of Python, Python Interpreter, Memory Management in Python, Garbage Collection in Python, Comparison of Python with C and Java, Installing Python, Writing and Executing First Python Program, Getting Help, IDLE **Data Types, Variables and Other Basic Elements:** Comments, Docstrings, Data types- Numeric Data type, Compound Data Type, Boolean Data type, Dictionary, Sets, Mapping, Basic Elements of Python, Variables **Input and Output Operations:** Input Function, Output Statements, The print() function, The print("string") function, The print(variables list) function, , The print(object) function, The print(formatted string) function, Command Line Arguments	**15**

	Control Statements: The if statement, The if … else Statement, The 'if … elif … else' Statement, Loop Statement- while loop, for loop, Infinite loop, Nested loop, The else suite, break statement, continue statement, pass statement, assert statement, return statement	
II	**Operators:** Arithmetic operators, Assignment operators, Unary minus operator, Relational operators, Logical operators, Bitwise operators, Membership operators, Identity operators, Precedence of Operators, Associativity of Operators **Arrays:** Creating Arrays, Indexing and Slicing of Arrays, Basic Array Operations, Arrays Processing, Mathematical Operations on Array, Aliasing Arrays, Slicing and Indexing in NumPy Arrays, Basic slicing, Advanced Indexing, Dimensions of Arrays, Attributes of an Array, The ndim Attribute, The shape Attribute, The size Attribute, The itemsize Attribute **Functions:** Function definition and call, Returning Results, Returning Multiple Values from a Function, Built-in Functions, Difference between a Function and a Method, Pass Value by Object Reference, Parameters and Arguments, Formal and Actual Arguments, Positional Arguments, Keyword Arguments, Default Arguments, Arbitrary Arguments, Recursive Functions, Anonymous or Lambda Functions, Using Lambda with the filter() Function, Using Lambda with the map() Function, Using Lambda with the reduce() Function **Modules**:Introduction to Modules in Python	**15**
III	**Strings:** Creating Strings, Functions of Strings, Working with Strings, Length of a String, Indexing and Slicing, Repeating and Concatenating Strings, Checking Membership, Comparing Strings, Removing Spaces, Finding Substrings, Counting Substrings, Immutability, Splitting and Joining Strings, Changing Case, Checking Starting and Ending of a String, Sorting Strings, Searching in the Strings, Testing Methods, Formatting Strings, Finding the Number of Characters and Words, Inserting Substrings into a String **List and Tuples:** Lists, List Functions and Methods, List Operations, List Slices, Nested Lists, Tuples, Functions in Tuple **Dictionaries:** Creating a Dictionary, Operators in Dictionary, Dictionary Methods, Using for Loop with Dictionaries, Operations on Dictionaries, Converting Lists into Dictionary, Converting Strings into Dictionary, Passing Dictionaries to Functions, Sorting the Elements of a Dictionary using Lambda, Ordered Dictionaries	**15**

Textbooks:

1. Practical Programming: An Introduction to Computer Science Using Python 3, Paul Gries , Jennifer Campbell, Jason Montojo, Pragmatic Bookshelf, 2nd Edition, 2014

2. Programming through Python, M. T Savaliya, R. K. Maurya& G M Magar, Sybgen Learning India, 2020

Additional References:

1. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018
2. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017
3. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018
4. Python Programming: Using Problem Solving Approach, ReemaThareja, Oxford Univeristy Press, 2017
5. Let Us Python, Yashwant. B. Kanetkar, BPB Publication, 2019

Course Code	Course Title	Credits	Lectures /Week
USCSP102	**Introduction to Programming with Python – Practical**	**1**	**3**
1	Write a program to design and develop python program to implement various control statement using suitable examples		
2	Write program in Python to define and call functions for suitable problem.		
3	Write Python program to demonstrate different types of function arguments.		
4	Write a Python program to demonstrate the precedence and associativity of operators.		
5	Write suitable Python program to implement recursion for problems such as Fibonacci series, Factorial, Tower of Hanoi etc.		
6	Write Python program to implement and use lambda function in python		
7	Write a python program to create and manipulate arrays in Python. Also demonstrate use of slicing and indexing for accessing elements from the array.		
8	Write a program to implement list in Python for suitable problem. Demonstrate various operations on it.		
9	Write a program to implement tuple in Python for suitable problem. Demonstrate various operations on it.		
10	Write a program to implement dictionary in Python for suitable problem. Demonstrate various operations on it.		

Course Code	Course Title	Credits	Lectures /Week
USCS103	**LINUX Operating System**	**2**	**3**

About the Course:
This syllabus will help to train students in fundamental skills and build-up sustainable interest in Linux Operating System. It will improve necessary knowledge base to understand Linux Operating System and its practical implementation, it will also help to develop Linux based solutions for real life problems.

Course Objectives:

- To learn basic concepts of Linux in terms of operating system
- To learn use of various shell commands with regular expressions
- To set Linux Environment variables and learn setting file permissions to maintain Linux security implementation
- To learn various editors available in Linux OS
- To learn shell scripting.
- To learn installation of compilers and programming using C and Python languages on Linux platform

Learning Outcomes:
After successful completion of this course, students would be able to

- Work with Linux file system structure, Linux Environment
- Handle shell commands for scripting, with features of regular expressions, redirections
- Implement file security permissions
- Work with vi, sed and awk editors for shell scripting using various control structures
- Install softwares like compilers and develop programs in C and Python programming languages on Linux Platform

Unit	Topics	No of Lectures
I	**Linux operating system and Basics :** History, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux, Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages **Basic Bash shell commands:** General purpose utility Commands, basic commands, Various file types, attributes and File handling Commands, Handling Ordinary Files. More file attributes **Advanced Bash shell commands:**Simple Filters, Filters using regular expressions. **The Linux environment variable:** Setting, Locating and removing environment variables like PATH etc, Default shell environment variables, Using command aliases.	**15**

II	**Understanding Linux file permission:** Linux security, Using Linux groups, Decoding file permissions, Changing security setting, Sharing files. **Linux Security:** Understanding Linux Security, uses of root, sudo command, working with passwords, Understanding ssh. **Networking:** TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, ping, telnet, ftp, DNS **Working withEditors:** awk, sed and Introduction to vi	**15**
III	**Basic script building:** Using multiple commands, Creating script files, Displaying messages, Using variables, Redirecting Input and Output, Pipes performing math, Exiting the script. **Using structured commands:** Working with if-then, if-then-else and nested if statements, test command, Compound condition testing, while command, until command, case command. **Script and Process control :** Handling signals, Running scripts in background mode, Running scripts without a console, Job control, Job scheduling commands: ps, nice, renice, at, batch, cron table, Running the script at boot	**15**

Textbooks:

1. "Linux Command line and Shell Scripting Bible", Richard Blum, Wiley India.
2. "Unix: Concepts and Applications", Sumitabha Das, 4th Edition, McGraw Hill.
3. "Official Ubuntu Book", Matthew Helmke& Elizabeth K. Joseph with Jose Antonio Rey and Philips Ballew, 8th Ed.

Additional References:

1. "Linux Administration: A Beginner's Guide", Fifth Edition, Wale Soyinka, Tata McGraw-Hill, 2008.
2. "Linux: Complete Reference", Richard Petersen, 6th Edition, Tata McGraw-Hill
3. "Beginning Linux Programming", Neil Mathew, 4th Edition, Wiley Publishing, 2008.

Course Code	Course Title	Credits	Lectures /Week
USCSP103	**LINUX Operating System – Practical**	**1**	**3**
1	**Installation of Ubuntu Linux operating system.** a) Booting and Installing from (USB/DVD) b) Using Ubuntu Software center / Using Synaptic c) Explore useful software packages.		
2	**Becoming an Ubuntu power user** a) Administering system and User setting b) Learning Unity keyboard c) Using the Terminal d) Working with windows programs		

3	**File System Commands:** touch, help, man, more, less, pwd, cd, mkdir, rmdir, ls, find, ls, etc **File handling Commands:** cat, cp, rm, mv, more, file, wc, od, cmp, diff, comm, chmod, chown, chgrp, gzip and gunzip, zip and unzip, tar, ln, umask,, chmod, chgrp, chown, etc
4	**General purpose utility Commands:**cal, date, echo, man, printf, passwd, script, who, uname, tty, stty, etc **Simple Filters and I/O redirection:** head, tail, cut paste, sort, grep family, tee, uniq, tr, etc. **Networking Commands:** who, whoami, ping, telnet, ftp, ssh, etc
5	**Editors:** vi, sed, awk
6	**Working and Managing with processes-** sh, ps, kill, nice, at and batch etc.
7	**Shell scripting I:** Defining variables, reading user input, exit and exit status commands, , expr, test, [], if conditional, logical operators
8	**Shell scripting II:** Conditions (for loop, until loop and while loop) arithmetic operations, examples
9	**Shell scripting III:** Redirecting Input / Output in scripts, creating your own Redirection
10	Installation of C/C++/Java/Python Compiler and creating an environment for app development. Basic programming using C and Python Languages.

Course Code	Course Title	Credits	Lectures /Week
USCS104	**Open Source Technologies**	**2**	**3**

About the Course:
Open Source Software is becoming an important resource for development, especially in developing countries. A working understanding of the economic and technical background of the Free / Open Source Software movement (FOSS) is essential for its effective use. The course takes students through the history and current status of the FOSS world, and starts them exploring it, by connecting their personal experiences with corresponding FOSS projects. Students will experience finding and using Open Source Software projects.

Course Objectives:

- Understand the difference between open-source software and commercial software.
- Understand the policies, licensing procedures and ethics of FOSS.
- Understand open-source philosophy, methodology and ecosystem.
- Awareness with Open-Source Technologies.

Learning Outcomes:

- Differentiate between Open Source and Proprietary software and Licensing.
- Recognize the applications, benefits and features of Open-Source Technologies
- Gain knowledge to start, manage open-source projects.

Unit	Topics	No of Lectures
I	**Introduction to Open-Source:** Open Source, Need and Principles of OSS, Open-Source Standards, Requirements for Software, OSS success, Free Software, Examples, Licensing, Free Vs. Proprietary Software, Free Software Vs. Open-Source Software, Public Domain. History of free software, Proprietary Vs Open-Source Licensing Model, use of Open-Source Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project. **Open-Source Principles and Methodology:** Open-Source History, Open-Source Initiatives, Open Standards Principles, Methodologies, Philosophy, Software freedom, Open-Source Software Development, Licenses, Copyright vs. Copy left, Patents, Zero marginal cost, Income-generation Opportunities, Internationalization. **Licensing:** What Is A License, How to create your own Licenses, Important FOSS Licenses (Apache, BSD, PL, LGPL), copyrights and copy lefts, Patent.	**15**
II	**Open-Source projects:** Starting and maintaining own Open-Source Project, Open-Source Hardware, Open-Source Design, Open-source Teaching, Open-source media. **Collaboration:** Community and Communication, Contributing to Open-Source Projects Introduction to GitHub, interacting with the community on GitHub, Communication and etiquette, testing open-source code, reporting	**15**

	issues, contributing code. Introduction to Wikipedia, contributing to Wikipedia or contributing to any prominent open-source project of student's choice. **Open-Source Ethics and Social Impact:** Open source vs. closed source, Open-source Government, Ethics of Open-source, Social and Financial impacts of open-source technology, Shared software, Shared source, Open Source as a Business Strategy	
III	**Understanding Open-Source Ecosystem**: Open-Source Operating Systems: GNU/Linux, Android, Free BSD, Open Solaris. Open-Source Hardware, Virtualization Technologies, Containerization Technologies: Docker, Development tools, IDEs, Debuggers, Programming languages, LAMP, Open-Source Database technologies **Case Studies:** Example Projects: Apache Web server, BSD, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, WordPress, Git, GCC, GDB, GitHub, Open Office, LibreOffice Study: Understanding the developmental models, licensing, mode of funding, commercial/non-commercial use.	**15**

Textbooks:

1. "Open-Source Technology", Kailash Vadera&Bhavyesh Gandhi, University Science Press, Laxmi Publications, 2009
2. "Open-Source Technology and Policy", Fadi P. Deek and James A. M. McHugh, Cambridge University Press, 2008.

Additional References:

1. "Perspectives on Free and Open-Source Software", Clay Shirky and Michael Cusumano, MIT press.
2. "Understanding Open Source and Free Software Licensing", Andrew M. St. Laurent, O'Reilly Media.
3. "Open Source for the Enterprise", Dan Woods, GautamGuliani, O'Reilly Media
4. Linux kernel Home: http://kernel.org4
5. Open-Source Initiative: https://opensource.org/5
6. The Linux Foundation: http://www.linuxfoundation.org/
7. The Linux Documentation Project: http://www.tldp.org/2
8. Docker Project Home: http://www.docker.com3.
9. Linux Documentation Project: http://www.tldp.org/6
10. Wikipedia: https://en.wikipedia.org/7.https://en.wikipedia.org/wiki/Wikipedia:Contributing_to_Wikipedia8
11. GitHub: https://help.github.com/9.
12. The Linux Foundation: http://www.linuxfoundation.org/

Course Code	Course Title	Credits	Lectures /Week
USCSP104	**Open Source Technologies– Practical**	**1**	**3**
1	**Open Source Operating Systems** • Learn the following open source operating system of your choice: Linux, Android, FreeBSD, Open Solaris etc. • Learn the installation. • Identify the unique features of these OS.		
2	Hands on with **LibreOffice** • Learn it from practical view-point • Give a brief presentation about it to the class		
3	Hands on with **GIMP** Photo Editing Tool • Learn it from practical view-point • Give a brief presentation about it to the class		
4	Hands on with **Shotcut** Video Editing Tool • Learn it from practical view-point • Give a brief presentation about it to the class		
5	Hands on with **Blender** Graphics and Animation Tool • Learn it from practical view-point • Give a brief presentation about it to the class		
6	Hands on with **Apache** Web Server • Learn it from practical view-point • Give a brief presentation about it to the class		
7	Hands on with **WordPress** CMS • Learn it from practical view-point • Give a brief presentation about it to the class		
8	Contributing to **Wikipedia**: • Introduction to wikipedia: operating model, license, how to contribute? • Create your user account on wikipedia • c. Identify any topic of your choice and contribute the missing information		
9	**Github** • Create and publish your own open source project: Write any simple program using your choice of programming language. • Create a repository on github and save versions of your project. You'll learn about the staging area, committing your code, branching, and merging, • Using GitHub to Collaborate: Get practice using GitHub or other remote repositories to share your changes with others and collaborate on multi-developer projects. You'll learn how to make and review a pull request on GitHub. • d. Contribute to a Live Project: Students will publish a repository containing		

	their reflections from the course and submit a pull request.
10	**Virtualization:** Open Source virtualization technologies: • Install and configure the following: VirtualBox, Zen, KVM • Create and use virtual machines
11	**Containerization:** • Install and configure the following containerization technologies: docker, rocket, LXD • Create and use containers using it

Course Code	Course Title	Credits	Lectures /Week
USCS105	**Discrete Mathematics**	**2**	**3**

About the Course:
Discrete Mathematics provides an essential foundation for virtually every area of Computer Science. The problem-solving techniques honed in Discrete Mathematics are necessary for writing complicated software. Discrete mathematics also builds the gateway to advanced courses in Mathematical Sciences, Data Science, Machine Learning, Software Engineering, etc.

Course Objectives:

- The purpose of the course is to familiarize the prospective learners with mathematical structures that are fundamentally discrete.
- This course will enhance prospective learners to reason and ability to articulate mathematical problems.
- This course will introduce functions, forming and solving recurrence relations and different counting principles. These concepts will be useful to study or describe objects or problems in computer algorithms and programming languages and these concepts can be used effectively in other courses.

Learning Outcomes:
After successful completion of this course, learners would be able to:

- Define mathematical structures (relations, functions, graphs) and use them to model real life situations.
- Understand, construct and solve simple mathematical problems.
- Solve puzzles based on counting principles.
- Provide basic knowledge about models of automata theory and the corresponding formal languages.
- Develop an attitude to solve problems based on graphs and trees, which are widely used in software.

Unit	Topics	No of Lectures
I	**Functions:** Definition of function; Domain, co-domain, range of a function; Examples of standard functions such as identity and constant functions, absolute value function, logarithmic and exponential functions, flooring and ceiling functions; Injective, surjective and bijective functions; Composite and inverse functions. **Relations:** Definition and examples of relation; Properties of relations, Representation of relations using diagraphs and matrices; Equivalence relation; Partial Order relation, Hasse Diagrams, maximal, minimal, greatest, least element, Lattices.	**15**

	Recurrence Relations: Definition and Formulation of recurrence relations; Solution of a recurrence relation; Solving recurrence relations- Back tracking method, Linear homogeneous recurrence relations with constant coefficients; Homogeneous solution of linear homogeneous recurrence relation with constant coefficients; Particular solution of non-linear homogeneous recurrence relation with constant coefficients; General solution of non-linear homogeneous recurrence relation with constant coefficients; Applications- Formulate and solve recurrence relation for Fibonacci numbers, Tower of Hanoi, Intersection of lines in a plane, Sorting Algorithms.	
II	**Counting Principles:** Basic Counting Principles (Sum and Product Rule); Pigeonhole Principle (without proof) - Simple examples; Inclusion Exclusion Principle (Sieve formula) (without proof); Counting using Tree diagrams. **Permutations and Combinations:** Permutation without and with repetition; Combination without and with repetition; Binomial numbers and identities: Pascal Identity, Vandermonde's Identity, Pascal triangle, Binomial theorem (without proof) and applications; Multionomial numbers, Multinomial theorem (without proof) and applications. **Languages, Grammars and Machines:** Languages and Grammars – Introduction, Phase structure grammar, Types of grammar, derivation trees; Finite-State Machines with Output; Finite-State Machines with No Output; Regular Expression and Regular Language.	**15**
III	**Graphs:** Graphs and Graph Models; Graph terminologies and Special types of graphs; Definition and elementary results; Representing graphs, Linked representation of a graph; Graph Isomorphism; Connectivity in graphs – path, trail, walk; Euler and Hamilton paths; Planar graphs, Graph coloring and chromatic number. **Trees:** Definition, Tree terminologies and elementary results; Linked representation of binary trees; Ordered rooted tree, Binary trees, Complete and extended binary trees, Expression trees, Binary Search tree, Algorithms for searching and inserting in binary search trees, Algorithms for deleting in a binary search tree; Traversing binary trees	**15**

Textbooks:

1. Discrete Mathematics and Its Applications, Seventh Edition by Kenneth H. Rosen, McGraw Hill Education (India) Private Limited. (2011)
2. Discrete Mathematics: SemyourLipschutz, Marc Lipson, Schaum's out lines, McGraw- Hill Inc.

3rd Edition
3. Data Structures Seymour Lipschutz, Schaum's out lines, McGraw- Hill Inc. 2017
4. Norman L. Biggs, Discrete Mathematics, Revised Edition, Clarendon Press, Oxford 1989.

Additional References:
1. Elements of Discrete Mathematics: C.L. Liu, Tata McGraw- Hill Edition.
2. Concrete Mathematics (Foundation for Computer Science): Graham, Knuth, Patashnik Second Edition, Pearson Education.
3. Discrete Mathematics: SemyourLipschutz, Marc Lipson, Schaum's out lines, McGraw- Hill Inc.
4. Foundations in Discrete Mathematics: K.D. Joshi, New Age Publication, New Delhi.

Course Code	Course Title	Credits	Lectures /Week
USCSP105	**Discrete Mathematics – Practical**	**1**	**3**
1	**Functions –** a. Identify if the given mapping is a function b. Finding domain and range of a given function c. Check if the given function is injective/surjective/bijective d. Find the inverse of a given function e. Operations on functions f. Graphs of functions using any online tool		
2	**Relations –** a. Representation of relations b. Determine if the given relation satisfies equivalence relation/partial order relation c. Draw Hasse diagrams d. Find maximal, minimal, greatest, least element in a poset e. Determine if a given poset is a lattice		
3	**Recurrence Relation –** a. Solve recurrence relation using backtracking method b. Solve linear homogeneous recurrence relations with constant coefficients c. Find homogeneous, particular, general solution of a recurrence relation d. Formulate and solving recurrence relation		
4	**Counting Principles –** a. Sum and product rule b. Pigeonhole Principle c. Inclusion Exclusion Principle d. Counting using Tree diagrams		
5	**Permutations and Combinations –** a. Permutations b. Permutations with repetitions c. Combinations d. Combinations with repetitions e. Binomial numbers and Identities		

	f. Applications on Binomial theorem g. Applications on Multinomial theorem
6	**Languages and Grammars –** a. Find the language generated by given grammar b. Check if a given string belongs or not to a given language/grammar c. Operations on languages d. Identify the type of grammar
7	**Finite State Machines –** a. Check if a given string is accepted or rejected by FSM without output b. Find the output for a FSM with output c. Describe a machine (diagram/table)
8	**Regular Expression and Regular Language –** a. Describe the regular expressions represented by given language b. Describe the language represented by given regular expression
9	**Graphs –** a. Types of graph b. Properties of graph c. Representation of graph d. Graph Isomorphism e. Connectivity in graphs – path, trail, walk f. Euler and Hamilton graphs g. Planar graphs h. Graph coloring and chromatic number
10	**Trees –** a. Tree terminologies b. Types of tree c. Properties of tree d. Representation of tree e. Expression tree f. Binary Search tree g. Tree traversal

Course Code	Course Title	Credits	Lectures /Week
USCS106	**Descriptive Statistics**	**2**	**3**

About the Course:
This course is designed to provide learners with an understanding of the data and to develop an understanding of the quantitative techniques from Statistics. It also provides the knowledge of different statistical tools used for primary statistical analysis of data.

Course Objectives:

1. To develop the learners ability to deal with different types of data.
2. To enable the use of different measures of central tendency and dispersion wherever relevant.
3. To make learner aware about the techniques to check the Skewness and Kurtosis of data.
4. To make learner enable to find the correlation between different variables and further apply the regression analysis to find the exact relation between them.
5. To develop ability to analyze statistical data through R software.

Learning Outcomes:
After successful completion of this course, learners would be able to

1. Organize, manage and present data.
2. Analyze Statistical data using measures of central tendency and dispersion.
3. Analyze Statistical data using basics techniques of R.
4. Study the relationship between variables using techniques of correlation and regression.

Unit	Topics	No of Lectures
I	**Data Types and Data Presentation: Data types:** Attribute, Variable, Discrete and Continuous variable, Univariate and Bivariate distribution. Types of Characteristics, Different types of scales: nominal, ordinal, interval and ratio. **Data presentation:** Frequency distribution, Histogram, Ogive curves. **Introduction to R:** Data input, Arithmetic Operators, Vector Operations, Matrix Operations, Data Frames, Built-in Functions. Frequency Distribution, Grouped Frequency Distribution, Diagrams and Graphs, Summary statistics for raw data and grouped frequency distribution. **Measures of Central tendency:** Concept of average/central tendency, characteristics of good measure of central tendency. Arithmetic Mean (A.M.), Median, Mode - Definition, examples for ungrouped and grouped data, effect of shift of origin and change of scale, merits and demerits. Combined arithmetic mean. Partition Values: Quartiles, Deciles and Percentiles - examples for ungrouped and grouped data	**15**
II	**Measures dispersion:** Concept of dispersion, Absolute and Relative	**15**

	measure of dispersion, characteristics of good measure of dispersion. Range, Semi-interquartile range, Quartile deviation, Standard deviation - Definition, examples for ungrouped and grouped data, effect of shift of origin and change of scale, merits and demerits. Combined standard deviation, Variance. Coefficient of range, Coefficient of quartile deviation and Coefficient of variation (C.V.) **Moments:** Concept of Moments, Raw moments, Central moments, Relation between raw and central moments. **Measures of Skewness and Kurtosis:** Concept of Skewness and Kurtosis, measures based on moments, quartiles.	
III	**Correlation:** Concept of correlation, Types and interpretation, Measure of Correlation: Scatter diagram and interpretation; Karl Pearson's coefficient of correlation (r): Definition, examples for ungrouped and grouped data, effect of shift of origin and change of scale, properties; Spearman's rank correlation coefficient: Definition, examples of with and without repetition. Concept of Multiple correlation. **Regression:** Concept of dependent (response) and independent (predictor) variables, concept of regression, Types and prediction, difference between correlation and regression, Relation between correlation and regression. Linear Regression - Definition, examples using least square method and regression coefficient, coefficient of determination, properties. Concept of Multiple regression and Logistic regression.	**15**

Textbooks:

1. Goon, A. M., Gupta, M. K. and Dasgupta, B. (1983). Fundamentals of Statistics, Vol. 1, Sixth Revised Edition, The World Press Pvt. Ltd., Calcutta.
2. Gupta, S.C. and Kapoor, V.K. (1987): Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi

Additional References:

1. Sarma, K. V. S. (2001). Statistics Made it Simple: Do it yourself on PC. Prentce Hall of India, NewDelhi.
2. Agarwal, B. L. (2003). Programmed Statistics, Second Edition, New Age International Publishers, NewDelhi.
3. Purohit, S. G., Gore S. D., Deshmukh S. R. (2008). Statistics Using R, Narosa Publishing House, NewDelhi.
4. Schaum's Outline Of Theory And Problems Of Beginning Statistics, Larry J. Stephens, Schaum's Outline Series Mcgraw-Hill

Course Code	Course Title	Credits	Lectures /Week

USCSP106	Descriptive Statistics – Practical	1	3
Problem solving and implementation using R programming			
1	**Basics of R-** a. Data input, Arithmetic Operators b. Vector Operations, Matrix Operations c. Data Frames, Built-in Functions d. Frequency Distribution, Grouped Frequency Distribution e. Diagrams and Graphs		
2	**Frequency distribution and data presentation-** a. Frequency Distribution (Univariate data/ Bivariate data) b. Diagrams c. Graphs		
3	**Measures of Central Tendency-** a. Arithmetic Mean b. Median c. Mode d. Partition Values		
4	**Measures dispersion-** a. Range and Coefficient of range b. Quartile deviation and Coefficient of quartile deviation c. Standard deviation, Variance and Coefficient of variation (C.V.)		
5	**Moments-** a. Raw moments b. Central moments		
6	**Measures of Skewness -** a. Karl Pearson's measure of Skewness b. Bowley's measure of Skewness c. Moment coefficient of Skewness		
7	**Measures of Kurtosis-** a. Moment coefficient of Kurtosis (Absolute measure) b. Moment coefficient of Kurtosis (Relative measure)		
8	**Correlation-** a. Karl Pearson's correlation coefficient b. Spearman's Rank correlation		
9	**Regression-** a. Method of least squares b. Using regression coefficients c. Properties of regression lines & regression coefficients		
10	**Summary Statistics using R-** a. Summary statistics for raw data b. Summary statistics for grouped frequency distribution c. Simple Correlation & Regression using R		
Course Code	**Course Title**	**Credits**	**Lectures /Week**

USCS107	Soft Skills	2	3

About the Course:
To help learners develop their soft skills and develop their personality along with technical skills. Focus on various communication enhancement along with academic and professional ethics.

Course Objectives:

- Understand the significance and essence of a wide range of soft skills.
- Learn how to apply soft skills in a wide range of routine social and professional settings
- Learn how to employ soft skills to improve interpersonal relationships
- Learn how to employ soft skills to enhance employability and ensure workplace and career success

Learning Outcomes:

- Learners will be able to understand the importance and types soft skills
- Learners will develop skills for Academic and Professional Presentations.
- Learners will able to understand Leadership Qualities and Ethics.
- Ability to understand the importance of stress management in their academic & professional life.

Unit	Topics	No of Lectures
I	**Introduction to Soft Skills** **Soft Skills: An Introduction –** Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. **Personality Development:** Knowing Yourself, Positive Thinking, Johari's Window, Physical Fitness **Emotional Intelligence:** Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence, Competencies of Emotional Intelligence, Skills to Develop Emotional Intelligence **Positivity and Motivation:** Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels **Etiquette and Mannerism:** Introduction, Professional Etiquette, Technology Etiquette **Ethical Values:** Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics	15
II	**Basic Skills in Communication:** **Components of effective communication:** Communication process and handling them, Composing effective messages, Non – Verbal	15

	Communication: its importance and nuances: Facial Expression, Posture, Gesture, Eye contact, appearance (dress code). **Communication Skills:** Spoken English, Phonetics, Accent, Intonation **Employment Communication:** Introduction, Resume, Curriculum Vitae, Scannable Resume, Developing an Impressive Resume, Formats of Resume, Job Application or Cover Letter **Job Interviews:** Introduction, Importance of Resume, Definition of Interview, Background Information, Types of Interviews, Preparatory Steps for Job Interviews, Interview Skill Tips, Changes in the Interview Process, FAQ During Interviews **Group Discussion:** Introduction, Ambience/Seating Arrangement for Group Discussion, Importance of Group Discussions, Difference between Group Discussion, Panel Discussion and Debate, Traits, Types of Group Discussions, topic based and Case based Group Discussion, Individual Traits	
III	**Academic and Professional Skills:** **Professional Presentation:** Nature of Oral Presentation, planning a Presentation, Preparing the Presentation, Delivering the Presentation **Creativity at Workplace:** Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method. **Capacity Building: Learn, Unlearn and Relearn**: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building **Leadership and Team Building:** Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams. **Decision Making and Negotiation:** Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts **Stress and Time Management:** Stress, Sources of Stress, Ways to Cope with Stress	**15**

Textbooks:

1. Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2017.
2. Soft Skills: An Integrated Approach to Maximize Personality, Gajendra S. Chauhan, Sangeeta Sharma, Wiley India

Additional References:

1. Personality Development and Soft Skills, Barun K. Mitra, Oxford Press
2. Business Communication, ShaliniKalia, Shailja Agrawal, Wiley India
3. Cornerstone: Developing Soft Skills, Sherfield, Pearson India

Semester II

Course Code	Course Title	Credits	Lectures /Week
USCS201	**Design & Analysis of Algorithms**	**2**	**3**

About the Course:
The course covers the concepts of - (i) calculating complexity of algorithms, (ii) the essential operations like searching, sorting, selection, pattern matching & recursion, and (iii) various algorithmic strategies like greedy, divide-n-conquer, dynamic programming, backtracking and implementations of all these on basic data structures like array, list and stack.

Course Objectives:
The objectives of this course are:

- To make students understand the basic principles of algorithm design
- To give idea to students about the theoretical background of the basic data structures
- To familiarize the students with fundamental problem-solving strategies like searching, sorting, selection, recursion and help them to evaluate efficiencies of various algorithms.
- To teach students the important algorithm design paradigms and how they can be used to solve various real world problems.

Learning Outcomes:
After successful completion of this course, students would be able to

- Students should be able to understand and evaluate efficiency of the programs that they write based on performance of the algorithms used.
- Students should be able to appreciate the use of various data structures as per need
- To select, decide and apply appropriate design principle by understanding the requirements of any real life problems

Unit	Topics	No of Lectures
I	**Introduction to algorithms** - What is algorithm, analysis of algorithm, Types of complexity, Running time analysis, How to Compare Algorithms, Rate of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Performance characteristics of algorithms, Estimating running time / number of steps of executions on paper, Idea of Computability **Introduction to Data Structures** - What is data structure, types, Introduction to Array(1-d & 2-d), Stack and List data structures, operations on these data structures, advantages disadvantages and applications of these data structures like solving linear equations, Polynomial Representation, Infix-to-Postfix conversion	**15**
II	**Recursion** - What is recursion, Recursion vs Iteration, recursion applications like Factorial of a number, Fibonacci series & their comparative analysis with respect to iterative version, Tower of hanoi	**15**

	problem **Basic Sorting Techniques -** Bubble, Selection and Insertion Sort & their comparative analysis **Searching Techniques -** Linear Search and its types, Binary Search and their comparative analysis **Selection Techniques** - Selection by Sorting, Partition-based Selection Algorithm, Finding the Kth Smallest Elements in Sorted Order & their comparative analysis **String Algorithms** - Pattern matching in strings, Brute Force Method & their comparative analysis	
III	**Algorithm Design Techniques -** Introduction to various types of classifications/design criteria and design techniques **Greedy Technique -** Concept, Advantages & Disadvantages, Applications, Implementation using problems like - file merging problem **Divide-n-Conquer -** Concept, Advantages & Disadvantages, Applications, Implementation using problems like - merge sort, Strassen's Matrix Multiplication **Dynamic Programming** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - Fibonacci series, Factorial of a number, Longest Common subsequence **Backtracking Programming -** Concept, Advantages & Disadvantages, Applications, Implementation using problems like N-Queen Problem	**15**

Textbooks:

1. "Data Structure and Algorithm Using Python", Rance D. Necaise, Wiley India Edition, 2016.
2. "Data Structures and Algorithms Made Easy", NarasimhaKarumanchi, CareerMonk Publications, 2016.
3. "Introduction to Algorithms", Thomas H. Cormen, 3rd Edition, PHI.

Additional References:

1. "Introduction to the Design and Analysis of Algorithms", Anany Levitin, Pearson, 3rd Edition, 2011.
2. "Design and Analysis of Algorithms", S. Sridhar, Oxford University Press, 2014.

Course Code	Course Title	Credits	Lectures /Week
USCSP201	**Design & Analysis of Algorithms – Practical**	**1**	**3**

1	Programs on 1-d arrays like - sum of elements of array, searching an element in array, finding minimum and maximum element in array, count the number of even and odd numbers in array. For all such programs, also find the time complexity, compare if there are multiple methods
2	Programs on 2-d arrays like row-sum, column-sum, sum of diagonal elements, addition of two matrices , multiplication of two matrices. For all such programs, also find the time complexity, compare if there are multiple methods
3	Program to create a list-based stack and perform various stack operations.
4	Program to perform linear search and binary search on list of elements. Compare the algorithms by calculating time required in milliseconds using readymade libraries.
5	Programs to sort elements of list by using various algorithms like bubble, selection sort, and insertion sort. Compare the efficiency of algorithms.
6	Programs to select the Nth Max/Min element in a list by using various algorithms. Compare the efficiency of algorithms.
7	Programs to find a pattern in a given string - general way and brute force technique. Compare the efficiency of algorithms.
8	Programs on recursion like factorial, fibonacci, tower of hanoi. Compare algorithms to find factorial/fibonacci using iterative and recursive approaches.
9	Program to implement file merging, coin change problems using Greedy Algorithm and to understand time complexity.
10	Program to implement merge sort, Straseen's Matrix Multiplication using D-n-C Algorithm and to understand time complexity.
11	Program to implement fibonacci series, Longest Common Subsequence using dynamic programming and to understand time complexity. Compare it with the general recursive algorithm.
12	Program to implement N-Queen Problem, Binary String generation using Backtracking Strategy and to understand time complexity.

Course Code	Course Title	Credits	Lectures /Week
USCS202	**Advanced Python Programming**	**2**	**3**

About the Course:
This course aims to explore and enable learners to master the skills of advanced topics in Python Programming. It helps learners develops advanced skills such as working with databases, matching patterns, implementing threads and exception handling and GUI in Python. It also highlights and why Python is a useful scripting language for all developers.

Course Objectives:

- To learn how to design object-oriented programs with Python classes.
- To learn about reading, writing and implementing other operation on files in Python.
- To implement threading concept and multithreading on Python
- To design GUI Programs and implement database interaction using Python.
- To know about use of regular expression and handling exceptions for writing robust python programs.

Learning Outcomes:
After successful completion of this course, students would be able to

- Ability to implement OOP concepts in Python including Inheritance and Polymorphism
- Ability to work with files and perform operations on it using Python.
- Ability to implement regular expression and concept of threads for developing efficient program
- Ability to implement exception handling in Python applications for error handling.
- Knowledge of working with databases, designing GUI in Python and implement networking in Python

Unit	Topics	No of Lectures
I	**Working with files:** Files, opening and closing a file, working with text files containing strings, knowing whether a file exists or not, working with binary files, the 'with' statement, the seek() and tell() methods, random accessing of binary files, zipping and unzipping files, working with directories, running other programs from python program **Regular expressions:** What is a regular expression?, sequence characters in regular expressions, quantifiers in regular expressions, special characters in regular expressions, using regular expression on files, retrieving information from an html file, **Threads in python:** Difference between process and thread, types of threads, benefits of threads, creating threads, single tasking and multitasking, thread synchronization, deadlock in threads, daemon threads **Date and time in python:** Date and time now, combining date and time,	**15**

	formatting dates and times, finding durations using “time delta”, comparing two dates, sorting dates, stopping execution temporarily, knowing the time taken by a program, calendar module	
II	**Database in python:** Using SQL with python, retrieving rows from a table, inserting rows into a table, deleting rows from a table, updating rows in a table, creating database tables through python, Exception handling in databases. **Exceptions in python:** Errors in a python program, compile & run-time errors, logical error, exceptions-exception handling, types of exceptions, the except block, the assert statement, user-defined exceptions, logging the exceptions **Networking:** Protocols,server-client architecture, tcp/ip and udp communication **Graphical user interface:** Creating a GUI in python, Widget classes, Working with Fonts and Colours, working with Frames, Layout manager, Event handling	**15**
III	**OOPs in python:** Features of Object Oriented Programming system (oops)-classes and objects, encapsulation, abstraction, inheritance, polymorphism, constructors and destructors **Classes and objects:** Creating a class, the self-variable, types of variables, namespaces, types of methods, instance methods, class methods, static methods, passing members of one class to another class, inner classes **Inheritance and polymorphism:** Inheritance in python, types of inheritance- single inheritance, multilevel inheritance, hierarchical inheritance, multiple inheritance, constructors in inheritance, overriding super class constructors and methods, the super() method, method resolution order (mro), polymorphism, duck typing, operator overloading, method overloading, method overriding**,** **Abstract classes and interfaces:** Abstract class, abstract method, interfaces in python, abstract classes vs. Interfaces	**15**

Textbooks:

1. Paul Gries , Jennifer Campbell, Jason Montojo, Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 3rd Edition, 2018
2. Programming through Python, M. T Savaliya, R. K. Maurya, G M Magar, Revised Edition, Sybgen Learning India, 2020

Additional References:

1. Advanced Python Programming, Dr. Gabriele Lanaro, Quan Nguyen, SakisKasampalis, Packt Publishing, 2019
2. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018
3. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018
4. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017

5. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018

Course Code	Course Title	Credits	Lectures /Week
USCSP202	**Advanced Python Programming – Practical**	**1**	**3**
1	Write a program to Python program to implement various file operations.		
2	Write a program to Python program to demonstrate use of regular expression for suitable application.		
3	Write a Program to demonstrate concept of threading and multitasking in Python.		
4	Write a Python Program to work with databases in Python to perform operations such as a. Connecting to database b. Creating and dropping tables **c.** Inserting and updating into tables.		
5	Write a Python Program to demonstrate different types of exception handing.		
6	Write a GUI Program in Python to design application that demonstrates a. Different fonts and colors b. Different Layout Managers **c.** Event Handling		
7	Write Python Program to create application which uses date and time in Python.		
8	Write a Python program to create server-client and exchange basic information		
9	Write a program to Python program to implement concepts of OOP such as a. Types of Methods b. Inheritance c. Polymorphism		
10	Write a program to Python program to implement concepts of OOP such as a. Abstract methods and classes b. Interfaces		

Course Code	Course Title	Credits	Lectures /Week
USCS203	**Introduction to OOPs using C++**	**2**	**3**

About the Course:
The course aims to introduce a new programming paradigm called Object Oriented Programming. This will be covered using C++ programming language. C++ is a versatile programming language, which supports a variety of programming styles, including procedural, object-oriented, and functional programming. This makes C++ powerful as well as flexible. It can be used to develop software such as operating systems, databases, and compilers.

Course Objectives:

Learning Outcomes:
After successful completion of this course, students would be able to

- Work with numeric, character and textual data and arrays.
- Understand the importance of OOP approach over procedural language.
- Understand how to model classes and relationships using UML.
- Apply the concepts of OOPS like encapsulation, inheritance and polymorphism.
- Handle basic file operations.

Unit	Topics	No of Lectures
I	**Introduction to Programming Concepts:** Object oriented programming paradigm, basic concepts of object oriented programming, benefits of object oriented programming, object oriented languages, applications of object oriented programming. Tokens-keywords, identifiers, constants-integer, real, character and string constants, backslash constants, features of C++ and its basic structure, simple C++ program without class, compiling and running C++ program. **Data Types, Data Input Output and Operators:** Basic data types, variables, rules for naming variables, programming constants, the type cast operator, implicit and explicit type casting, cout and cin statements, operators, precedence of operators. **Decision Making, Loops, Arrays and Strings:** Conditional statements-if, if...else, switch loops- while, do...while, for, types of arrays and string and string manipulations **Unified Modeling Language (UML):** Introduction to UML & class diagrams. **Classes, Abstraction & Encapsulation:** Classes and objects, Dot Operator, data members, member functions, passing data to functions, scope and visibility of variables in function.	**15**
II	**Constructors and Destructors:** Default constructor, parameterized	**15**

	constructor, copy constructor, private constructor, destructors. **Working with objects:**Accessor - mutator methods, static data and static function, access specifiers, array of objects. **Polymorphism -** Binding-static binding & overloading, constructor overloading function overloading, operator overloading, overloading unary and binary operators. **Modelling Relationships in Class Diagrams:** Association, Aggregation-Composition and examples covering these principles	
III	**Inheritance:** Defining base class and its derived class, access specifiers, types of inheritance-single, multiple, hierarchical, multilevel, hybrid inheritance, friend function and friend class, constructors in derived classes. **Modelling Relationships**: Generalization-Specialization and examples covering these principles **Run time Polymorphism -** Dynamic Binding, Function overriding, virtual function, pure virtual function, virtual base class, abstract class. **Pointers:** Introduction to pointers, * and & operators, assigning addresses to pointer variables, accessing values using pointers, pointers to objects & this pointer, pointers to derived classes **File Handling:** File Stream classes, opening and closing file-file opening modes, text file handling, binary file handling. **Applying OOP to solve real life applications:** To cover case studies like library management, order management etc. to design classes covering all relationships	**15**

Textbooks:

1. Object Oriented Programming with C++, Balagurusamy E., 8th Edition, McGraw Hill Education India.
2. UML & C++: A Practical Guide to Object Oriented Development, Lee/Tepfenhart, Pearson Education, 2nd Edition2015

Additional References:

1. Mastering C++ by Venugopal, Publisher: McGraw-Hill Education, 2017
2. Let Us C++ by KanetkarYashwant, Publisher: BPB Publications, 2020
3. Object Oriented Analysis and Design by Timothy Budd TMH, 2001

Course Code	Course Title	Credits	Lectures /Week
USCSP203	**Introduction to OOPs using C++ – Practical**	**1**	**3**
1	Program todemonstrate use of data members & member functions.		
2	Programs based on branching and looping statements using classes.		
3	Program to demonstrate one and two dimensional arrays using classes		
4	Program to use scope resolution operator. Display the various values of the same variables declared at different scope levels.		
5	Programs to demonstrate various types of constructors and destructors.		
6	Programs to demonstrate use of public, protected & private scope specifiers.		
7	Programs to demonstrate single and multilevel inheritance		
8	Programs to demonstrate multiple inheritance and hierarchical inheritance		
9	Programs to demonstrate inheritance and derived class constructors		
10	Programs to demonstrate friend function, inline function, this pointer		
11	Programs to demonstrate function overloading and overriding.		
12	Programs to demonstrate use of pointers		
13	Programs to demonstrate text and binary file handling		

Course Code	Course Title	Credits	Lectures /Week
USCS204	**Database Systems**	**2**	**3**

About the Course:
The course introduces the core principles and techniques required in the design and implementation of database systems. It includes ER Model, Normalization, Relational Model, and Relational Algebra. It also provides students with theoretical knowledge and practical skills of creating and manipulating data with an interactive query language (MySQL). It also provide student knowledge and importance of data protection.

Course Objectives:

- To make students aware fundamentals of database system.
- To give idea how ERD components helpful in database design and implementation.
- To experience the students working with database using MySQL.
- To familiarize the student with normalization, database protection and different DCL Statements.
- To make students aware about importance of protecting data from unauthorized users.
- To make students aware of granting and revoking rights of data manipulation.

Learning Outcomes:
After successful completion of this course, students would be able to

- To appreciate the importance of database design.
- Analyze database requirements and determine the entities involved in the system and their relationship to one another.
- Write simple queries to MySQL related to String, Maths and Date Functions.
- Create tables and insert/update/delete data, and query data in a relational DBMS using MySQL commands.
- Understand the normalization and its role in the database design process.
- Handle data permissions.
- Create indexes and understands the role of Indexes in optimization search.

Unit	Topics	No of Lectures
I	**Introduction to DBMS –** Database, DBMS – Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture **Data models -** Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network) **Entity Relationship Model -** Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER)	**15**

	ER to Table- Entity to Table, Relationship to tables with and without key constraints. **DDL Statements** - Creating Databases, Using Databases, datatypes, Creating Tables (with integrity constraints – primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables **DML Statements** – Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause	
II	**Relational data model**– Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint **Relational Algebra** operations (selection, projection, set operations union, intersection, difference, cross product, Joins –conditional, equi join and natural joins, division) **Functions** – String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) **Joining Tables** – inner join, outer join (left outer, right outer, full outer) **Subqueries** – subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries	**15**
III	**Schema refinement and Normal forms:** Functional dependencies, first, second, third, and BCNF normal forms based on primary keys, lossless join decomposition. **Database Protection:** Security Issues, Threats to Databases, Security Mechanisms, Role of DBA, Discretionary Access Control, Backing Up and Restoring databases **Views** (creating, altering dropping, renaming and manipulating views) **DCL Statements** (creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges), Transaction control commands – Commit, Rollback **Index Structures of Files:** Introduction, Primary index, Clustering Index, Multilevel indexes	**15**

Textbooks:

1. "Fundamentals of Database System", ElmasriRamez, NavatheShamkant, Pearson Education, Seventh edition, 2017
2. "Database Management Systems", Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, 2014
3. "Murach's MySQL", Joel Murach, 3rd Edition, 3rd Edition, 2019

Additional References:

1. "Database System Concepts", Abraham Silberschatz,HenryF.Korth,S.Sudarshan, McGraw Hill, 2017
2. "MySQL: The Complete Reference", VikramVaswani , McGraw Hill, 2017
3. "Learn SQL with MySQL: Retrieve and Manipulate Data Using SQL Commands with Ease", AshwinPajankar, BPB Publications, 2020

Course Code	Course Title	Credits	Lectures /Week
USCSP204	**Database Systems – Practical**	**1**	**3**
1.	Conceptual Designing using ER Diagrams (Identifying entities, attributes, keys and relationships between entities, cardinalities, generalization, specialization etc.)		
2.	Perform the following: • Viewing all databases • Creating a Database • Viewing all Tables in a Database • Creating Tables (With and Without Constraints) • Inserting/Updating/Deleting Records in a Table		
3.	Perform the following: • Altering a Table • Dropping/Truncating/Renaming Tables • Backing up / Restoring a Database		
4.	Perform the following: • Simple Queries • Simple Queries with Aggregate functions		
5.	Queries involving • Date Functions • String Functions • Math Functions		
6.	Join Queries • Inner Join • Outer Join		

7.	Subqueries • With IN clause • With EXISTS clause
8.	Converting ER Model to Relational Model and apply Normalization on database. (Represent entities and relationships in Tabular form, Represent attributes as columns, identifying keys and normalization up to 3rd Normal Form).
9.	Views • Creating Views (with and without check option) • Dropping views • Selecting from a view
10.	DCL statements • Granting and revoking permissions • Saving (Commit) and Undoing (rollback)
11.	Creating Indexes on data tables.

Course Code	Course Title	Credits	Lectures /Week
USCS205	**Calculus**	**2**	**3**

About the Course:
Calculus is a branch of mathematics that involves the study of rates of change. In Computer Science, Calculus is used in Machine Learning, Data Mining, Scientific Computing, Image Processing, and creating the graphics and physics engines for video games, including the 3D visuals for simulations.

Course Objectives:

- The primary objective of this course is to introduce the basic tools of Calculus which are helpful in understanding their applications to the real world problems.
- The course is designed to have a grasp of important concepts of Calculus in a scientific way.
- It covers topics from as basic as definition of functions to partial derivatives of functions in a gradual and logical way.
- The learner is expected to solve as many examples as possible to a get compete clarity and understanding of the topics covered.

Learning Outcomes:
After successful completion of this course, learners would be able to:

- Develop mathematical skills and enhance thinking power of learners.
- Understand mathematical concepts like limit, continuity, derivative, integration of functions, partial derivatives.
- Appreciate real world applications which uses the learned concepts.
- Skill to formulate a problem through Mathematical modelling and simulation.

Unit	Topics	No of Lectures
I	**DERIVATIVES AND ITS APPLICATIONS:** **Review of Basic Concepts:** Functions, limit of a function, continuity of a function, derivative function. **Derivative In Graphing And Applications:** Increase, Decrease, Concavity, Relative Extreme; Graphing Polynomials, Rational Functions, Cusps and Vertical Tangents. Absolute Maxima and Minima, Applied Maximum and Minimum Problems, Newton's Method.	**15**
II	**INTEGRATION AND ITS APPLICATIONS:** **Integration:** An Overview of the Area Problem, Indefinite Integral, Definition of Area as a Limit; Sigma Notation, Definite Integral, Evaluating Definite Integrals by Substitution, Numerical Integration: Simpson's Rule. **Applications of Integration:** Area between two curves, Length of a plane curve. **Mathematical Modeling with Differential Equations**: Modeling with	**15**

	Differential Equations,Separation of Variables, Slope Fields, Euler's Method, First-Order Differential Equations and Applications.	
III	**PARTIAL DERIVATIVES AND ITS APPLICATIONS:** **Functions of Several Variables**: Functions of two or more variables, Limits and Continuity of functions of two or three variables. **Partial Derivatives:** Partial Derivatives, Differentiability, Differentials, and Local Linearity, Chain Rule, Implicit Differentiation, Directional Derivatives and Gradients, **Applications ofPartial Derivatives:** Tangent Planes and Normal Vectors, Maxima and Minima of Functions of Two Variables.	**15**

Textbooks:

1. Calculus: Early transcendental (10th Edition): Howard Anton, IrlBivens, Stephen Davis, John Wiley & sons, 2012.

Additional References:

1. Calculus and analytic geometry (9th edition): George B Thomas, Ross L Finney, Addison Wesley, 1995
2. Calculus: Early Transcendentals (8th Edition): James Stewart, Brooks Cole, 2015.
3. Calculus (10th Edition): Ron Larson, Bruce H. Edwards, Cengage Learning, 2013.
4. Thomas' Calculus (13th Edition): George B. Thomas, Maurice D. Weir, Joel R. Hass, Pearson, 2014.

Course Code	Course Title	Credits	Lectures /Week
USCSP205	**Calculus – Practical**	**1**	**3**
1	**Review of Basic Concepts –** a. Functions of one variable, its domain and range, Operations on functions b. Limits of functions of one variable c. Continuity of functions of one variable d. Derivatives of functions of one variable		
2	**Applications of Derivatives I –** a. Increasing and Decreasing functions b. Concavity and inflection points c. Relative Extrema d. Absolute Extrema		
3	**Applications of Derivatives II –** a. Analysis of polynomials b. Graphing rational functions c. Graphs With Vertical Tangents And Cusps d. Newton's method to find approximate solution of an equation		

4	**Integration –** a. Finding area using rectangle method and antiderivative method b. Indefinite and definite integrals c. Properties of integrals d. Numerical integration using Simpson's rule.
5	**Applications of Integration –** a. Area between two curves b. Length of a plane curve
6	**Differential Equations –** a. Solution of a first order first degree differential equation using variable separable method b. Solution of a first order linear differential equation using integrating factor c. Numerical solution of first-order equations using Euler's method d. Modeling using differential equation
7	**Functions of Several Variables –** a. Functions of two or more variables, its domain and range, Operations on functions, level curves b. Limits of functions of two or three variables c. Continuity of functions of two or three variables
8	**Partial Derivatives I –** a. Partial derivatives of functions, First and Second order partial derivatives, Mixed derivative theorem, Higher order partial derivatives b. Differential for functions of two or three variables c. Local linear approximation for functions of two or three variables
9	**Partial Derivatives II –** a. Chain rule for functions of two or three variables b. Implicit differentiation c. Directional derivatives and gradient
10	**Applications of Partial Derivatives–** a. Tangent Planes and Normal Vectors for functions of two or three variables b. Maxima and Minima of Functions of Two Variables
NOTE	**Above Practicals can also to be implemented using SageMath/ Geogebra.**

Course Code	Course Title	Credits	Lectures /Week
USCS206	**Statistical Methods**	**2**	**3**

About the Course:
This course introduces the key concepts in probability, conditional probabilities and distribution theory, including probability laws, random variables, expectation and variance, functions of random variables and its probability distributions. Emphasis is placed on theoretical understanding combined with problem solving using various statistical inferential techniques.

Course Objectives:

- To make learner aware about basic probability axioms and rules and its application.
- To understand the concept of conditional probability and Independence of events.
- To make learner familiar with discrete and continuous random variables as well as standard discrete and continuous distributions.
- To learn computational skills to implement various statistical inferential approaches.

Learning Outcomes:
After successful completion of this course, learners would be able to

- Calculate probability, conditional probability and independence.
- Apply the given discrete and continuous distributions whenever necessary.
- Define null hypothesis, alternative hypothesis, level of significance, test statistic and p value.
- Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases.
- Apply non-parametric test whenever necessary.
- Conduct and interpret one-way and two-way ANOVA.

Unit	Topics	No of Lectures
I	**Probability:** Random experiment, sample space, events types and operations of events, Probability definition: classical, axiomatic, Elementary Theorems of probability (without proof). Conditional probability, 'Bayes' theorem, independence, Examples on Probability. **Random Variables:** Concept and definition of a discrete random variable and continuous random variable. Probability mass function, Probability density function and cumulative distribution function of discrete and continuous random variable, Properties of cumulative distribution function.	**15**
II	**Mathematical Expectation and Variance:** Expectation of a function, Variance and S.D of a random variable, properties. **Standard Probability distributions:** Introduction, properties, examples and applications of each of the following distributions: Binomial distribution, Normal distribution, Chi-square distribution, t distribution, F distribution	**15**

III	**Hypothesis testing:** One sided, Two sided hypothesis, critical region, p-value, tests based on t, Normal and F, confidence intervals. **Analysis of Variance:** One-way, two-way analysis of variance. **Non-parametric tests:** Need of non-parametric tests, Sign test, Wilicoxon's signed rank test, run test, Kruskal-Walis tests, Chi square test.	**15**

Textbooks:

1. Gupta, S.C. and Kapoor, V.K. (1987): Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi
2. Goon, A. M., Gupta, M. K. and Dasgupta, B. (1983). Fundamentals of Statistics, Vol. 1, Sixth Revised Edition, The World Press Pvt. Ltd., Calcutta.

Additional References:

1. Mood, A. M. and Graybill, F. A. and Boes D.C. (1974). Introduction to the Theory of Statistics, Ed. 3, McGraw Hill Book Company.
2. Hoel P. G. (1971). Introduction to Mathematical Statistics, John Wiley and Sons, New York.
3. Hogg, R.V. and Craig R.G. (1989). Introduction to Mathematical Statistics, Ed. MacMillan Publishing Co., New York.
4. Walpole R. E., Myers R. H. and Myers S. L. (1985), Probability and Statistics for Engineers and Scientists
5. Agarwal, B. L. (2003). Programmed Statistics, Second Edition, New Age International Publishers, New Delhi.

Course Code	Course Title	Credits	Lectures /Week
USCSP206	**Statistical Methods – Practical**	**1**	**3**
1	**Probability-** a. Examples based on Probability definition: classical, axiomatic b. Examples based on elementary Theorems of probability		
2	**Conditional probability and independence-** a. Examples based on Conditional probability b. Examples based on 'Bayes' theorem c. Examples based on independence		
3	**Discrete random variable-** a. Probability distribution of discrete random variable b. Probability mass function		
4	**Continuous random variable-** a. Probability distribution of continuous random variable b. Probability density function		

5	**Mathematical Expectation and Variance-** a. Mean of discrete and continuous Probability distribution b. S.D. and variance of discrete and continuous Probability distribution
6	**Standard probability distributions-** a. Calculation of probability, mean and variance based on Binomial distribution b. Calculation of probability based on Normal distribution
7	**Large Sample tests based on Normal (Z) -** a. Test of significance for proportion (Single proportion Ho: P = Po) b. Test of significance for difference between two proportions (Double proportion Ho: P1 = P2) c. Test of significance for mean (Single mean Ho: $\mu = \mu 0$) d. Test of significance for difference between two means. (Double mean Ho: $\mu 1 = \mu 2$)
8	**Small sample tests based on t and F-** a. t-test for significance of single mean, population variance being unknown (Single mean Ho : $\mu = \mu 0$) b. t-test for significance of the difference between two sample means (Independent samples) c. t-test for significance of the difference between two sample means (Related samples) d. F-Test to Compare Two Variances
9	**Analysis of variance -** a. Perform One-way ANOVA b. Perform Two-way ANOVA
10	**Non-parametric tests-** a. Sign test and Wilcoxon Sign rank test b. Run test c. Kruskal-Wallis (H) test d. Chi-square test
Note: Practical no. 6, 7, 8, 9 can also to be implemented using R programming.	

Course Code	Course Title	Credits	Lectures /Week
USCS207	**E-Commerce & Digital Marketing**	**2**	**3**

About the Course:
This course introduces the fundamental concepts of e-commerce, its types, the various legal and ethical issues of e-commerce and different e-commerce applications. The course also aims to introduce basic principles and types of digital marketing and web and Google analytics

Course Objectives:

- To understand increasing significance of E-Commerce and its applications in Business and Various Sectors
- To provide an insight on Digital Marketing activities on various Social Media platforms and its emerging significance in Business
- To understand Latest Trends and Practices in E-Commerce and Digital Marketing, along with its Challenges and Opportunities for an Organization

Learning Outcomes:
After successful completion of this course, students would be able to

- Understand the core concepts of E-Commerce.
- Understand the various online payment techniques
- Understand the core concepts of digital marketing and the role of digital marketing in business.
- Apply digital marketing strategies to increase sales and growth of business
- Apply digital marketing through different channels and platforms
- Understand the significance of Web Analytics and Google Analytics and apply the same.

Unit	Topics	No of Lectures
I	**Introduction to E-Commerce and E- Business:** Definition and competing in the digital economy, Impact of E-Commerce on Business Models, FactorsDriving e-commerce and e-Business Models, Economics and social impact of e-Business, opportunities and Challenges, e-Commerce vs m-Commerce, Different e-Commerce Models (B2B, B2C, C2B, C2C, B2E), e-Commerce Applications: e-Trading, e-Learning, e-Shopping, Virtual Reality & Consumer Experience, Legal and Ethical issues in e-Commerce. **Overview of Electronic Payment system**s: Types of Electronic payment schemes (Credit cards, Debit cards, Smartcards, Internet banking), E-checks, E-Cash Concepts and applications of EDI and Limitation **Introduction & origin of Digital Marketing**: Traditional v/s Digital Marketing. Digital Marketing Strategy, The P-O-E-M Framework, Segmenting & Customizing Messages, The Digital landscape, Digital Advertising Market in India. Skills required in Digital Marketing. Digital Marketing Plan.	**15**
II	**Social Media Marketing:** Meaning, Purpose, types of social media websites, Social Media Engagement, Target audience, Facebook Marketing: Business through Facebook Marketing, Creating Advertising Campaigns,	**15**

	Adverts, Facebook Marketing Tools, LinkedIn Marketing: Importance of LinkedIn Marketing, Framing LinkedIn Strategy, Lead Generation through LinkedIn, Content Strategy, Analytics and Targeting, Twitter Marketing: Framing content strategy, Twitter Advertising Campaigns, YouTube Marketing: Video optimization, Promoting on YouTube, Monetization, YouTube Analytics **Email Marketing:** Types of Emails, Mailing List, Email Marketing tools, Email Deliverability & Email Marketing automation **Mobile Marketing**: Introduction, Mobile Usage, Mobile Advertising, Mobile Marketing Types, Mobile Marketing Features, Mobile Campaign Development, Mobile Advertising Analytics **Content Marketing:** Introduction, Content marketing statistics, Types of Content, Types of Blog posts, Content Creation, Content optimization, Content Management & Distribution, Content Marketing Strategy, Content creation tools and apps, Challenges of Content Marketing.	
III	**Search Engine Optimization:** Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimize website, On-page and off-page optimization **Search Engine Marketing:** Introduction to SEM, Introduction to Ad Words - Google Ad Words, Ad Words fundamentals, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation, Display marketing, Buying Models: Cost per Click (CPC), Cost per Milli (CPM), Cost per Lead (CPL), Cost per Acquisition (CPA). **Web Analytics:** Purpose, History, Goals & objectives, Web Analytic tools & Methods. Web Analytics Mistakes and Pitfalls. **Google Analytics:** Basics of Google Analytics, Installing Google Analytics in website, Parameters of Google Analytics, Reporting and Analysis	**15**

Textbooks:

1. "E-Commerce Strategy, Technologies and Applications", Whitley, David, Tata McGraw Hill, 2017
2. Digital Marketing, Seema Gupta, McGraw Hill Education, 2nd Edition

Additional References:

1. E-Commerce by S. Pankaj, A.P.H. Publication, New Delhi
2. Fundamentals of Digital Marketing, Punit Singh Bhatia, Pearson, 2nd Edition
3. "Understanding Digital Marketing: MarketingStrategies for Engaging the Digital Generation", Damian Ryan, Calvin Jone. Kogan Page, 4th Edition

EvaluationScheme

I. Internal Evaluation for Theory Courses – 25 Marks

(i) Mid-Term Class Test– 15Marks

- It should be conducted using any **learning management system** such as **Moodle**(Modularobject-orienteddynamiclearning environment)
- The test should have **15 MCQ's** which should be solved in a time duration of **30 minutes.**

(ii) Assignment/ Case study/ Presentations– 10 Marks

- Assignment / Case Study Report / Presentation can be uploaded onany **learning management system**.

II. External Examination for Theory Courses – 75 Marks

- Duration: **2.5 Hours**
- Theory question paper pattern:

	All questions are compulsory.		
Question	**Based on**	**Options**	**Marks**
Q.1	Unit I	*Any 4 out of 6*	20
Q.2	Unit II	*Any 4 out of 6*	20
Q.3	Unit III	*Any 4 out of 6*	20
Q.4	Unit I,II and III	*Any 5 out of 6*	15

- All questions shall be compulsorywith internal choicewithin thequestions.
- Each Question maybe sub-divided into subquestions as a, b, c, d, etc.&the allocation ofMarks dependson theweightage ofthetopic.

III. Practical Examination

- Each core subjectcarries50 Marks

  40 marks + 05 marks (journal) + 05 marks (viva)
- Duration: **2 Hours**for each practical course.
- Minimum **80% practical** from each core subjects are required to be completed.
- **Certified Journal is compulsory for appearing at the time of Practical Exam**
- The final submission and evaluation of **journal in electronic form** using a Learning Management System / Platform can be promoted by college.

AC_____

UNIVERSITY OF MUMBAI

Syllabus for SemIII& IV
Program: B.Sc.
Course: Computer Science

(Credit Based Semester and Grading System with effect from the academic year **2017-2018**)

Preamble

The revised and restructured curriculum for the Three-year integrated course is systematically designed considering the current industry needs in terms of skills sets demanded under new technological environment. It also endeavours to align the programme structure and course curriculum with student aspirations and corporate expectations. The proposed curriculum is more contextual, industry affable and suitable to cater the needs of society and nation in present day context.

Second year of this course is about studying core computer science subjects. Theory of Computation course provides understanding of grammar, syntax and other elements of modern language designs. It also covers developing capabilities to design formulations of computing models and its applications in diverse areas.

The course in Operating System satisfies the need of understanding the structure and functioning of system. Programming holds key indispensable position in any curriculum of Computer Science. It is essential for the learners to know how to use object oriented paradigms. There is also one dedicated course Android Developer Fundamentals as a skill enhancement catering to modern day needs of Mobile platforms and applications. The syllabus has Database Systems courses in previous semesters. The course in Database Management Systems is its continuation in third semester. The course has objectives to develop understanding of concepts and techniques for data management along with covers concepts of database at advance level.

The course of Combinatorics and Graph Theory in third semester and the course of Linear Algebra in fourth semester take the previous courses in Mathematics. Graph theory is rapidly moving into the mainstream mainly because of its applications in diverse fields which include can further open new opportunities in the areas of genomics, communications networks and coding theory, algorithms and computations and operations research.

Introducing one of the upcoming concepts Physical Computing and IoT programming will definitely open future area as Embedded Engineer, involvement in IoT projects, Robotics and many more. The RasPi is a popular platform as it offers a complete Linux server in a tiny platform for a very low cost and custom-built hardware with minimum complex hardware builds which is easier for projects in education domain.

S.Y.B.Sc. (Semester III and IV)
Computer Science Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2017-2018

SEMESTER III			
Course	**TOPICS**	**Credits**	**L / Week**
USCS301	Theory of Computation	2	3
USCS302	Core JAVA	2	3
USCS303	Operating System	2	3
USCS304	Database Management Systems	2	3
USCS305	Combinatorics and Graph Theory	2	3
USCS306	Physical Computing and IoT Programming	2	3
USCS307	Skill Enhancement: Web Programming	2	3
USCSP301	USCS302+USCS303+USCS304	3	9
USCSP302	USCS305+USCS306+USCS307	3	9

SEMESTER IV			
Course	**TOPICS**	**Credits**	**L / Week**
USCS401	Fundamentals of Algorithms	2	3
USCS402	Advanced JAVA	2	3
USCS403	Computer Networks	2	3
USCS404	Software Engineering	2	3
USCS405	Linear Algebra using Python	2	3
USCS406	.NET Technologies	2	3
USCS407	Skill Enhancement: Android Developer Fundamentals	2	3
USCSP401	USCS401+ USCS402+ USCS403	3	9
USCSP402	USCS405+ USCS406+ USCS407	3	9

SEMESTER III

THEORY

Course: USCS301	TOPICS (Credits : 02 Lectures/Week:03) Theory of Computation	
Objectives: To provide the comprehensive insight into theory of computation by understanding grammar, languages and other elements of modern language design. Also to develop capabilities to design and develop formulations for computing models and identify its applications in diverse areas. **Expected Learning Outcomes:** 1. Understand Grammar and Languages 2. Learn about Automata theory and its application in Language Design 3. Learn about Turing Machines and Pushdown Automata 4. Understand Linear Bound Automata and its applications		
Unit I	**Automata Theory:** Defining Automaton, Finite Automaton, Transitios and Its properties, Acceptability by Finite Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moore Machines, Minimizing Automata. **Formal Languges:** Defining Grammar, Derivations, Languges generated by Grammar, Comsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on Languages, Languages and Automata	**15L**
Unit II	**Regular Sets and Regular Grammar:** Regular Grammar, Regular Expressions, Finite automata and Regular Expressions, Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar **Context Free Languages:** Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG **Pushdown Automata:** Definitions, Acceptance by PDA, PDA and CFG	**15L**

Unit III	**Linear Bound Automata:** The Linear Bound Automata Model, Linear Bound Automata and Languages. **Turing Machines:** Turing Machine Definition, Representations, Acceptability by Turing Machines, Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine, **Undecidability:** The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvable Problems	**15L**

Tutorials :

1. Problems on generating languages for given simple grammar
2. Problems on DFA and NDFA equivalence
3. Problems on generating Regular Expressions
4. Problems on drawing transition state diagrams for Regular Expressions
5. Problems on Regular Sets and Regular Grammar
6. Problems on Ambiguity of Grammar
7. Problems on working with PDA
8. Problems on working with Turing Machines
9. Problems on generating derivation trees
10. Problems on Linear Bound Automata/Universal Turing Machine

Textbook(s):

1) Theory of Computer Science, K. L. P Mishra, Chandrasekharan, PHI,3rd Edition
2) Introduction to Computer Theory, Daniel Cohen, Wiley,2nd Edition
3) Introductory Theory of Computer Science, E.V. Krishnamurthy,Affiliated East-West Press.

Additional Reference(s):

1) Theory of Computation, Kavi Mahesh, Wiley India
2) Elements of The Theory of Computation, Lewis, Papadimitriou, PHI
3) Introduction to Languages and the Theory of Computation, John E Martin, McGraw-Hill Education
4) Introduction to Theory of Computation, Michel Sipser, Thomson

Course: USCS302	TOPICS (Credits : 02 Lectures/Week:03) Core Java	
Objectives: The objective of this course is to teach the learner how to use Object Oriented paradigm to develop code and understand the concepts of Core Java and to cover-up with the pre-requisites of Core java. **Expected Learning Outcomes:** 1. Object oriented programming concepts using Java. 2. Knowledge of input, its processing and getting suitable output. 3. Understand, design, implement and evaluate classes and applets. 4. Knowledge and implementation of AWT package.		
Unit I	**The Java Language:** Features of Java, Java programming format, Java Tokens, Java Statements, Java Data Types, Typecasting, Arrays **OOPS**: Introduction, Class, Object, Static Keywords, Constructors, this Key Word, Inheritance, super Key Word, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces **String Manipulations**: String, String Buffer, String Tokenizer **Packages:** Introduction to predefined packages (java.lang, java.util, java.io, java.sql, java.swing), User Defined Packages, Access specifiers	**15L**
Unit II	**Exception Handling:** Introduction, Pre-Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples **Multithreading:** Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods **I/O Streams:** Introduction, Byte-oriented streams, Character- oriented streams, File, Random access File, Serialization **Networking:** Introduction, Socket, Server socket, Client –Server Communication	**15L**
	Wrapper Classes: Introduction, Byte, Short, Integer, Long, Float, Double, Character, Boolean classes **Collection Framework**: Introduction, util Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its classes	

Unit III	**Inner Classes**: Introduction, Member inner class, Static inner class, Local inner class, Anonymous inner class **AWT:** Introduction, Components, Event-Delegation-Model, Listeners, Layouts, Individual components Label, Button, CheckBox, Radio Button, Choice, List, Menu, Text Field, Text Area	**15L**

Textbook(s):

1) Herbert Schildt, Java The Complete Reference, Ninth Edition, McGraw-Hill Education, 2014

Additional Reference(s):

1) E. Balagurusamy, Programming with Java, Tata McGraw-Hill Education India, 2014
2) Programming in JAVA, 2nd Ed, Sachin Malhotra & Saurabh Choudhary, Oxford Press
3) The Java Tutorials: http://docs.oracle.com/javase/tutorial/

Course: USCS303	**TOPICS (Credits : 02 Lectures/Week:03)** **Operating System**	

Objectives:

Learners must understand proper working of operating system. To provide a sound understanding of Computer operating system, its structures, functioning and algorithms.

Expected Learning Outcomes:

1. To provide a understanding of operating system, its structures and functioning
2. Develop and master understanding of algorithms used by operating systems for various purposes.

Unit I	**Introduction and Operating-Systems Structures:** Definition of Operating system, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments **Operating-System Structures:** Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls, Operating-System Structure **Processes**: Process Concept, Process Scheduling, Operations on Processes, Interprocess Communication	**15L**

	Threads: Overview, Multicore Programming, Multithreading Models	
Unit II	**Process Synchronization:** General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors **CPU Scheduling:** Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling **Deadlocks:** System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock	**15L**
Unit III	**Main Memory:** Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table **Virtual Memory:** Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing **Mass-Storage Structure:** Overview, Disk Structure, Disk Scheduling, Disk Management **File-System Interface:** File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing **File-System Implementation:** File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management	**15L**

Textbook(s):

1. Abraham Silberschatz, Peter Galvin, Greg Gagne, Operating System Concepts, Wiley,8th Edition

Additional Reference(s):

1. Achyut S. Godbole, Atul Kahate, Operating Systems, Tata McGraw Hill
2. Naresh Chauhan, Principles of Operating Systems, Oxford Press
3. Andrew S Tanenbaum, Herbert Bos, Modern Operating Systems, 4e Fourth Edition, Pearson Education, 2016

Course: USCS304	TOPICS (Credits : 02 Lectures/Week:03) Database Management Systems	
Objectives: To develop understanding of concepts and techniques for data management and learn about widely used systems for implementation and usage. **Expected Learning Outcomes:** 1. Master concepts of stored procedure and triggers and its use. 2. Learn about using PL/SQL for data management 3. Understand concepts and implementations of transaction management and crash recovery		
Unit I	**Stored Procedures:** Types and benefits of stored procedures, creating stored procedures, executing stored procedures, altering stored procedures, viewing stored procedures. **Triggers:** Concept of triggers, Implementing triggers – creating triggers, Insert, delete, and update triggers, nested triggers, viewing, deleting and modifying triggers, and enforcing data integrity through triggers. **Sequences**: creating sequences, referencing, altering and dropping a sequence. **File Organization and Indexing:** Cluster, Primary and secondary indexing, Index data structure: hash and Tree based indexing, Comparison of file organization: cost model, Heap files, sorted files, clustered files. Creating, dropping and maintaining indexes.	**15L**
	Fundamentals of PL/SQL: Defining variables and constants, PL/SQL expressions and comparisons: Logical Operators, Boolean Expressions, CASE Expressions Handling, Null Values in Comparisons and Conditional Statements, PL/SQL Datatypes: Number Types, Character Types, Boolean Type, Datetime and Interval Types.	

Unit II	**Overview of PL/SQL Control Structures:** Conditional Control: IF and CASE Statements, IF-THEN Statement, IF-THEN-ELSE Statement, IFTHEN-ELSIF Statement, CASE Statement, Iterative Control: LOOP and EXIT Statements, WHILE-LOOP, FOR-LOOP, Sequential Control: GOTO and NULL Statements	**15L**
Unit III	**Transaction Management:** ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem , Read-Write Locks, Deadlocks Handling, Two Phase Locking protocol. **DCL Statements:** Defining a transaction, Making Changes Permanent with COMMIT, Undoing Changes with ROLLBACK, Undoing Partial Changes with SAVEPOINT and ROLLBACK **Crash Recovery:** ARIES algorithm. The log based recovery, recovery related structures like transaction and dirty page table, Write-ahead log protocol, check points, recovery from a system crash, Redo and Undo phases.	**15L**

Textbook(s):

1) Ramakrishnam, Gehrke, Database Management Systems, Bayross, McGraw-Hill,3rd Edition
2) Abraham Silberschatz, Henry F. Korth,S. Sudarshan , Database System Concepts, 6th Edition
3) Ivan Bayross, “SQL,PL/SQL -The Programming language of Oracle”, B.P.B. Publications

Additional Reference(s):

1) Ramez Elmasri & Shamkant B.Navathe, Fundamentals of Database Systems, Pearson Education
2) Robert Sheldon, Geoff Moes, Begning MySQL, Wrox Press.
3) Joel Murach, Murach’s MySQL, Murach

Course: USCS305	TOPICS (Credits : 02 Lectures/Week: 03) Combinatorics and Graph Theory	

Objectives:

To give the learner a broad exposure of combinatorial Mathematics through applications especially the Computer Science applications.

Expected Learning Outcomes:

1. Appreciate beauty of combinatorics and how combinatorial problems naturally arise in many settings.
2. Understand the combinatorial features in real world situations and Computer Science applications.
3. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts and apply them to solve problems

Unit I	**Introduction to Combinatorics:** Enumeration, Combinatorics and Graph Theory/ Number Theory/Geometry and Optimization, Sudoku Puzzles. Strings, Sets, and Binomial Coefficients: Strings- A First Look, Combinations, Combinatorial, The Ubiquitous Nature of Binomial Coefficients, The Binomial, Multinomial Coefficients. Induction: Introduction, The Positive Integers are Well Ordered, The Meaning of Statements, Binomial Coefficients Revisited, Solving Combinatorial Problems Recursively, Mathematical Induction, and Inductive Definitions Proofs by Induction. Strong Induction	**15L**
Unit II	**Graph Theory:** Basic Notation and Terminology, Multigraphs: Loops and Multiple Edges, Eulerian and Hamiltonian Graphs, Graph Coloring, Planar Counting, Labeled Trees, A Digression into Complexity Theory. Applying Probability to Combinatorics, Small Ramsey Numbers, Estimating Ramsey Numbers, Applying Probability to Ramsey Theory, Ramsey's Theorem The Probabilistic Method	**15L**
Unit III	**Network Flows:** Basic Notation and Terminology, Flows and Cuts, Augmenting Paths, The Ford-Fulkerson Labeling Algorithm,	**15L**

	A Concrete Example, Integer Solutions of Linear Programming Problems. Combinatorial Applications of Network Flows: Introduction, Matching in Bipartite Graphs, Chain partitioning, Pólya's Enumeration Theorem: Coloring the Vertices of a Square.	

Textbook(s):

1) Applied Combinatorics, Mitchel T. Keller and William T. Trotter, 2016, http://www.rellek.net/appcomb.

Additional Reference(s):

1) Applied Combinatorics, sixth.edition, Alan Tucker, Wiley; (2016)
2) Graph Theory and Combinatorics, Ralph P. Grimaldi, Pearson Education; Fifth edition (2012)
3) Combinatorics and Graph Theory, John Harris, Jeffry L. Hirst, Springer(2010).
4) Graph Theory: Modeling, Applications and Algorithms, Agnarsson, Pearson Education India (2008).

Course: **USCS306**	**TOPICS (Credits : 02 Lectures/Week:03)** **Physical Computing and IoT Programming**

Objectives:

To learn about SoC architectures; Learn how Raspberry Pi. Learn to program Raspberry Pi. Implementation of internet of Things and Protocols.

Expected Learning Outcomes:

1. Enable learners to understand System On Chip Architectures.
2. Introduction and preparing Raspberry Pi with hardware and installation.
3. Learn physical interfaces and electronics of Raspberry Pi and program them using practical's
4. Learn how to make consumer grade IoT safe and secure with proper use of protocols.

Unit I	**SoC and Raspberry Pi** **System on Chip:** What is System on chip? Structure of System on Chip. **SoC products:** FPGA**,** GPU, APU, Compute Units. **ARM 8 Architecture:** SoC on ARM 8. ARM 8 Architecture Introduction **Introduction to Raspberry Pi:** Introduction to Raspberry Pi, Raspberry Pi Hardware, Preparing your raspberry Pi. **Raspberry Pi Boot:** Learn how this small SoC boots without BIOS. Configuring boot sequences and hardware.	**15L**
Unit II	**Programming Raspberry Pi** **Raspberry Pi and Linux:** About Raspbian, Linux Commands, Configuring Raspberry Pi with Linux Commands **Programing interfaces:** Introduction to Node.js, Python. **Raspberry Pi Interfaces:** UART, GPIO, I2C, SPI **Useful Implementations:** Cross Compilation, Pulse Width Modulation, SPI for Camera.	**15L**
Unit III	**Introduction to IoT:** What is IoT? IoT examples, Simple IoT LED Program. **IoT and Protocols** **IoT Security:** HTTP, UPnp, CoAP, MQTT, XMPP**.** **IoT Service as a Platform:** Clayster, Thinger.io, SenseIoT, carriots and Node RED. **IoT Security and Interoperability:** Risks, Modes of Attacks, Tools for Security and Interoperability.	**15L**

Textbook(s):

1) Learning Internet of Things, Peter Waher, Packt Publishing(2015)
2) Mastering the Raspberry Pi, Warren Gay, Apress(2014)

Additional Reference(s):

1) Abusing the Internet of Things, Nitesh Dhanjani, O'Reilly

Course: USCS307	TOPICS (Credits : 02 Lectures/Week: 03) Web Programming	

Objectives:

To provide insight into emerging technologies to design and develop state of - the art web applications using client-side scripting, server-side scripting, and database connectivity.

Expected Learning Outcomes:

1. To design valid, well-formed, scalable, and meaningful pages using emerging technologies.
2. Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites
3. To develop and implement client-side and server-side scripting language programs.
4. To develop and implement Database Driven Websites.
5. Design and apply XML to create a markup language for data and document centric applications.

Unit I	**HTML5:** Fundamental Elements of HTML, Formatting Text in HTML, Organizing Text in HTML, Links and URLs in HTML, Tables in HTML, Images on a Web Page, Image Formats, Image Maps, Colors, FORMs in HTML, Interactive Elements, Working with Multimedia - Audio and Video File Formats, HTML elements for inserting Audio / Video on a web page **CSS:** Understanding the Syntax of CSS, CSS Selectors, Inserting CSS in an HTML Document, CSS properties to work with background of a Page, CSS properties to work with Fonts and Text Styles, CSS properties for positioning an element	**15L**
Unit II	**JavaScript:** Using JavaScript in an HTML Document, Programming Fundamentals of JavaScript – Variables, Operators, Control Flow Statements, Popup Boxes, Functions – Defining and Invoking a Function, Defining Function arguments, Defining a Return Statement, Calling Functions with Timer, JavaScript Objects - String, RegExp, Math, Date, Browser Objects - Window, Navigator, History, Location, Document, Cookies, Document Object Model, Form Validation using JavaScript **XML:** Comparing XML with HTML, Advantages and Disadvantages of XML,	**15L**

	Structure of an XML Document, XML Entity References, DTD, XSLT: XSLT Elements and Attributes - xsl:template, xsl:apply-templates, xsl:import, xsl:call-template, xsl:include, xsl:element, xsl:attribute, e xsl:attribute-set, xsl:value-of	
Unit III	**AJAX:** AJAX Web Application Model, How AJAX Works, XMLHttpRequest Object – Properties and Methods, Handling asynchronous requests using AJAX **PHP:** Variables and Operators, Program Flow, Arrays, Working with Files and Directories, Working with Databases, Working with Cookies, Sessions and Headers **Introduction to jQuery:** Fundamentals, Selectors, methods to access HTML attributes, methods for traversing, manipulators, events, effects	**15L**

Text Book(s):

1) HTML 5 Black Book, Covers CSS 3, JavaScript, XML, XHTML, AJAX, PHP and jQuery, 2ed, Dreamtech Press
2) Web Programming and Interactive Technologies, scriptDemics, StarEdu Solutions India.
3) PHP: A Beginners Guide, Vikram Vaswani, TMH

Additional Reference(s):

1) HTML, XHTML, and CSS Bible Fifth Edition, Steven M. Schafer, WILEY
2) Learn to Master HTML 5, scriptDemics, StarEdu Solutions Pvt Ltd.
3) Learning PHP, MySQL, JavaScript, CSS & HTML5, Robin Nixon, O'Reilly
4) PHP, MySQL, JavaScript & HTML5 All-in-one for Dummies, Steve Suehring, Janet Valade Wiley

Suggested List of Practical- SEMESTER III

Course: **USCSP301**	**(Credits : 03 Lectures/Week: 09)** **USCS302+ USCS303+USCS304**	

USCS302: Core JAVA

1. Accept integer values for a, b and c which are coefficients of quadratic equation. Find the solution of quadratic equation.
2. Accept two n x m matrices. Write a Java program to find addition of these matrices.
3. Accept n strings. Sort names in ascending order.
4. Create a package: Animals. In package animals create interface Animal with suitable behaviors. Implement the interface Animal in the same package animals.
5. Demonstrate Java inheritance using extends keyword.
6. Demonstrate method overloading and method overriding in Java.
7. Demonstrate creating your own exception in Java.
8. Using various swing components design Java application to accept a student's resume. (Design form)
9. Write a Java List example and demonstrate methods of Java List interface.
10. Design simple calculator GUI application using AWT components.

USCS303: Operating System

Practical can be implemented either in JAVA or any other programming language.

1. **Process Communication**:
   (i) Give solution to the producer–consumer problem using shared memory.
   (ii) Give solution to the producer–consumer problem using message passing.
   (iii) One form of communication in a Client–Server Systems environment is Remote method invocation (RMI). RMI is a Java feature similar to RPCs. RMI allows a thread to invoke a method on a remote object. Objects are considered remote if they reside in a different Java virtual machine (JVM). Demonstrate RMI program for adding/subtracting/multiplying/dividing two numbers.
2. **Threads**:
   (i) The Java version of a multithreaded program that determines the summation of a

non-negative integer. The Summation class implements the Runnable interface. Thread creation is performed by creating an object instance of the Thread class and passing the constructor a Runnable object.

(ii) Write a multithreaded Java program that outputs prime numbers. This program should work as follows: The user will run the program and will enter a number on the command line. The program will then create a separate thread that outputs all the prime numbers less than or equal to the number entered by the user.

(iii) The Fibonacci sequence is the series of numbers 0, 1, 1, 2, 3, 5. 8, ... Formally, it can be expressed as: $fib_0 = 0$, $fib_1 = 1$, $fib_n = fib_{n-1} + fib_{n-2}$ Write a multithreaded program that generates the Fibonacci sequence using either the Java,

3. **Synchronization**:

(i) Give Java solution to Bounded buffer problem.

(ii) Give solution to the readers–writers problem using Java synchronization.

(iii) The Sleeping-Barber Problem: A barber shop consists of awaiting room with *n* chairs and a barber room with one barber chair. If there are no customers to be served, the barber goes to sleep. If a customer enters the barbershop and all chairs are occupied, then the customer leaves the shop. If the barber is busy but chairs are available, then the customer sits in one of the free chairs. If the barber is asleep, the customer wakes up the barber. Write a program to coordinate the barber and the customers using Java synchronization.

4. Implement FCFS scheduling algorithm in Java.
5. Implement SJF (with no preemption) scheduling algorithm in Java
6. Implement RR scheduling algorithm in Java
7. Write a Java program that implements the banker's algorithm
8. Write a Java program that implements the FIFO page-replacement algorithm.
9. Write a Java program that implements the LRU page-replacement algorithm.
10. Design a File System in Java.

USCS304: Database Management Systems

1. Creating and working with Insert/Update/Delete Trigger using Before/After clause.
2. Writing PL/SQL Blocks with basic programming constructs by including following:
   a. Sequential Statements b. unconstrained loop
3. Sequences:
   a. Creating simple Sequences with clauses like START WITH, INCREMENT BY, MAXVALUE, MINVALUE, CYCLE | NOCYCLE, CACHE | NOCACHE, ORDER | NOORECER.
   b. Creating and using Sequences for tables.
4. Writing PL/SQL Blocks with basic programming constructs by including following:
   a. If...then...Else, IF...ELSIF...ELSE... END IF
   b. Case statement
5. Writing PL/SQL Blocks with basic programming constructs for following Iterative Structure:
   a. While-loop Statements
   b. For-loop Statements.
6. Writing PL/SQL Blocks with basic programming constructs by including a GoTO to jump out of a loop and NULL as a statement inside IF
7. Writing Procedures in PL/SQL Block
   a. Create an empty procedure, replace a procedure and call procedure
   b. Create a stored procedure and call it
   c. Define procedure to insert data
   d. A forward declaration of procedure
8. Writing Functions in PL/SQL Block.
   a. Define and call a function
   b. Define and use function in select clause,
   c. Call function in dbms_output.put_line
   d. Recursive function
   e. Count Employee from a function and return value back
   f. Call function and store the return value to a variable
9. Writing a recursive Functions in PL/SQL Block
10. Study of transactions and locks

Course: USCSP302	(Credits : 03 Lectures/Week: 09) USCS305+ USCS306+USCS307	

USCS305: Combinatorics and Graph Theory

1. Solving problems on strings, sets and binomial coefficients.
2. Solving problems using induction.
3. Solving problems on Eulerian and Hamiltonian graphs.
4. Solving problems on Chromatic number and coloring
5. Solving problems using Kruskal's Algorithm
6. Solving problems using Prim's Algorithm
7. Solving problems using Dijkstra's Algorithm
8. Solving problems of finding augmenting paths in network flows.
9. Solving problems on network flows using Ford-Fulkerson Labeling Algorithm
10. Solving problems on posets and their associated networks.

USCS306: Physical Computing and IoT Programming

1. Preparing Raspberry Pi: Hardware preparation and Installation
2. Linux Commands: Exploring the Raspbian
3. GPIO: Light the LED with Python
4. GPIO: LED Grid Module: Program the 8X8 Grid with Different Formulas
5. SPI: Camera Connection and capturing Images using SPI
6. Real Time Clock display using PWM.
7. Stepper Motor Control: PWM to manage stepper motor speed.
8. Node RED: Connect LED to Internet of Things
9. Stack of Raspberry Pi for better Computing and analysis
10. Create a simple Web server using Raspberry Pi

USCS307: Web Programming

1. Design a webpage that makes use of
   a. Document Structure Tags b. Various Text Formatting Tags
   c. List Tags d. Image and Image Maps
2. Design a webpage that makes use of
   a. Table tags b. Form Tags (forms with various form elements)

c. Navigation across multiple pages d. Embedded Multimedia elements

3. Design a webpage that make use of Cascading Style Sheets with
   a. CSS properties to change the background of a Page
   b. CSS properties to change Fonts and Text Styles
   c. CSS properties for positioning an element
4. Write JavaScript code for
   a. Performing various mathematical operations such as calculating factorial / finding Fibonacci Series / Displaying Prime Numbers in a given range / Evaluating Expressions / Calculating reverse of a number
   b. Validating the various Form Elements
5. Write JavaScript code for
   a. Demonstrating different JavaScript Objects such as String, RegExp, Math, Date
   b. Demonstrating different JavaScript Objects such as Window, Navigator, History, Location, Document,
   c. Storing and Retrieving Cookies
6. Create a XML file with Internal / External DTD and display it using
   a. CSS b. XSL
7. Design a webpage to handle asynchronous requests using AJAX on
   a. Mouseover b. button click
8. Write PHP scripts for
   a. Retrieving data from HTML forms
   b. Performing certain mathematical operations such as calculating factorial / finding Fibonacci Series / Displaying Prime Numbers in a given range / Evaluating Expressions / Calculating reverse of a number
   c. Working with Arrays
   d. Working with Files (Reading / Writing)
9. Write PHP scripts for
   a. Working with Databases (Storing Records / Reprieving Records and Display them)
   b. Storing and Retrieving Cookies
   c. Storing and Retrieving Sessions
10. Design a webpage with some jQuery animation effects.

SEMESTER IV

THEORY

Course: **USCS401**	**TOPICS (Credits : 02 Lectures/Week:03)** **Fundamentals of Algorithms**	
Objectives: 1. To understand basic principles of algorithm design and why algorithm analysis is important 2. To understand how to implement algorithms in Python 3. To understand how to transform new problems into algorithmic problems with efficient solutions 4. To understand algorithm design techniques for solving different problems **Expected Learning Outcomes:** 1. Understand the concepts of algorithms for designing good program 2. Implement algorithms using Python		
Unit I	Introduction to algorithm, Why to analysis algorithm, Running time analysis, How to Compare Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming	**15L**
Unit II	Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees Graph Algorithms: Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree	**15L**

	Selection Algorithms: What are Selection Algorithms? Selection by Sorting, Partition-based Selection Algorithm, Linear Selection Algorithm - Median of Medians Algorithm, Finding the K Smallest Elements in Sorted Order	
Unit III	Algorithms Design Techniques: Introduction, Classification, Classification by Implementation Method, Classification by Design Method Greedy Algorithms: Introduction, Greedy Strategy, Elements of Greedy Algorithms, Advantages and Disadvantages of Greedy Method, Greedy Applications, Understanding Greedy Technique Divide and Conquer Algorithms: Introduction, What is Divide and Conquer Strategy? Divide and Conquer Visualization, Understanding Divide and Conquer, Advantages of Divide and Conquer, Disadvantages of Divide and Conquer, Master Theorem, Divide and Conquer Applications Dynamic Programming: Introduction, What is Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence	**15L**

Textbook(s):

1. Data Structure and Algorithmic Thinking with Python, Narasimha Karumanchi , CareerMonk Publications, 2016
2. Introduction to Algorithm, Thomas H Cormen, PHI

Additional References(s):

1. Data Structures and Algorithms in Python, Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser, 2016, Wiley
2. Fundamentals of Computer Algorithms, Sartaj Sahni and Sanguthevar Rajasekaran Ellis Horowitz, Universities Press

Course: **USCS402**	**TOPICS (Credits : 02 Lectures/Week: 03)** **Advanced Java**	
Objectives: Explore advanced topic of Java programming for solving problems. **Expected Learning Outcomes:** 1) Understand the concepts related to Java Technology 2) Explore and understand use of Java Server Programming		
Unit I	**Swing:** Need for swing components, Difference between AWT and swing, Components hierarchy, Panes, Swing components: Jlabel, JTextField and JPasswordField, JTextAres, JButton, JCheckBox, JRadioButton, JComboBox and JList **JDBC:** Introduction, JDBC Architecture, Types of Drivers, Statement, ResultSet, Read Only ResultSet, Updatable ResultSet, Forward Only ResultSet, Scrollable ResultSet, PreparedStatement, Connection Modes, SavePoint, Batch Updations, CallableStatement, BLOB & CLOB	**15L**
Unit II	**Servlets:** Introduction, Web application Architecture, Http Protocol & Http Methods, Web Server & Web Container, Servlet Interface, GenericServlet, HttpServlet, Servlet Life Cycle, ServletConfig, ServletContext, Servlet Communication, Session Tracking Mechanisms **JSP:** Introduction, JSP LifeCycle, JSP Implicit Objects & Scopes, JSP Directives, JSP Scripting Elements, JSP Actions: Standard actions and customized actions,	**15L**
Unit III	**Java Beans:** Introduction, JavaBeans Properties, Examples **Struts 2:** Basic MVC Architecture, Struts 2 framework features, Struts 2 MVC pattern, Request life cycle, Examples, Configuration Files, Actions, Interceptors, Results & Result Types, Value Stack/OGNL **JSON:** Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java	**15L**

Textbook(s):

1) Cay S. Horstmann, Gary Cornell, Core Java™ 2: Volume II–Advanced Features Prentice Hall PTR,9th Edition
2) Herbert Schildt, Java2: The Complete Reference, Tata McGraw-Hill,5th Edition
3) Joe Wigglesworth and Paula McMillan, Java Programming: Advanced Topics, Thomson Course Technology (SPD) ,3rd Edition

Additional Reference(s)*:*

1) Advanced Java Programming, Uttam K. Roy, Oxford University Press
2) *The Java Tutorials: http://docs.oracle.com/javase/tutorial/)*
3) The Java Tutorials of Sun Microsystems Inc

Course: **USCS403**	**TOPICS (Credits :02 Lectures/Week:03)** **Computer Networks**	
Objectives: In this era of Information, its computation and its exchange techniques, Learner should be able to conceptualize and understand the framework and working of communication networks. And on completion, will be able to have a firm grip over this very important segment of Internet. **Expected Learning Outcome**s : 1. Learner will be able to understand the concepts of networking, which are important for them to be known as a '*networking professionals*'. 2. Useful to proceed with industrial requirements and International vendor certifications.		
Unit I	**Introduction Network Models:** Introduction to data communication, Components, Data Representation, Data Flow, Networks, Network Criteria, Physical Structures, Network types, Local Area Network, Wide Area Network, Switching, The Internet, Accessing the Internet, standards and administration Internet Standards. Network Models, Protocol layering, Scenarios, Principles of Protocol Layering, Logical Connections, TCP/IP Protocol Suite, Layered Architecture, Layers in	**15L**

	the TCP/IP Protocol Suite, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing. Detailed introduction to Physical Layer, Detailed introduction to Data-Link Layer, Detailed introduction to Network Layer, Detailed introduction to Transport Layer, Detailed introduction to Application Layer. Data and Signals, Analog and Digital Data, Analog and Digital Signals, Sine Wave Phase, Wavelength, Time and Frequency Domains, Composite Signals, Bandwidth, Digital Signal, Bit Rate, Bit Length, Transmission of Digital Signals, Transmission Impairments, Attenuation, Distortion, Noise, Data Rate Limits, Performance, Bandwidth, Throughput, Latency (Delay)	
Unit II	**Introduction to Physical Layer and Data-Link Layer:** Digital Transmission digital-to-digital conversion, Line Coding, Line Coding Schemes, analog-to-digital conversion, Pulse Code Modulation (PCM), Transmission Modes, Parallel Transmission, Serial Transmission. Analog Transmission, digital-to-analog Conversion, Aspects of Digital-to-Analog Conversion, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, analog-to-analog Conversion, Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), Multiplexing, Frequency-Division Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing. Transmission Media, Guided Media, Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable. Switching, Three Methods of Switching , Circuit Switched Networks, Packet Switching, Introduction to Data-Link Layer, Nodes and Links, Services, Two Sub-layers, Three Types of addresses, Address Resolution Protocol (ARP). Error Detection and Correction, introduction, Types of Errors, Redundancy, Detection versus Correction,	**15L**
Unit III	**Network layer, Transport Layer** Media Access Control (MAC), random access, CSMA, CSMA/CD, CSMA/CA, controlled access, Reservation, Polling, Token Passing, channelization, FDMA, TDMA, CDMA. Connecting Devices and Virtual LANs, connecting devices, Hubs, Link-Layer	**15L**

	Switches, Routers, Introduction to Network Layer, network layer services, Packetizing, Routing and Forwarding, Other Services, IPv4 addresses, Address Space, Classful Addressing. Unicast Routing, General Idea, Least-Cost Routing, Routing Algorithms, Distance-Vector Routing, Link-State Routing, Path-Vector Routing, Introduction to Transport Layer, Transport-Layer Services, Connectionless and Connection-Oriented Protocols. Transport-Layer Protocols, Service, Port Numbers, User Datagram Protocol, User Datagram, UDP Services, UDP Applications, Transmission Control Protocol, TCP Services, TCP Features, Segment.	

Textbook(s):

1) Data Communications and Networking, Behrouz A. Forouzan, Fifth Edition, TMH, 2013.
2) Computer Network, Andrew S. Tanenbaum, David J. Wetherall, Fifth Edition, Pearson Education, 2011.

Additional Reference(s)*:*

1) Computer Network, Bhushan Trivedi, Oxford University Press
2) Data and Computer Communication, William Stallings, PHI

Course: **USCS404**	**TOPICS (Credits : 02 Lectures/Week: 03)** **Software Engineering**	
Unit I	**Introduction:** The Nature of Software, Software Engineering, The Software Process, Generic Process Model, The Waterfall Model, Incremental Process Models, Evolutionary Process Models, Concurrent Models, Component-Based Development, The Unified Process Phases, Agile Development- Agility, Agile Process, Extreme Programming **Requirement Analysis and System Modeling:** Requirements Engineering, Eliciting Requirements, SRS Validation, Components of	**15L**

	SRS, Characteristics of SRS , Object-oriented design using the UML - Class diagram, Object diagram, Use case diagram, Sequence diagram, Collaboration diagram, State chart diagram, Activity diagram, Component diagram, Deployment diagram	
Unit II	**System Design:** System/Software Design, Architectural Design, Low-Level Design Coupling and Cohesion, Functional-Oriented Versus The Object-Oriented Approach, Design Specifications, Verification for Design, Monitoring and Control for Design **Software Measurement and Metrics:** Product Metrics – Measures, Metrics, and Indicators, Function-Based Metrics, Metrics for Object-Oriented Design, Operation-Oriented Metrics, User Interface Design Metrics, Metrics for Source Code, Halstead Metrics Applied to Testing, Metrics for Maintenance, Cyclomatic Complexity, Software Measurement - Size-Oriented, Function-Oriented Metrics, Metrics for Software Quality **Software Project Management: Estimation** in Project Planning Process –Software Scope And Feasibility, Resource Estimation, Empirical Estimation Models – COCOMO II, Estimation for Agile Development, The Make/Buy Decision, **Project Scheduling** - Basic Principles, Relationship Between People and Effort, Effort Distribution, Time-Line Charts	**15L**
Unit III	**Risk Management** - Software Risks, Risk Identification, Risk Projection and Risk Refinement, RMMM Plan **Software Quality Assurance:** Elements of SQA, SQA Tasks, Goals, and Metrics, Formal Approaches to SQA, Six Sigma, Software Reliability, The ISO 9000 Quality Standards, Capability Maturity Model **Software Testing :** Verification and Validation, Introduction to Testing, Testing Principles, Testing Objectives, Test Oracles, Levels of Testing, White-Box Testing/Structural Testing, Functional/Black-Box Testing, Test Plan, Test-Case Design	**15L**

Text book(s):

1) Software Engineering, A Practitioner's Approach, Roger S, Pressman.(2014)

Additional Reference(s):

1) Software Engineering, Ian Sommerville, Pearson Education
2) Software Engineering: Principles and Practices",Deepak Jain,OXFORD University Press,
3) Fundamentals of Software Engineering, Fourth Edition, Rajib Mall, PHI
4) Software Engineering: Principles and Practices, Hans Van Vliet, John Wiley & Sons
5) A Concise Introduction to Software Engineering, Pankaj Jalote, Springer

Course: **USCS405**	**TOPICS (Credits : 02 Lectures/Week: 03)** **Linear Algebra using Python**	
Objectives: To offer the learner the relevant linear algebra concepts through computer science applications. **Expected Learning Outcomes**: 1. Appreciate the relevance of linear algebra in the field of computer science. 2. Understand the concepts through program implementation 3. Instill a computational thinking while learning linear algebra.		
Unit I	**Field**: Introduction to complex numbers, numbers in Python , Abstracting over fields, Playing with GF(2), Vector Space: Vectors are functions, Vector addition, Scalar-vector multiplication, Combining vector addition and scalar multiplication, Dictionary-based representations of vectors, Dot-product, Solving a triangular system of linear equations. Linear combination, Span, The geometry of sets of vectors, Vector spaces, Linear systems, homogeneous and otherwise	**15L**
Unit II	**Matrix**: Matrices as vectors, Transpose, Matrix-vector and vector-matrix multiplication in terms of linear combinations, Matrix-vector multiplication in terms of dot-products, Null space, Computing sparse matrix-vector product, Linear functions, Matrix-matrix multiplication, Inner product and outer product,	**15L**

	From function inverse to matrix inverse **Basis**: Coordinate systems, Two greedy algorithms for finding a set of generators, Minimum Spanning Forest and GF(2), Linear dependence, Basis , Unique representation, Change of basis, first look, Computational problems involving finding a basis Dimension: Dimension and rank, Direct sum, Dimension and linear functions, The annihilator	
Unit III	**Gaussian elimination**: Echelon form, Gaussian elimination over GF(2), Solving a matrix-vector equation using Gaussian elimination, Finding a basis for the null space, Factoring integers, **Inner Product**: The inner product for vectors over the reals, Orthogonality, **Orthogonalization**: Projection orthogonal to multiple vectors, Projecting orthogonal to mutually orthogonal vectors, Building an orthogonal set of generators, Orthogonal complement, Eigenvector: Modeling discrete dynamic processes, Diagonalization of the Fibonacci matrix, Eigenvalues and eigenvectors, Coordinate representation in terms of eigenvectors, The Internet worm, Existence of eigenvalues, Markov chains, Modeling a web surfer: PageRank.	**15L**

Textbook(s):

1) Coding the Matrix Linear Algebra through Applications to Computer Science Edition 1, PHILIP N. KLEIN, Newtonian Press (2013)

Additional References*:*

1) Linear Algebra and Probability for Computer Science Applications, Ernest Davis, A K Peters/CRC Press (2012).
2) Linear Algebra and Its Applications, Gilbert Strang, Cengage Learning, 4th Edition (2007).
3) Linear Algebra and Its Applications, David C Lay, Pearson Education India; 3rd Edition (2002)

Course: **USCS406**	**TOPICS (Credits : 02 Lectures/Week: 03)** **.Net Technologies**	

Objectives:

To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications.

Expected Learning Outcomes:

1. Understand the .NET framework
2. Develop a proficiency in the C# programming language
3. Proficiently develop ASP.NET web applications using C#
4. Use ADO.NET for data persistence in a web application

Unit I	**The .NET Framework:**.NET Languages, Common Language Runtime, .NET Class Library **C# Language Basics:** Comments, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Methods, Classes, Value Types and Reference Types, Namespaces and Assemblies, Inheritance, Static Members, Casting Objects, Partial Classes **ASP.NET:** Creating Websites, Anatomy of a Web Form - Page Directive, Doctype, Writing Code - Code-Behind Class, Adding Event Handlers, Anatomy of an ASP.NET Application - ASP.NET File Types, ASP.NET Web Folders, **HTML Server Controls** - View State, HTML Control Classes, HTML Control Events, HtmlControl Base Class, HtmlContainerControl Class, HtmlInputControl Class, Page Class, global.asax File, web.config File	**15L**
Unit II	**Web Controls:** Web Control Classes, WebControl Base Class, List Controls, Table Controls, Web Control Events and AutoPostBack, Page Life Cycle **State Management:** ViewState, Cross-Page Posting, Query String, Cookies, Session State, Configuring Session State, Application State **Validation:** Validation Controls, Server-Side Validation, Client-Side Validation, HTML5 Validation, Manual Validation, Validation with Regular Expressions **Rich Controls:** Calendar Control, AdRotator Control, MultiView Control **Themes and Master Pages:** How Themes Work, Applying a Simple Theme,	**15L**

	Handling Theme Conflicts, Simple Master Page and Content Page, Connecting Master pages and Content Pages, Master Page with Multiple Content Regions, Master Pages and Relative Paths **Website Navigation:** Site Maps, URL Mapping and Routing, SiteMapPath Control, TreeView Control, Menu Control	
Unit III	**ADO.NET:** Data Provider Model, Direct Data Access - Creating a Connection, Select Command, DataReader, Disconnected Data Access **Data Binding**: Introduction, Single-Value Data Binding, Repeated-Value Data Binding, Data Source Controls – SqlDataSource **Data Controls:** GridView, DetailsView, FormView **Working with XML:** XML Classes – XMLTextWriter, XMLTextReader **Caching:** When to Use Caching, Output Caching, Data Caching **LINQ:** Understanding LINQ, LINQ Basics, **ASP.NET AJAX:** ScriptManager, Partial Refreshes, Progress Notification, Timed Refreshes	**15L**

Textbook(s):

1) Beginning ASP.NET 4.5 in C#, Matthew MacDonald, Apress(2012)

Additional Reference(s):

1) The Complete Reference ASP .NET, MacDonald, Tata McGraw Hill
2) Beginning ASP.NET 4 in C# and VB Imar Spanajaars, WROX

Course: **USCS407**	**TOPICS (Credits : 02 Lectures/Week: 03)** **Android Developer Fundamentals**	

Objectives:

To provide the comprehensive insight into developing applications running on smart mobile devices and demonstrate programming skills for managing task on mobile. To provide systematic approach for studying definition, methods and its applications for Mobile-App development.

Expected Learning Outcomes:

1) Understand the requirements of Mobile programming environment.
2) Learn about basic methods, tools and techniques for developing Apps
3) Explore and practice App development on Android Platform
4) Develop working prototypes of working systems for various uses in daily lives.

Unit I	What is Android? Obtaining the required tools, creating first android app, understanding the components of screen, adapting display orientation, action bar, Activities and Intents, Activity Lifecycle and Saving State, Basic Views: TextView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views, ProgressBar View, AutoCompleteTextView, TimePicker View, DatePicker View, ListView View, Spinner View	**15L**
Unit II	User Input Controls, Menus, Screen Navigation, RecyclerView, Drawables, Themes and Styles, Material design, Providing resources for adaptive layouts, AsyncTask and AsyncTaskLoader, Connecting to the Internet, Broadcast receivers, Services, Notifications, Alarm managers, Transferring data efficiently	**15L**
Unit III	Data - saving, retrieving, and loading: Overview to storing data, Shared preferences, SQLite primer, store data using SQLite database, ContentProviders, loaders to load and display data, Permissions, performance and security, Firebase and AdMob, Publish your app	**15L**

Textbook(s):

1) "Beginning Android 4 Application Development", Wei-Meng Lee, March 2012, WROX.

Additional Reference(s):

1) https://developers.google.com/training/courses/android-fundamentals
2) https://www.gitbook.com/book/google-developer-training/android-developer-fundamentals-course-practicals/details

Suggested List of Practical – SEMESTER IV

Course: **USCSP401**	**(Credits : 03 Lectures/Week:09)** **USCS401+ USCS402+USCS403**	

USCS401: Fundamentals of Algorithms

1. Write Python program to perform matrix multiplication. Discuss the complexity of algorithm used.
2. Write Python program to sort n names using Quick sort algorithm. Discuss the complexity of algorithm used.
3. Write Python program to sort n numbers using Merge sort algorithm. Discuss the complexity of algorithm used.
4. Write Python program for inserting an element into binary tree.
5. Write Python program for deleting an element (assuming data is given) from binary tree.
6. Write Python program for checking whether a given graph G has simple path from source s to destination d. Assume the graph G is represented using adjacent matrix.
7. Write Python program for finding the smallest and largest elements in an array A of size n using Selection algorithm. Discuss Time complexity.
8. Write Python program for finding the second largest element in an array A of size n using Tournament Method. Discuss Time complexity.
9. Write Python program for implementing Huffman Coding Algorithm. Discuss the complexity of algorithm.
10. Write Python program for implementing Strassen's Matrix multiplication using Divide and Conquer method. Discuss the complexity of algorithm.

USCS402: Advanced JAVA

1. Develop the presentation layer of Library Management software application with suitable menus.
2. Design suitable database for Library Management System.
3. Develop business logic layer for Library Management System.
4. Develop Java application to store image in a database as well as retrieve image from database.

5. Write a Java application to demonstrate servlet life cycle.
6. Design database for student administration. Develop servlet(s) to perform CRUD operations.
7. Create Employees table in EMP database. Perform select, insert, update, and delete operations on Employee table using JSP.
8. Write a Student class with three properties. The useBean action declares a JavaBean for use in a JSP. Write Java application to access JavaBeans Properties.
9. Design application using Struts2. Application must accept user name and greet user when command button is pressed.
10. Write Java application to encoding and decoding JSON in Java.

USCS403: Computer Networks

1. Understanding the working of NIC cards, Ethernet/Fast Ethernet/Gigabit Ethernet.
2. Crimping of Twisted-Pair Cable with RJ45connector for Straight-Through, Cross-Over, Roll-Over.
3. To understand their respective role in networks/internet.
4. Problem solving with IPv4, which will include concept of Classful addressing. (supportive Hint: use Cisco Binary Game)
5. Using, linux-terminal or Windows-cmd, execute following networking commands and note the output: *ping, traceroute, netstat, arp, ipconfig.*
6. Using **Packet Tracer**, create a basic network of two computers using appropriate network wire.
7. Using **Packet Tracer**, connect multiple (min.6) computers using layer 2 switch.
8. Using **Packet Tracer**, connect a network in triangular shape with three layer two switches and every switch will have four computer. Verify their connectivity with each other.
9. Using **Packet Tracer**, create a wireless network of multiple PCs using appropriate access point.
10. Using **Wireshark**, network analyzer, set the filter for ICMP, TCP, HTTP, UDP, FTP and perform respective protocol transactions to show/prove that the network analyzer is working.

Course: USCSP402	(Credits : 03 Lectures/Week:09) USCS405+ USCS406+ USCS407	

USCS405: Linear Algebra using Python

1. Write a program which demonstrates the following:
    - Addition of two complex numbers
    - Displaying the conjugate of a complex number
    - Plotting a set of complex numbers
    - Creating a new plot by rotating the given number by a degree 90, 180, 270 degrees and also by scaling by a number a=1/2, a=1/3, a=2 etc.
2. Write a program to do the following:
    - Enter a vector u as a n-list
    - Enter another vector v as a n-list
    - Find the vector au+bv for different values of a and b
    - Find the dot product of u and v
3. Write a program to do the following:
    - Enter two distinct faces as vectors u and v.
    - Find a new face as a linear combination of u and v i.e. au+bv for a and b in R.
    - Find the average face of the original faces.
4. Write a program to do the following:
    - Enter an r by c matrix M (r and c being positive integers)
    - Display M in matrix format
    - Display the rows and columns of the matrix M
    - Find the scalar multiplication of M for a given scalar.
    - Find the transpose of the matrix M.
5. Write a program to do the following:
    - Find the vector –matrix multiplication of a r by c matrix M with an c-vector u.
    - Find the matrix-matrix product of M with a c by p matrix N.
6. Write a program to enter a matrix and check if it is invertible. If the inverse exists, find the inverse.
7. Write a program to convert a matrix into its row echelon form.

8. Write a program to do the following:
    - Enter a positive number N and find numbers a and b such that $a^2 - b^2 = N$
    - Find the gcd of two numbers using Euclid's algorithm.
9. Write a program to do the following:
    - Enter a vector b and find the projection of b orthogonal to a given vector u.
    - Find the projection of b orthogonal to a set of given vectors
10. Write a program to enter a given matrix and an eigen value of the same. Find its eigen vector.

USCS406: .NET Technologies

1. Write C# programs for understanding C# basics involving
    a. Variables and Data Types b. Object-Based Manipulation
    c. Conditional Logic d. Loops e. Methods
2. Write C# programs for Object oriented concepts of C# such as:
    a. Program using classes b. Constructor and Function Overloading
    c. Inheritance d. Namespaces
3. Design ASP.NET Pages with
    a. Server controls.
    b. Web controls and demonstrate the use of AutoPostBack
    c. Rich Controls (Calendar / Ad Rotator)
4. Design ASP.NET Pages for State Management using
    a. Cookies b. Session State c. Application State
5. Perform the following activities
    a. Design ASP.NET page and perform validation using various Validation Controls
    b. Design an APS.NET master web page and use it other (at least 2-3) content pages.
    c. Design ASP.NET Pages with various Navigation Controls
6. Performing ADO.NET data access in ASP.NET for
    a. Simple Data Binding b. Repeated Value Data Binding
7. Design ASP.NET application for Interacting (Reading / Writing) with XML documents
8. Design ASP.NET Pages for Performance improvement using Caching
9. Design ASP.NET application to query a Database using LINQ
10. Design and use AJAX based ASP.NET pages.

USCS407:Android Developer Fundamentals
1. Install Android Studio and Run Hello World Program. 2. Create an android app with Interactive User Interface using Layouts. 3. Create an android app that demonstrates working with TextView Elements. 4. Create an android app that demonstrates Activity Lifecycle and Instance State. 5. Create an android app that demonstrates the use of Keyboards, Input Controls, Alerts, and Pickers. 6. Create an android app that demonstrates the use of an Options Menu. 7. Create an android app that demonstrate Screen Navigation Using the App Bar and Tabs. 8. Create an android app to Connect to the Internet and use BroadcastReceiver. 9. Create an android app to show Notifications and Alarm manager. 10. Create an android app to save user data in a database and use of different queries.

Evaluation Scheme

I. Internal Exam - 25 Marks

(i) Test – 20 Marks

20 marks Test – Duration 40 mins It will be conducted either using any open source learning management system like Moodle (Modular object-oriented dynamic learning environment) **OR** A test based on an equivalent online course on the contents of the concerned course (subject) offered by or build using MOOC (Massive Open Online Course) platform.

(ii) 5 Marks – Active participation in routine class instructional deliveries
Overall conduct as a responsible student, manners, skill in articulation, leadership qualities demonstrated through organizing co-curricular activities, etc.

II. External Exam– 75 Marks

III. Practical Exam – 50 Marks

- Each course carry 50 Marks : 40 marks + 05 marks (journal) + 05 marks (viva)
- Minimum 75 % practical from each paper are required to be completed and written in the journal**.**

(Certified Journal is compulsory for appearing at the time of Practical Exam)

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Academic Council 14/06/2018
Item No : 4.49

UNIVERSITY OF MUMBAI

Syllabus for T.Y.B.Sc.

Programme: B.Sc.

Subject: Information Technology

(Choice Based Credit System)

with effect from the academic year

2018 – 2019

Semester – 5			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT501	Skill Enhancement Course	Software Project Management	2
USIT502	Skill Enhancement Course	Internet of Things	2
USIT503	Skill Enhancement Course	Advanced Web Programming	2
USIT504	Discipline Specific Elective (Any One)	Artificial Intelligence	2
USIT505		Linux System Administration	
USIT506	Discipline Specific Elective (Any One)	Enterprise Java	2
USIT507		Next Generation Technologies	
USIT5P1	Skill Enhancement Course Practical	Project Dissertation	2
USIT5P2	Skill Enhancement Course Practical	Internet of Things Practical	2
USIT5P3	Skill Enhancement Course Practical	Advanced Web Programming Practical	2
USIT5P4	Discipline Specific Elective Practical (Any One)*	Artificial Intelligence Practical	2
USIT5P5		Linux Administration Practical	
USIT5P6	Discipline Specific Elective Practical (Any One)*	Enterprise Java Practical	2
USIT5P7		Next Generation Technologies Practical	
		Total Credits	**20**

(All the practical mentioned in the syllabi are compulsory as per the courses chosen)

Semester – 6			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT601	Skill Enhancement Course	Software Quality Assurance	2
USIT602	Skill Enhancement Course	Security in Computing	2
USIT603	Skill Enhancement Course	Business Intelligence	2
USIT604	Discipline Specific Elective (Any One)	Principles of Geographic Information Systems	2
USIT605		Enterprise Networking	
USIT606	Discipline Specific Elective (Any One)	IT Service Management	2
USIT607		Cyber Laws	
USIT6P1	Skill Enhancement Course Practical	Project Implementation	2
USIT6P2	Skill Enhancement Course Practical	Security in Computing Practical	2
USIT6P3	Skill Enhancement Course Practical	Business Intelligence Practical	2
USIT6P4	Discipline Specific Elective Practical (Any One)*	Principles of Geographic Information Systems Practical	2
USIT6P5		Enterprise Networking Practical	
USIT6P6	Skill Enhancement Course Practical	Advanced Mobile Programming	2
		Total Credits	**20**

***The choice of Practical course is based on the theory Course. For Semester V, USIT504, USIT505, USIT506 and USIT507, the practical courses are USIT5P4, USIT5P5 USIT5P6, USIT5P7. For Semester VI, USIT604, USIT605 the practical courses are USIT6P4, USIT6P5 respectively. Practical Course USIT6P6 is compulsory.**

SEMESTER V

B. Sc. (Information Technology)		Semester – V	
Course Name: Software Project Management		**Course Code: USIT501**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction to Software Project Management**:Introduction, Why is Software Project Management Important? What is a Project? Software Projects versus Other Types of Project, Contract Management and Technical Project Management, Activities Covered by Software Project Management, Plans, Methods and Methodologies, Some Ways of Categorizing Software Projects, Project Charter, Stakeholders, Setting Objectives, The Business Case, Project Success and Failure, What is Management? Management Control, Project Management Life Cycle, Traditional versus Modern Project Management Practices. **Project Evaluation and Programme Management**: Introduction, Business Case, Project Portfolio Management, Evaluation of Individual Projects, Cost–benefit Evaluation Techniques, Risk Evaluation, Programme Management, Managing the Allocation of Resources within Programmes, Strategic Programme Management, Creating a Programme, Aids to Programme Management, Some Reservations about Programme Management, Benefits Management. **An Overview of Project Planning** :Introduction to Step Wise Project Planning, Step 0: Select Project, Step 1: Identify Project Scope and Objectives, Step 2: Identify Project Infrastructure, Step 3: Analyse Project Characteristics, Step 4: Identify Project Products and Activities, Step 5: Estimate Effort for Each Activity, Step 6: Identify Activity Risks, Step 7: Allocate Resources, Step 8: Review/Publicize Plan, Steps 9 and 10: Execute Plan/Lower Levels of Planning	**12**
II	**Selection of an Appropriate Project Approach:**Introduction, Build or Buy? Choosing Methodologies and Technologies, Software Processes and Process Models, Choice of Process Models, Structure versus Speed of Delivery, The Waterfall Model, The Spiral Model, Software Prototyping, Other Ways of Categorizing Prototypes, Incremental Delivery, Atern/Dynamic Systems Development Method, Rapid Application Development, Agile Methods, Extreme Programming (XP), Scrum, Lean Software Development, Managing Iterative Processes, Selecting the Most Appropriate Process Model. **Software Effort Estimation:**Introduction, Where are the Estimates Done? Problems with Over- and Under-Estimates, The Basis for Software Estimating, Software Effort Estimation Techniques, Bottom-up Estimating, The Top-down Approach and Parametric Models, Expert Judgement, Estimating by Analogy, Albrecht Function Point	**12**

	Analysis, Function Points Mark II, COSMIC Full Function Points, COCOMO II: A Parametric Productivity Model, Cost Estimation, Staffing Pattern, Effect of Schedule Compression, Capers Jones Estimating Rules of Thumb.	
III	**Activity Planning:** Introduction, Objectives of Activity Planning, When to Plan, Project Schedules, Projects and Activities, Sequencing and Scheduling Activities, Network Planning Models, Formulating a Network Model, Adding the Time Dimension, The Forward Pass, Backward Pass, Identifying the Critical Path, Activity Float, Shortening the Project Duration, Identifying Critical Activities, Activity-on-Arrow Networks. **Risk Management**: Introduction, Risk, Categories of Risk, Risk Management Approaches, A Framework for Dealing with Risk, Risk Identification, Risk Assessment, Risk Planning, Risk Management, Evaluating Risks to the Schedule, Boehm's Top 10 Risks and Counter Measures, Applying the PERT Technique, Monte Carlo Simulation, Critical Chain Concepts. **Resource Allocation**: Introduction, Nature of Resources, Identifying Resource Requirements, Scheduling Resources, Creating Critical Paths, Counting the Cost, Being Specific, Publishing the Resource Schedule, Cost Schedules, Scheduling Sequence.	**12**
IV	**Monitoring and Control**: Introduction, Creating the Framework, Collecting the Data, Review, Visualizing Progress, Cost Monitoring, Earned Value Analysis, Prioritizing Monitoring, Getting the Project Back to Target, Change Control, Software Configuration Management (SCM). **Managing Contracts**: Introduction, Types of Contract, Stages in Contract Placement, Typical Terms of a Contract, Contract Management, Acceptance. **Managing People in Software Environments**: Introduction, Understanding Behaviour, Organizational Behaviour: A Background, Selecting the Right Person for the Job, Instruction in the Best Methods, Motivation, The Oldham–Hackman Job Characteristics Model, Stress, Stress Management, Health and Safety, Some Ethical and Professional Concerns.	**12**
V	**Working in Teams:** Introduction, Becoming a Team, Decision Making, Organization and Team Structures, Coordination Dependencies, Dispersed and Virtual Teams, Communication Genres, Communication Plans, Leadership. **Software Quality :** Introduction, The Place of Software Quality in Project Planning, Importance of Software Quality, Defining Software Quality, Software Quality Models, ISO 9126, Product and Process Metrics, Product versus Process Quality Management, Quality Management Systems, Process Capability Models, Techniques to Help Enhance Software Quality, Testing, Software Reliability, Quality Plans. **Project Closeout**: Introduction, Reasons for Project Closure, Project	**12**

	Closure Process, Performing a Financial Closure, Project Closeout Report.	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Software Project Management	Bob Hughes, Mike Cotterell, Rajib Mall	TMH	6th	2018
2.	Project Management and Tools & Technologies – An overview	Shailesh Mehta	SPD	1st	2017
3.	Software Project Management	Walker Royce	Pearson		2005

Course Name: Internet of Things		Course Code: USIT502	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	**The Internet of Things: An Overview** : The Flavour of the Internet of Things, The "Internet" of "Things", The Technology of the Internet of Things, Enchanted Objects, Who is Making the Internet of Things? **Design Principles for Connected Devices:** Calm and Ambient Technology, Magic as Metaphor, Privacy, Keeping Secrets, Whose Data Is It Anyway? Web Thinking for Connected Devices, Small Pieces, Loosely Joined, First-Class Citizens On The Internet, Graceful Degradation, Affordances. **Internet Principles:** Internet Communications: An Overview, IP, TCP, The IP Protocol Suite (TCP/IP), UDP, IP Addresses, DNS, Static IP Address Assignment, Dynamic IP Address Assignment, IPv6, MAC Addresses, TCP and UDP Ports, An Example: HTTP Ports, Other Common Ports, Application Layer Protocols, HTTP, HTTPS: Encrypted HTTP, Other Application Layer Protocols.	12
II	**Thinking About Prototyping:** Sketching, Familiarity, Costs versus Ease of Prototyping, Prototypes and Production, Changing Embedded Platform, Physical Prototypes and Mass Personalisation, Climbing into the Cloud, Open Source versus Closed Source, Why Closed? Why Open? Mixing Open and Closed Source, Closed Source for Mass Market Projects, Tapping into the Community. **Prototyping Embedded Devices:** Electronics, Sensors, Actuators, Scaling Up the Electronics, Embedded Computing Basics, Microcontrollers, System-on-Chips, Choosing Your Platform, Arduino, Developing on the Arduino, Some Notes on the Hardware, Openness, Raspberry Pi, Cases and Extension Boards, Developing on the Raspberry Pi, Some Notes on the Hardware, Openness.	12
III	**Prototyping the Physical Design:** Preparation, Sketch, Iterate, and Explore, Nondigital Methods, Laser Cutting, Choosing a Laser Cutter, Software, Hinges and Joints, 3D Printing, Types of 3D Printing, Software, CNC Milling, Repurposing/Recycling. **Chapter 7: Prototyping Online Components:** Getting Started with an API, Mashing Up APIs, Scraping, Legalities, Writing a New API, Clockodillo, Security, Implementing the API, Using Curl to Test, Going Further, Real-Time Reactions, Polling, Comet, Other Protocols, MQ Telemetry Transport, Extensible Messaging and Presence Protocol, Constrained Application Protocol.	12

IV	**Techniques for Writing Embedded Code:** Memory Management, Types of Memory, Making the Most of Your RAM, Performance and Battery Life, Libraries, Debugging, **Business Models:** A Short History of Business Models, Space and Time, From Craft to Mass Production, The Long Tail of the Internet, Learning from History, The Business Model Canvas, Who Is the Business Model For? Models, Make Thing, Sell Thing, Subscriptions, Customisation, Be a Key Resource, Provide Infrastructure: Sensor Networks, Take a Percentage, Funding an Internet of Things Startup, Hobby Projects and Open Source, Venture Capital, Government Funding, Crowdfunding, Lean Startups.	**12**
V	**Moving to Manufacture:** What Are You Producing? Designing Kits, Designing Printed circuit boards, Software Choices, The Design Process, Manufacturing Printed Circuit Boards, Etching Boards, Milling Boards. Assembly, Testing, Mass-Producing the Case and Other Fixtures, Certification, Costs, Scaling Up Software, Deployment, Correctness and Maintainability, Security, Performance, User Community. **Ethics:** Characterizing the Internet of Things, Privacy, Control, Disrupting Control, Crowdsourcing, Environment, Physical Thing, Electronics, Internet Service, Solutions, The Internet of Things as Part of the Solution, Cautious Optimism, The Open Internet of Things Definition.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	DesigningtheInternetof Things	Adrian McEwen, Hakim Cassimally	WILEY	First	2014
2.	Internet of Things – Architecture and Design	Raj Kamal	McGraw Hill	First	2017
3.	Getting Started with the Internet of Things	Cuno Pfister	O'Reilly	Sixth	2018
4.	Getting Started with Raspberry Pi	Matt Richardson and Shawn Wallace	SPD	Third	2016

B. Sc. (Information Technology)	**Semester – V**

Course Name: Advanced Web Programming		Course Code: USIT503	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	**Introducing .NET**: The .NET Framework, C#, VB, and the .NET Languages, The Common Language Runtime, The .NET Class Library. **The C# Language**: C# Language Basics, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Methods. **Types, Objects, and Namespaces**: The Basics About Classes, Building a Basic Class, Value Types and Reference Types, Understanding Namespaces and Assemblies, Advanced Class Programming.	12
II	**Web Form Fundamentals**: Writing Code, Using the Code-Behind Class, Adding Event Handlers, Understanding the Anatomy of an ASP.NET Application, Introducing Server Controls, Using the Page Class, Using Application Events, Configuring an ASP.NET Application. **Form Controls**: Stepping Up to Web Controls, Web Control Classes, List Controls, Table Controls, Web Control Events and AutoPostBack, Validation, Understanding Validation, Using the Validation Controls, Rich Controls, The Calendar, The AdRotator, Pages with Multiple Views, User Controls and Graphics, User Controls, Dynamic Graphics, The Chart Control, Website Navigation: Site Maps, URL Mapping and Routing, The SiteMapPath Control, The TreeView Control, The Menu Control.	12
III	**Error Handling, Logging, and Tracing** : Avoiding Common Errors, Understanding Exception Handling, Handling Exceptions, Throwing Your Own Exceptions, Using Page Tracing **State Management** : Understanding the Problem of State, Using View State, Transferring Information Between Pages, Using Cookies, Managing Session State, Configuring Session State, Using Application State, Comparing State Management Options **Styles, Themes, and Master Pages** : Styles, Themes, Master Page Basics, Advanced Master Pages,	12
IV	**ADO.NET Fundamentals**: Understanding Databases, Configuring Your Database, Understanding SQL Basics, Understanding the Data Provider Model, Using Direct Data Access, Using Disconnected Data Access. **Data Binding**: Introducing Data Binding, Using Single-Value Data Binding, Using Repeated-Value Data Binding, Working with Data Source Controls,	12

	The Data Controls: The GridView, Formatting the GridView, Selecting a GridView Row, Editing with the GridView, Sorting and Paging the GridView, Using GridView Templates, The DetailsView and FormView	
V	**XML**: XML Explained, The XML Classes, XML Validation, XML Display and Transforms. **Security Fundamentals**: Understanding Security Requirements, Authentication and Authorization, Forms Authentication, Windows Authentication. **ASP.NET AJAX**: Understanding Ajax, Using Partial Refreshes, Using Progress Notification, Implementing Timed Refreshes, Working with the ASP.NET AJAX Control Toolkit.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Beginning ASP.NET 4.5 in C#	Matthew MacDonald	Apress		2012
2.	C# 2015	Anne Bohem and Joel Murach	Murach	Third	2016
3.	Murach's ASP.NET 4.6 Web Programming in C#2015	Mary Delamater and Anne Bohem	SPD	Sixth	2016
4.	ASP.NET 4.0 programming	J. Kanjilal	Tata McGraw-Hill		2011
5.	Programming ASP.NET	D.Esposito	Microsoft Press (Dreamtech)		2011
6.	Beginning Visual C# 2010	K. Watson, C. Nagel, J.H Padderson, J.D. Reid, M.Skinner	Wrox (Wiley)		2010

B. Sc. (Information Technology)		Semester – V	
Course Name: Artificial Intelligence		**Course Code: USIT504 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:** What is Artificial Intelligence? Foundations of AI, history, the state of art AI today. **Intelligent Agents:** agents and environment, good behavior, nature of environment, the structure of agents.	**12**
II	**Solving Problems by Searching:** Problem solving agents, examples problems, searching for solutions, uninformed search, informed search strategies, heuristic functions. **Beyond Classical Search:** local search algorithms, searching with non-deterministic action, searching with partial observations, online search agents and unknown environments.	**12**
III	**Adversarial Search:** Games, optimal decisions in games, alpha-beta pruning, stochastic games, partially observable games, state-of-the-are game programs. **Logical Agents:** Knowledge base agents, The Wumpus world, logic, propositional logic, propositional theorem proving, effective propositional model checking, agents based on propositional logic.	**12**
IV	**First Order Logic:** Syntax and semantics, using First Order Logic, Knowledge engineering in First Order Logic. **Inference in First Order Logic:** propositional vs. First Order, unification and lifting, forward and backward chaining, resolution.	**12**
V	**Planning:** Definition of Classical Planning,Algorithms for planning as state space search, planning graphs, other classical planning approaches, analysis of planning approaches, Time, Schedules and resources, hierarchical planning, Planning and Acting in Nondeterministic Domains, multiagent planning, **Knowledge Representation:** Categories and Objects, events, mental events and objects, reasoning systems for categories, reasoning with default information, Internet shopping world	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Artificial Intelligence: A Modern Approach	Stuart Russel and Peter Norvig	Pearson	3rd	2015

2.	A First Course in Artificial Intelligence	Deepak Khemani	TMH	First	2017
3.	Artificial Intelligence: A Rational Approach	Rahul Deva	Shroff publishers	1st	2018
4.	Artificial Intelligence	Elaine Rich, Kevin Knight and Shivashankar Nair	TMH	3rd	2009
5.	Artificial Intelligence & Soft Computing for Beginners	Anandita Das Bhattacharjee	SPD	1st	2013

B. Sc. (Information Technology)		Semester – V	
Course Name: Linux System Administration		**Course Code: USIT505 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction to Red Hat Enterprise Linux:** Linux, Open Source and Red Hat, Origins of Linux, Distributions, Duties of Linux System Administrator. **Command Line:** Working with the Bash Shell, Getting the Best of Bash, Useful Bash Key Sequences, Working with Bash History, Performing Basic File System Management Tasks, Working with Directories, Piping and Redirection, Finding Files **System Administration Tasks:** Performing Job Management Tasks, System and Process Monitoring and Management, Managing Processes with ps, Sending Signals to Processes with the kill Command, Using top to Show Current System Activity, Managing Process Niceness, Scheduling Jobs, Mounting Devices, Working with Links, Creating Backups, Managing Printers, Setting Up System Logging, Setting Up Rsyslog, Common Log Files, Setting Up Logrotate **Managing Software:** Understanding RPM, Understanding Meta Package Handlers, Creating Your Own Repositories, Managing Repositories,Installing Software with Yum, Querying Software, Extracting Files from RPM Packages	**12**
II	**Configuring and Managing Storage:** Understanding Partitions and Logical Volumes, Creating Partitions, Creating File Systems, File Systems Overview, Creating File Systems, Changing File System Properties, Checking the File System Integrity, Mounting File Systems Automatically Through fstab, Working with Logical Volumes, Creating Logical Volumes, Resizing Logical Volumes, Working with Snapshots, Replacing Failing Storage Devices, Creating Swap Space, Working with Encrypted Volumes **Connecting to the Network:** Understanding NetworkManager, Working with Services and Runlevels, Configuring the Network with NetworkManager, Working with system-config-network, NetworkManager Configuration Files, Network Service Scripts, Networking from the Command Line, Troubleshooting Networking, Setting Up IPv6, Configuring SSH, Enabling the SSH Server, Using the SSH Client, Using PuTTY on Windows Machines, Configuring Key-Based SSH Authentication, Using Graphical Applications with SSH, Using SSH Port Forwarding, Configuring VNC Server Access	**12**

	Working with Users, Groups, and Permissions: Managing Users and Groups, Commands for User Management, Managing Passwords, Modifying and Deleting User Accounts, Configuration Files, Creating Groups, Using Graphical Tools for User, and Group Management, Using External Authentication Sources, the Authentication Process, sssd, nsswitch, Pluggable Authentication Modules, Managing Permissions, the Role of Ownership, Basic Permissions: Read, Write, and Execute, Advanced Permissions, Working with Access Control Lists, Setting Default Permissions with umask, Working with Attributes	
III	**Securing Server with iptables:** Understanding Firewalls, Setting Up a Firewall with system-config-firewall, Allowing Services, Trusted Interfaces, Masquerading, Configuration Files, Setting Up a Firewall with iptables, Tables, Chains, and Rules, Composition of Rule, Configuration Example, Advanced iptables Configuration, Configuring Logging, The Limit Module, Configuring NAT **Setting Up Cryptographic Services:** Introducing SSL, Proof of Authenticity: the Certificate Authority, Managing Certificates with openssl, Creating a Signing Request, Working with GNU Privacy Guard, Creating GPG Keys, Key Transfer, Managing GPG Keys, Encrypting Files with GPG, GPG Signing, Signing RPM Files **Configuring Server for File Sharing:** What is NFS? Advantages and Disadvantages of NFS, Configuring NFS4, Setting Up NFSv4, Mounting an NFS Share, Making NFS Mounts Persistent, Configuring Automount, Configuring Samba, Setting Up a Samba File Server, Samba Advanced Authentication Options, Accessing Samba Shares, Offering FTP Services.	**12**
IV	**Configuring DNS and DHCP:**Introduction to DNS, The DNS Hierarchy, DNS Server Types, The DNS Lookup Process, DNS Zone Types, Setting Up a DNS Server, Setting Up a Cache-Only Name Server, Setting Up a Primary Name Server, Setting Up a Secondary Name Server, Understanding DHCP, Setting Up a DHCP Server **Setting Up a Mail Server:** Using the Message Transfer Agent, the Mail Delivery Agent, the Mail User Agent, Setting Up Postfix as an SMTP Server, Working with Mutt, Basic Configuration, Internet Configuration, Configuring Dovecot for POP and IMAP **Configuring Apache on Red Hat Enterprise Linux:** Configuring the Apache Web Server, Creating a Basic Website, Understanding the Apache Configuration Files, Apache Log Files, Working with Virtual Hosts, Securing the Web Server with TLS Certificates, Configuring Authentication, Setting Up Authentication with .htpasswd, Configuring LDAP Authentication, Setting Up MySQL	**12**

V	**Introducing Bash Shell Scripting:** Introduction, Elements of a Good Shell Script, Executing the Script, Working with Variables and Input, Understanding Variables, Variables, Subshells, and Sourcing, Working with Script Arguments, Asking for Input, Using Command Substitution, Substitution Operators, Changing Variable Content with Pattern Matching, Performing Calculations, Using Control Structures, Using if...then...else, Using case, Using while, Using until, Using for, Configuring booting with GRUB. **High-Availability Clustering:** High-Availability Clustering, The Workings of High Availability, High-Availability Requirements, Red Hat High-Availability Add-on Software, Components, Configuring Cluster-Based Services, Setting Up Bonding, Setting Up Shared Storage, Installing the Red Hat High Availability Add-On, Building the Initial State of the Cluster, Configuring Additional Cluster Properties, Configuring a Quorum Disk, Setting Up Fencing, Creating Resources and Services, Troubleshooting a Nonoperational Cluster, Configuring GFS2 File Systems **Setting Up an Installation Server:** Configuring a Network Server as an Installation Server, Setting Up a TFTP and DHCP Server for PXE Boot, Installing the TFTP Server, Configuring DHCP for PXE Boot, Creating the TFTP PXE Server Content, Creating a Kickstart File, Using a Kickstart File to Perform an Automated, Installation, Modifying the Kickstart File with, system-config-kickstart, Making Manual Modifications to the Kickstart File	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Red Hat Enterprise Linux6 Administration	Sander van Vugt	John Wiley and Sons		2013
2.	Red hat Linux Networking and System Administration	Terry Collings and Kurt Wall	Wiley	3rd	
3.	Linux Administration: A Beginner's Guide	Wale Soyinka	TMH	Fifth Edition	

B. Sc. (Information Technology)		Semester – V	
Course Name: Enterprise Java		**Course Code: USIT506 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Understanding Java EE:** WhatisanEnterpriseApplication? Whatisjavaenterpriseedition? JavaEETechnologies, JavaEEevolution, Glassfishserver **JavaEE Architecture,Serverand Containers:** TypesofSystemArchitecture, JavaEEServer, JavaEEContainers. **Introduction to Java Servlets:** TheNeedforDynamicContent, JavaServletTechnology, WhyServlets? WhatcanServletsdo? **Servlet API and Lifecycle:** JavaServletAPI, TheServletSkeleton, TheServletLifeCycle, ASimpleWelcomeServlet **WorkingWithServlets:** GettingStarted, UsingAnnotationsInsteadofDeploymentDescriptor. **Working with Databases:** WhatIsJDBC? JDBCArchitecture, AccessingDatabase, TheServletGUI and DatabaseExample.	**12**
II	**Request Dispatcher:** Resquestdispatcher Interface, Methods of Requestdispatcher, Requestdispatcher Application. **COOKIES:** KindsOfCookies, WhereCookiesAreUsed? CreatingCookiesUsingServlet, DynamicallyChangingTheColorsOfAPage **SESSION:** WhatAreSessions? LifecycleOfHttpSession, SessionTrackingWithServletAPI, AServlet Session Example **WorkingWith Files:** UploadingFiles, CreatinganUploadFileApplication, DownloadingFiles, CreatingaDownloadFileApplication. **Working With Non-Blocking I/O:** CreatingaNon-BlockingReadApplication, CreatingTheWeb Application, CreatingJavaClass, Creating Servlets, Retrieving The File, Creating index.jsp	**12**
III	**Introduction To Java ServerPages:** WhyuseJava ServerPages? DisadvantagesOfJSP, JSPv\sServlets, LifeCycleofaJSPPage, HowdoesaJSPfunction? HowdoesJSPexecute? AboutJava ServerPages **Getting Started With Java ServerPages:** Comments, JSPDocument, JSPElements, JSPGUIExample. **Action Elements:** IncludingotherFiles, ForwardingJSPPagetoAnotherPage, PassingParametersforotherActions, LoadingaJavabean. **Implicit Objects, ScopeAnd ElExpressions:** ImplicitObjects, CharacterQuotingConventions,	**12**

	UnifiedExpressionLanguage[UnifiedEl], ExpressionLanguage. **Java Server Pages Standard Tag Libraries:** WhatiswronginusingJSPScriptletTags? HowJSTLFixesJSPScriptlet'sShortcomings? DisadvantagesOfJSTL, TagLibraries.	
IV	**Introduction To EnterpriseJavabeans:** EnterpriseBeanArchitecture, BenefitsofEnterpriseBean, TypesofEnterpriseBean, AccessingEnterpriseBeans, EnterpriseBeanApplication, PackagingEnterpriseBeans **Working With Session Beans:** WhentouseSessionBeans? TypesofSessionBeans, RemoteandLocalInterfaces, AccessingInterfaces, LifecycleofEnterpriseBeans, PackagingEnterpriseBeans, Exampleof StatefulSessionBean, Example ofStatelessSessionBean, Example of SingletonSessionBeans. **Working with Message DrivenBeans:** LifecycleofaMessageDrivenBean, UsesofMessageDrivenBeans, TheMessage DrivenBeansExample. **Interceptors:** Request AndInterceptor, Defining An Interceptor, AroundInvokeMethod, ApplyingInterceptor, Adding An Interceptor To An Enterprise Bean, Build and Run the Web Application. **Java Naming and Directory Interface**: What is Naming Service? What is Directory Service? What is Java Naming and Directory interface? Basic Lookup, JNDI Namespace in Java EE, Resources and JNDI, Datasource Resource Definition in Java EE.	**12**
V	**Persistence, Object/Relational Mapping And JPA:** WhatisPersistence? PersistenceinJava, CurrentPersistenceStandardsinJava, WhyanotherPersistenceStandards? Object/RelationalMapping, **Introduction to JavaPersistence API:** TheJavaPersistenceAPI, JPA,ORM,DatabaseandtheApplication, ArchitectureofJPA, HowJPAWorks? JPA Specifications. **Writing JPA Application:** ApplicationRequirementSpecifications, SoftwareRequirements, TheApplicationDevelopmentApproach, CreatingDatabaseAndTablesinMysql, CreatingaWebApplication, AddingtheRequiredLibraryFiles, CreatingaJavabeanClass, CreatingPersistenceUnit[Persistence.Xml], CreatingJSPS, TheJPAApplicationStructure, RunningTheJPAApplication. **Introduction to Hibernate:** WhatisHibernate? WhyHibernate? Hibernate,DatabaseandTheApplication, ComponentsofHibernate, ArchitectureofHibernate, HowHibernateWorks? **WritingHibernateApplication:** ApplicationRequirementSpecifications, SoftwareRequirements, TheApplicationDevelopmentApproach, CreatingDatabaseandTablesinMysql, CreatingaWebApplication, AddingTheRequiredLibraryFiles, CreatingaJavabeanClass, CreatingHibernateConfigurationFile, AddingaMappingClass, CreatingJSPS, RunningTheHibernateApplication.	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Java EE 7 For Beginners	Sharanam Shah, Vaishali Shah	SPD	First	2017
2.	Java EE 8 Cookbook: Build reliable applications with the most robust and mature technology for enterprise development	Elder Moraes	Packt	First	2018
3.	Advanced Java Programming	Uttam Kumar Roy	Oxford Press		2015

B. Sc. (Information Technology)		Semester – V	
Course Name: Next Generation Technologies		**Course Code: USIT507 (Elective II)**	
Periods per week (1 Period is 50 minutes),		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Big Data:** Getting Started, Big Data, Facts About Big Data, Big Data Sources, Three Vs of Big Data, Volume, Variety, Velocity, Usage of Big Data, Visibility, Discover and Analyze Information, Segmentation and Customizations, Aiding Decision Making, Innovation, Big Data Challenges, Policies and Procedures, Access to Data, Technology and Techniques, Legacy Systems and Big Data, Structure of Big Data, Data Storage, Data Processing, Big Data Technologies **NoSQL:** SQL, NoSQL, Definition, A Brief History of NoSQL, ACID vs. BASE, CAP Theorem (Brewer's Theorem), The BASE, NoSQL Advantages and Disadvantages, Advantages of NoSQL, Disadvantages of NoSQL, SQL vs. NoSQL Databases, Categories of NoSQL Databases **Introducing MongoDB:** History, MongoDB Design Philosophy, Speed, Scalability, and Agility, Non-Relational Approach, JSON-Based Document Store, Performance vs. Features, Running the Database Anywhere, SQL Comparison	**12**
II	**The MongoDB Data Model:**The Data Model,JSON and BSON,The Identifier (_id),Capped Collection,Polymorphic Schemas,Object-Oriented Programming,Schema Evolution **Using MongoDB Shell:**Basic Querying,Create and Insert,Explicitly Creating Collections,Inserting Documents Using Loop,Inserting by Explicitly Specifying _id,Update,Delete,Read,Using Indexes,Stepping Beyond the Basics,Using Conditional Operators,Regular Expressions,MapReduce,aggregate(),Designing an Application's Data Model,Relational Data Modeling and Normalization,MongoDB Document Data Model Approach **MongoDB Architecture:**Core	**12**

	Processes,mongod,mongo,mongos,MongoDB Tools,Standalone Deployment,Replication,Master/Slave Replication,Replica Set,Implementing Advanced Clustering with Replica Sets,Sharding,Sharding Components,Data Distribution Process,Data Balancing Process,Operations,Implementing Sharding,Controlling Collection Distribution (Tag-Based Sharding),Points to Remember When Importing Data in a ShardedEnvironment,Monitoring for Sharding,Monitoring the Config Servers,Production Cluster Architecture,Scenario 1,Scenario 2,Scenario 3,Scenario 4	
III	**MongoDB Storage Engine:** Data Storage Engine, Data File (Relevant for MMAPv1), Namespace (.ns File), Data File (Relevant for WiredTiger), Reads and Writes, How Data Is Written Using Journaling, GridFS – The MongoDB File System, The Rationale of GridFS, GridFSunder the Hood, Using GridFS, Indexing, Types of Indexes, Behaviors and Limitations **MongoDB Use Cases:** Use Case 1 -Performance Monitoring, Schema Design, Operations, Sharding, Managing the Data, Use Case 2 – Social Networking, Schema Design, Operations, Sharding **MongoDB Limitations:** MongoDB Space Is Too Large (Applicable for MMAPv1), Memory Issues (Applicable for Storage Engine MMAPv1), 32-bit vs. 64-bit, BSON Documents, Namespaces Limits, Indexes Limit, Capped Collections Limit - Maximum Number of Documents in a Capped Collection, Sharding Limitations, Shard Early to Avoid Any Issues, Shard Key Can't Be Updated, Shard Collection Limit, Select the Correct Shard Key, Security Limitations, No Authentication by Default, Traffi c to and from MongoDB Isn't Encrypted, Write and Read Limitations, Case-Sensitive Queries, Type-Sensitive Fields, No JOIN, Transactions, MongoDB Not Applicable Range **MongoDB Best Practices:** Deployment, Hardware Suggestions from the MongoDB Site, Few Points to be Noted, Coding, Application Response Time Optimization, Data Safety, Administration, Replication Lag, Sharding, Monitoring	**12**
IV	**The End of Disk? SSD and In-Memory Databases:** The End of Disk?, Solid State Disk, The Economics of Disk, SSD-Enabled Databases, In-Memory Databases, TimesTen, Redis, SAP HANA, VoltDB, Oracle 12c "in-Memory Database, Berkeley Analytics Data Stack and Spark, Spark Architecture **jQuery:** Introduction, Traversing the DOM, DOM Manipulation with jQuery, Events, Ajax with jQuery, jQuery Plug-ins, jQuery Image Slider	**12**
V	**JSON:** Introduction, JSON Grammar, JSON Values, JSON Tokens, Syntax, JSON vs XML,Data Types,Objects,Arrays,Creating JSON,	**12**

	JSON Object, Parsing JSON, Persisting JSON, Data Interchange, JSON PHP,JSON HTML,JSONP	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Practical MongoDB	Shakuntala Gupta Edward Navin Sabharwal	Apress		
2.	Beginning jQuery	Jack Franklin Russ Ferguson	Apress	Second	
3.	Next Generation Databases	Guy Harrison	Apress		
4.	Beginning JSON	Ben Smith	Apress		

B. Sc. (Information Technology)		Semester – V	
Course Name: Project Dissertation		**Course Code: USIT5P1**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

The details are given in Appendix – I

B. Sc. (Information Technology)		Semester – V	
Course Name: Internet of Things Practical		**Course Code: USIT5P2**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

Practical No	Details
0	Starting Raspbian OS, Familiarising with Raspberry Pi Components and interface, Connecting to ethernet, Monitor, USB.
1	Displaying different LED patterns with Raspberry Pi.
2	Displaying Time over 4-Digit 7-Segment Display using Raspberry Pi
3	Raspberry Pi Based Oscilloscope
4	Controlling Raspberry Pi with WhatsApp.
5	Setting up Wireless Access Point using Raspberry Pi
6	Fingerprint Sensor interfacing with Raspberry Pi
7	Raspberry Pi GPS Module Interfacing
8	IoT based Web Controlled Home Automation using Raspberry Pi
9	Visitor Monitoring with Raspberry Pi and Pi Camera
10	Interfacing Raspberry Pi with RFID.
11	Building Google Assistant with Raspberry Pi.
12	Installing Windows 10 IoT Core on Raspberry Pi

Raspberry Pi Kits and components should be made available in the ratio of 1 kit : 3 students minimum.

B. Sc. (Information Technology)		Semester – V	
Course Name: Advanced Web Programming Practical		**Course Code: USIT5P3**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Working with basic C# and ASP .NET**
a.	Create an application that obtains four int values from the user and displays the product.
b.	Create an application to demonstrate string operations.
c.	Create an application that receives the (Student Id, Student Name, Course Name, Date of Birth) information from a set of students. The application should also display the information of all the students once the data entered.
	Create an application to demonstrate following operations i. Generate Fibonacci series. ii. Test for prime numbers. iii. Test for vowels. iv. Use of foreach loop with arrays v. Reverse a number and find sum of digits of a number.
2.	**Working with Object Oriented C# and ASP .NET**
a.	Create simple application to perform following operations i. Finding factorial Value ii. Money Conversion iii. Quadratic Equation iv. Temperature Conversion
b.	Create simple application to demonstrate use of following concepts i. Function Overloading ii. Inheritance (all types) iii. Constructor overloading iv. Interfaces
c.	Create simple application to demonstrate use of following concepts i. Using Delegates and events ii. Exception handling
3.	**Working with Web Forms and Controls**
a.	Create a simple web page with various sever controls to demonstrate setting and use of their properties. (Example : AutoPostBack)
b.	Demonstrate the use of Calendar control to perform following operations. a) Display messages in a calendar control b) Display vacation in a calendar control c) Selected day in a calendar control using style d) Difference between two calendar dates
c.	Demonstrate the use of Treeview control perform following operations.

	a) Treeview control and datalist b) Treeview operations
4.	**Working with Form Controls**
a.	Create a Registration form to demonstrate use of various Validation controls.
b.	Create Web Form to demonstrate use of Adrotator Control.
c.	Create Web Form to demonstrate use User Controls.
5.	**Working with Navigation, Beautification and Master page.**
a.	Create Web Form to demonstrate use of Website Navigation controls and Site Map.
b.	Create a web application to demonstrate use of Master Page with applying Styles and Themes for page beautification.
c.	Create a web application to demonstrate various states of ASP.NET Pages.
6.	**Working with Database**
a.	Create a web application bind data in a multiline textbox by querying in another textbox.
b.	Create a web application to display records by using database.
c.	Demonstrate the use of Datalist link control.
7.	**Working with Database**
a.	Create a web application to display Databinding using dropdownlist control.
b.	Create a web application for to display the phone no of an author using database.
c.	Create a web application for inserting and deleting record from a database. (Using Execute-Non Query).
8.	**Working with data controls**
a.	Create a web application to demonstrate various uses and properties of SqlDataSource.
b.	Create a web application to demonstrate data binding using DetailsView and FormView Control.
c.	Create a web application to display Using Disconnected Data Access and Databinding using GridView.
9.	**Working with GridView control**
a.	Create a web application to demonstrate use of GridView control template and GridView hyperlink.
b.	Create a web application to demonstrate use of GridView button column and GridView events.
c.	Create a web application to demonstrate GridView paging and Creating own table format using GridView.
10.	**Working with AJAX and XML**
a.	Create a web application to demonstrate reading and writing operation with XML.
b.	Create a web application to demonstrate Form Security and Windows Security with proper Authentication and Authorization properties.
c.	Create a web application to demonstrate use of various Ajax controls.
11.	**Programs to create and use DLL**

B. Sc. (Information Technology)		Semester – V	
Course Name: Artificial Intelligence Practical		**Course Code: USIT5P4 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

Practical No		Details
1	a	Write a program to implement depth first search algorithm.
	b	Write a program to implement breadth first search algorithm.
2	a	Write a program to simulate 4-Queen / N-Queen problem.
	b	Write a program to solve tower of Hanoi problem.
3	a	Write a program to implement alpha beta search.
	b	Write a program for Hill climbing problem.
4	a	Write a program to implement A* algorithm.
	b	Write a program to implement AO* algorithm.
5	a	Write a program to solve water jug problem.
	b	Design the simulation of tic – tac – toe game using min-max algorithm.
6	a	Write a program to solve Missionaries and Cannibals problem.
	b	Design an application to simulate number puzzle problem.
7	a	Write a program to shuffle Deck of cards.
	b	Solve traveling salesman problem using artificial intelligence technique.
8	a	Solve the block of World problem.
	b	Solve constraint satisfaction problem
9	a	Derive the expressions based on Associative law
	b	Derive the expressions based on Distributive law
10	a	Write a program to derive the predicate. (for e.g.: Sachin is batsman , batsman is cricketer) - > Sachin is Cricketer.
	b	Write a program which contains three predicates: male, female, parent. Make rules for following family relations: father, mother, grandfather,grandmother, brother, sister, uncle, aunt, nephew and niece, cousin. Question: i. Draw Family Tree. ii. Define: Clauses, Facts, Predicates and Rules with conjunction and disjunction

The practicals can be implemented in C / C++ / Java/ Python / R /Prolog / LISP or any other language.

B. Sc. (Information Technology)		Semester – V	
Course Name: Linux System Administration		**Course Code: USIT5P5 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

Practical No	Details
0	**Installation of RHEL 6.X**
1	**Graphical User Interface and Command Line Interface and Processes**
a	Exploring the Graphical Desktop
b	The Command Line Interface
c	Managing Processes
2	**Storage Devices and Links, Backup and Repository**
b	Working with Storage Devices and Links
a	Making a Backup
b	Creating a Repository
3	**Working with RPMsm Storage and Networking**
a	Using Query Options
b	Extracting Files From RPMs
c	Configuring and Managing Storage
d	Connecting to the Network
4	**Working with Users, Groups, and Permissions**
5	**Firewall and Cryptographic services**
a	Securing Server with iptables
b	Setting Up Cryptographic Services
6	**Configuring Server for File Sharing**
a	Configuring NFS Server and Client
b	Configuring Samba
c	Configuring FTP
7	**DNS, DHCP and Mail Server**
a	Configuring DNS

b	Configuring DHCP
c	Setting Up a Mail Server
8	**Web Server**
a	Configuring Apache on Red Hat Enterprise Linux
b	Writing a Script to Monitor Activity on the Apache Web Server
c	Using the select Command
9	**Shell Scripts and High-Availability Clustering**
a	Writing Shell Scripts
b	Configuring Booting with GRUB
c	Configuring High Availability Clustering
10	**Setting Up an Installation Server**
a	Configuring Network Server as an Installation Server
b	Setting Up a TFTP and DHCP Server for PXE Boot

B. Sc. (Information Technology)		Semester – V	
Course Name: Enterprise Java		**Course Code: USIT5P6 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Implement the following Simple Servlet applications.**
a.	Create a simple calculator application using servlet.
b.	Create a servlet for a login page. If the username and password are correct then it says message “Hello <username>” else a message “login failed”
c.	Create a registration servlet in Java using JDBC. Accept the details such as Username, Password, Email, and Country from the user using HTML Form and store the registration details in the database.
2.	**Implement the following Servlet applications with Cookies and Sessions.**
a.	Using Request Dispatcher Interface create a Servlet which will validate the password entered by the user, if the user has entered "Servlet" as password, then he will be forwarded to Welcome Servlet else the user will stay on the index.html page and an error message will be displayed.
b.	Create a servlet that uses Cookies to store the number of times a user has visited servlet.
c.	Create a servlet demonstrating the use of session creation and destruction. Also check whether the user has visited this page first time or has visited earlier also using sessions.
3.	**Implement the Servlet IO and File applications.**
a.	Create a Servlet application to upload and download a file.
b.	Develop Simple Servlet Question Answer Application using Database.
c.	Create simple Servlet application to demonstrate Non-Blocking Read Operation.
4.	**Implement the following JSP applications.**
a.	Develop a simple JSP application to display values obtained from the use of intrinsic objects of various types.
b.	Develop a simple JSP application to pass values from one page to another with validations. (Name-txt, age-txt, hobbies-checkbox, email-txt, gender-radio button).
c.	Create a registration and login JSP application to register and authenticate the user based on username and password using JDBC.

5.	**Implement the following JSP JSTL and EL Applications.**
a.	Create an html page with fields, eno, name, age, desg, salary. Now on submit this data to a JSP page which will update the employee table of database with matching eno.
b.	Create a JSP page to demonstrate the use of Expression language.
c.	Create a JSP application to demonstrate the use of JSTL.
6.	**Implement the following EJB Applications.**
a.	Create a Currency Converter application using EJB.
b.	Develop a Simple Room Reservation System Application Using EJB.
c.	Develop simple shopping cart application using EJB [Stateful Session Bean].
7.	**Implement the following EJB applications with different types of Beans.**
a.	Develop simple EJB application to demonstrate Servlet Hit count using Singleton Session Beans.
b.	Develop simple visitor Statistics application using Message Driven Bean [Stateless Session Bean].
c.	Develop simple Marks Entry Application to demonstrate accessing Database using EJB.
8.	**Implement the following JPA applications.**
a.	Develop a simple Inventory Application Using JPA.
b.	Develop a Guestbook Application Using JPA.
c.	Create simple JPA application to store and retrieve Book details.
9.	**Implement the following JPA applications with ORM and Hibernate.**
a.	Develop a JPA Application to demonstrate use of ORM associations.
b.	Develop a Hibernate application to store Feedback of Website Visitor in MySQL Database.
c.	Develop a Hibernate application to store and retrieve employee details in MySQL Database.
10.	**Implement the following Hibernate applications.**
a.	Develop an application to demonstrate Hibernate One- To -One Mapping Using Annotation.
b.	Develop Hibernate application to enter and retrieve course details with ORM Mapping.
c.	Develop a five page web application site using any two or three Java EE Technologies.

B. Sc. (Information Technology)		Semester – V	
Course Name: Next Generation Technologies Practical		**Course Code: USIT5P7 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

Practical No	Details
1	**MongoDB Basics**
a	Write a MongoDB query to create and drop database.
b	Write a MongoDB query to create, display and drop collection
c	Write a MongoDB query to insert, query, update and delete a document.
2	**Simple Queries with MongoDB**
3	**Implementing Aggregation**
a	Write a MongoDB query to use sum, avg, min and max expression.
b	Write a MongoDB query to use push and addToSet expression.
c	Write a MongoDB query to use first and last expression.
4	**Replication, Backup and Restore**
a	Write a MongoDB query to create Replica of existing database.
b	Write a MongoDB query to create a backup of existing database.
c	Write a MongoDB query to restore database from the backup.
5	**Java and MongoDB**
a	Connecting Java with MongoDB and inserting, retrieving, updating and deleting.
6	**PHP and MongoDB**
a	Connecting PHP with MongoDB and inserting, retrieving, updating and deleting.
7	**Python and MongoDB**

a	Connecting Python with MongoDB and inserting, retrieving, updating and deleting.
8	**Programs on Basic jQuery**
a	jQuery Basic, jQuery Events
b	jQuery Selectors, jQuery Hide and Show effects
c	jQuery fading effects, jQuery Sliding effects
9	**jQuery Advanced**
a	jQuery Animation effects, jQuery Chaining
b	jQuery Callback, jQuery Get and Set Contents
c	jQuery Insert Content, jQuery Remove Elements and Attribute
10	**JSON**
a	Creating JSON
b	Parsing JSON
c	Persisting JSON
11	**Create a JSON file and import it to MongoDB**
a	Export MongoDB to JSON.
b	Write a MongoDB query to delete JSON object from MongoDB

SEMESTER VI

B. Sc. (Information Technology)		Semester – VI	
Course Name: Software Quality Assurance		**Course Code: USIT601**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction to Quality:** Historical Perspective of Quality, What is Quality? (Is it a fact or perception?), Definitions of Quality, Core Components of Quality, Quality View, Financial Aspect of Quality, Customers, Suppliers and Processes, Total Quality Management (TQM), Quality Principles of Total Quality Management, Quality Management Through Statistical Process Control, Quality Management Through Cultural Changes, Continual (Continuous) Improvement Cycle, Quality in Different Areas, Benchmarking and Metrics, Problem Solving Techniques, Problem Solving Software Tools. **Software Quality:** Introduction, Constraints of Software Product Quality Assessment, Customer is a King, Quality and Productivity Relationship, Requirements of a Product, Organisation Culture, Characteristics of Software, Software Development Process, Types of Products, Schemes of Criticality Definitions, Problematic Areas of Software Development Life Cycle, Software Quality Management, Why Software Has Defects?Processes Related to Software Quality, Quality Management System Structure, Pillars of Quality Management System, Important Aspects of Quality Management.	**12**
II	**Fundamentals of testing:** Introduction, Necessity of testing, What is testing? Fundamental test process, The psychology of testing, Historical Perspective of Testing, Definitions of Testing, Approaches to Testing, Testing During Development Life Cycle, Requirement Traceability Matrix, Essentials of Software Testing, Workbench, Important Features of Testing Process, Misconceptions About Testing,	**12**

	Principles of Software Testing, Salient Features of Good Testing, Test Policy, Test Strategy or Test Approach, Test Planning, Testing Process and Number of Defects Found in Testing, Test Team Efficiency, Mutation Testing, Challenges in Testing, Test Team Approach, Process Problems Faced by Testing, Cost Aspect of Testing, Establishing Testing Policy, Methods, Structured Approach to Testing, Categories of Defect, Defect, Error, or Mistake in Software, Developing Test Strategy, Developing Testing Methodologies (Test Plan), Testing Process, Attitude Towards Testing (Common People Issues), Test Methodologies/Approaches, People Challenges in Software Testing, Raising Management Awareness for Testing, Skills Required by Tester, Testing throughout the software life cycle, Software development models, Test levels, Test types, the targets of testing, Maintenance testing	
III	**Unit Testing: Boundary Value Testing:** Normal Boundary Value Testing, Robust Boundary Value Testing, Worst-Case Boundary ValueTesting, Special Value Testing, Examples, Random Testing, Guidelines for Boundary Value Testing, **Equivalence Class Testing:** Equivalence Classes, Traditional Equivalence Class Testing, Improved Equivalence Class Testing, Edge Testing, Guidelines and Observations. **Decision Table–Based Testing:** Decision Tables, Decision Table Techniques, Cause-and-Effect Graphing, Guidelines and Observations, **Path Testing:** Program Graphs, DD-Paths, Test Coverage Metrics, Basis Path Testing, Guidelines and Observations, **Data Flow Testing:** Define/Use Testing, Slice-Based Testing, Program Slicing Tools.	**12**
IV	**Software Verification and Validation:**Introduction, Verification, Verification Workbench, Methods of Verification, Types of reviews on the basis od Stage Phase, Entities involved in verification, Reviews in testing lifecycle, Coverage in Verification, Concerns of Verification, Validation, Validation Workbench, Levels of Validation, Coverage in Validation, Acceptance Testing, Management of Verification and Validation, Software development verification and validation activities. **V-test Model:**Introduction, V-model for software, Testing during Proposal stage, Testing during requirement stage, Testing during test planning phase, Testing during design phase, Testing during coding, VV Model, Critical Roles and Responsibilities.	**12**
V	**Levels of Testing:** Introduction, Proposal Testing, Requirement Testing, Design Testing, Code Review, Unit Testing, Module Testing, Integration Testing, Big-Bang Testing, Sandwich Testing, Critical Path First, Sub System Testing, System Testing, Testing Stages. **Special Tests:**Introduction, GUI testing, Compatibility Testing, Security Testing, Performance Testing, Volume Testing, Stress Testing, Recovery Testing, Installation Testing, Requirement Testing, Regression Testing, Error Handling Testing, Manual Support Testing,	**12**

	Intersystem Testing, Control Testing, Smoke Testing, Adhoc Testing, Parallel Testing, Execution Testing, Operations Testing, Compliance Testing, Usability Testing, Decision Table Testing, Documentation Testing, Training testing, Rapid Testing, Control flow graph, Generating tests on the basis of Combinatorial Designs, State Graph, Risk Associated with New Technologies, Process maturity level of Technology, Testing Adequacy of Control in New technology usage, Object Oriented Application Testing, Testing of Internal Controls, COTS Testing, Client Server Testing, Web Application Testing, Mobile Application Testing, eBusiness eCommerce Testing, Agile Development Testing, Data Warehousing Testing.	

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Software Testing and Continuous Quality Improvement	William E. Lewis	CRC Press	Third	2016
2	Software Testing: Principles, Techniques and Tools	M. G. Limaye	TMH		2017
3.	Foundations of Software Testing	Dorothy Graham, Erik van Veenendaal, Isabel Evans, Rex Black	Cengage Learning	3rd	
4.	Software Testing: A Craftsman's Approach	Paul C. Jorgenson	CRC Press	4th	2017

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing		**Course Code: USIT602**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Information Security Overview** : The Importance of Information Protection, The Evolution of Information Security, Justifying Security Investment, Security Methodology, How to Build a Security Program, The Impossible Job, The Weakest Link, Strategy and Tactics, Business Processes vs. Technical Controls. **Risk Analysis**: Threat Definition, Types of Attacks, Risk Analysis. **Secure Design Principles**: The CIA Triad and Other Models, Defense Models, Zones of Trust, Best Practices for Network Defense.	**12**
II	**Authentication and Authorization**: Authentication, Authorization **Encryption**: A Brief History of Encryption, Symmetric-Key Cryptography, Public Key Cryptography, Public Key Infrastructure. **Storage Security**: Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices. **Database Security**: General Database Security Concepts, Understanding Database Security Layers, Understanding Database-Level Security, Using Application Security, Database Backup and Recovery, Keeping Your Servers Up to Date, Database Auditing and Monitoring.	**12**
III	**Secure Network Design**: Introduction to Secure Network Design, Performance, Availability, Security. **Network Device Security**: Switch and Router Basics, Network Hardening. **Firewalls**: Overview, The Evolution of Firewalls, Core Firewall	**12**

	Functions, Additional Firewall Capabilities, Firewall Design. **Wireless Network Security**: Radio Frequency Security Basics, Data-Link Layer Wireless Security Features, Flaws, and Threats, Wireless Vulnerabilities and Mitigations, Wireless Network Hardening Practices and Recommendations, Wireless Intrusion Detection and Prevention, Wireless Network Positioning and Secure Gateways.	
IV	**Intrusion Detection and Prevention Systems**: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations, Security Information and Event Management (SIEM). **Voice over IP (VoIP) and PBX Security**: Background, VoIP Components,VoIP Vulnerabilities and Countermeasures, PBX, TEM: Telecom Expense Management. **Operating System Security Models**: Operating System Models, Classic Security Models, Reference Monitor, Trustworthy Computing, International Standards for Operating System Security.	**12**
V	**Virtual Machines and Cloud Computing**: Virtual Machines, Cloud Computing. **Secure Application Design**: Secure Development Lifecycle, Application Security Practices, Web Application Security, Client Application Security, Remote Administration Security. **Physical Security**: Classification of Assets, Physical Vulnerability Assessment, Choosing Site Location for Security, Securing Assets: Locks and Entry Controls, Physical Intrusion Detection.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	TheCompleteReference: Information Security	Mark Rhodes-Ousley	McGraw-Hill	2nd	2013
2.	Essential Cybersecurity Science	Josiah Dykstra	O'Reilly	Fifth	2017
3.	Principles of Computer Security: CompTIA Security+ and Beyond	Wm.Arthur Conklin, Greg White	McGraw Hill	Second	2010

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence		**Course Code: USIT603**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Business intelligence:** Effective and timely decisions, Data, information and knowledge, The role of mathematical models, Business intelligence architectures, Ethics and business intelligence **Decision support systems:** Definition of system, Representation of the decision-making process, Evolution of information systems, Definition of decision support system, Development of a decision support system	**12**
II	**Mathematical models for decision making:** Structure of mathematical models, Development of a model, Classes of models **Data mining:** Definition of data mining, Representation of input data , Data mining process, Analysis methodologies **Data preparation**: Data validation, Data transformation, Data reduction	**12**
III	**Classification**: Classification problems, Evaluation of classification models, Bayesian methods, Logistic regression, Neural networks, Support vector machines **Clustering:** Clustering methods, Partition methods, Hierarchical methods, Evaluation of clustering models	**12**
IV	**Business intelligence applications:** **Marketing models**: Relational marketing, Sales force management, **Logistic and production models**: Supply chain optimization, Optimization models for logistics planning, Revenue management systems.	**12**

	Data envelopment analysis: Efficiency measures, Efficient frontier, The CCR model, Identification of good operating practices	
V	**Knowledge Management:** Introduction to Knowledge Management, Organizational Learning and Transformation, Knowledge Management Activities, Approaches to Knowledge Management, Information Technology (IT) In Knowledge Management, Knowledge Management Systems Implementation, Roles of People in Knowledge Management **Artificial Intelligence and Expert Systems:** Concepts and Definitions of Artificial Intelligence, Artificial Intelligence Versus Natural Intelligence, Basic Concepts of Expert Systems, Applications of Expert Systems, Structure of Expert Systems, Knowledge Engineering, Development of Expert Systems	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Business Intelligence: Data Mining and Optimization for Decision Making	Carlo Vercellis	Wiley	First	2009
2.	Decision support and Business Intelligence Systems	Efraim Turban, Ramesh Sharda, Dursun Delen	Pearson	Ninth	2011
3.	Fundamental of Business Intelligence	Grossmann W, Rinderle-Ma	Springer	First	2015

B. Sc. (Information Technology)		Semester – VI	
Course Name: Principles of Geographic Information Systems		**Course Code: USIT604 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**A Gentle Introduction to GIS** **The nature of GIS:** Some fundamental observations, Defining GIS, GISystems, GIScience and GIApplications, Spatial data and Geoinformation. **The real world and representations of it:** Models and modelling, Maps, Databases, Spatial databases and spatial analysis **Geographic Information and Spatial Database** **Models and Representations of the real world** **Geographic Phenomena:** Defining geographic phenomena, types of geographic phenomena, Geographic fields, Geographic objects, Boundaries **Computer Representations of Geographic Information:** Regular tessellations, irregular tessellations, Vector representations, Topology and Spatial relationships, Scale and Resolution, Representation of Geographic fields, Representation of Geographic objects **Organizing and Managing Spatial Data** **The Temporal Dimension**	**12**
II	**Data Management and Processing Systems** **Hardware and Software Trends** **Geographic Information Systems:** GIS Software, GIS Architecture	**12**

	and functionality, Spatial Data Infrastructure (SDI) **Stages of Spatial Data handling:** Spatial data handling and preparation, Spatial Data Storage and maintenance, Spatial Query and Analysis, Spatial Data Presentation. **Database management Systems:** Reasons for using a DBMS, Alternatives for data management, The relational data model, Querying the relational database. **GIS and Spatial Databases:** Linking GIS and DBMS, Spatial database functionality.	
III	**Spatial Referencing and Positioning** **Spatial Referencing:** Reference surfaces for mapping, Coordinate Systems, Map Projections, Coordinate Transformations **Satellite-based Positioning:** Absolute positioning, Errors in absolute positioning, Relative positioning, Network positioning, code versus phase measurements, Positioning technology **Data Entry and Preparation** **Spatial Data Input:** Direct spatial data capture, Indirect spatial data captiure, Obtaining spatial data elsewhere **Data Quality:** Accuracy and Positioning, Positional accuracy, Attribute accuracy, Temporal accuracy, Lineage, Completeness, Logical consistency **Data Preparation:** Data checks and repairs, Combining data from multiple sources **Point Data Transformation:** Interpolating discrete data, Interpolating continuous data	**12**
IV	**Spatial Data Analysis** **Classification of analytical GIS Capabilities** **Retrieval, classification and measurement:** Measurement, Spatial selection queries, Classification **Overlay functions:** Vector overlay operators,Raster overlay operators **Neighbourhood functions:** Proximity computations, Computation of diffusion, Flow computation, Raster based surface analysis **Analysis:** Network analysis, interpolation, terrain modeling **GIS and Application models:**GPS, Open GIS Standards, GIS Applications and Advances **Error Propagation in spatial data processing:** How Errors propagate, Quantifying error propagation	**12**
V	**Data Visualization** **GIS and Maps, The Visualization Process** **Visualization Strategies: Present or explore?** **The cartographic toolbox:** What kind of data do I have?, How can I map my data? **How to map?:** How to map qualitative data, How to map quantitative data, How to map the terrain elevation, How to map time series	**12**

	Map Cosmetics, Map Dissemination	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Principles of Geographic Information Systems- An Introductory Text Book	Editors: Otto Huisman and Rolf A.	The International Institute of Geoinformation Science and Earth Observation	Fourth	2009
2.	Principles of Geographic Information Systems	P.A Burrough and R.A.McDonnell	Oxford University Press	Third	1999
3.	Fundamentals of Spatial Information Systems,	R.Laurini and D. Thompson,	Academic Press		1994
4.	Fundamentals of Geographic Information Systems	Michael N.Demers	Wiley Publications	Fourth	2009
5.	Introduction to Geographic Information Systems	Chang Kang-tsung (Karl),	McGrawHill	Any above 3rd Edition	2013 7th Edition
6.	GIS Fundamentals: A First Text on Geographic Information Systems	Paul Bolsatd	XanEdu Publishing Inc	5th Edition	

B. Sc. (Information Technology)		Semester – VI	
Course Name: Enterprise Networking		**Course Code: USIT605 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**General Network Design:** Network Design Methodology, Architectures for the Enterprise, Borderless Networks Architecture, Collaboration and Video Architecture, Data Center and Virtualization Architecture, Design Lifecycle: Plan, Build, Manage Plan Phase Build Phase Manage Phase Prepare, Plan, Design, Implement, Operate, and Optimize Phases Prepare Phase Plan Phase Design Phase Implement Phase Operate Phase Optimize Phase Summary of PPDIOO Phases Project Deliverables Design Methodology Identifying Customer Design Requirements Characterizing the Existing Network Steps in Gathering Information Network Audit Tools Network Checklist Designing the Network Topology and Solutions Top-Down Approach Pilot and Prototype Tests Design Document **Network Design Models:** Hierarchical Network Models Benefits of the Hierarchical Model, Hierarchical Network Design, Core Layer, Distribution Layer, Access Layer, Hierarchical Model Examples, Hub-and-Spoke, Design Collapsed Core, Design Enterprise Architecture Model, Enterprise Campus Module, Enterprise Edge Area, E-Commerce Module, Internet Connectivity Module, VPN/Remote Access, Enterprise WAN, Service Provider Edge Module, Remote Modules, Enterprise Branch Module, Enterprise Data Center Module, Enterprise Teleworker Module, High Availability Network Services, Workstation-to-Router Redundancy and LAN, High Availability Protocols, ARP Explicit Configuration, RDP, RIP, HSRP, VRRP, GLBP, Server Redundancy, Route	**12**

	Redundancy, Load Balancing, Increasing Availability, Link Media Redundancy	
II	**Enterprise LAN Design:** LAN Media, Ethernet Design Rules, 100Mbps Fast Ethernet Design Rules, Gigabit Ethernet Design Rules, 1000BASE-LX Long-Wavelength Gigabit Ethernet, 1000BASE-SX Short-Wavelength Gigabit Ethernet, 1000BASE-CX Gigabit Ethernet over Coaxial Cable, 1000BASE-T Gigabit Ethernet over UTP 86, 10 Gigabit Ethernet Design Rules, 10GE Media Types, EtherChannel, Comparison of Campus Media LAN Hardware, Repeaters, Hubs, Bridges, Switches, Routers, Layer 3 Switches, Campus LAN Design and Best Practices Best Practices for Hierarchical Layers, Access Layer Best Practices, Distribution Layer Best Practices, Core Layer Best Practices, STP Design Considerations, STP Toolkit, PortFast, UplinkFast, BackboneFast, Loop Guard, Root Guard, BPDU Guard, BPDU Filter, VLAN and Trunk Considerations, Unidirectional Link Detection (UDLD) Protocol, Large-Building LANs, Enterprise Campus LANs, Edge Distribution, Medium-Size LANs, Small and Remote Site LANs, Server Farm Module, Server Connectivity Options, Enterprise Data Center Infrastructure, Campus LAN QoS Considerations, Multicast Traffic Considerations, CGMP, IGMP Snooping. **Data Center Design:** Enterprise DC Architecture, Data Center Foundation Components, Data Center Topology Components, Data Center Network Programmability, SDN, Controllers, APIs, ACI, Challenges in the DC, Data Center Facility Aspects, Data Center Space, Data Center Power, Data Center Cooling, Data Center Heat, Data Center Cabling, Enterprise DC Infrastructure, Data Center Storage, Data Center Reference Architecture, Defining the DC Access Layer, Defining the DC Aggregation Layer, Defining the DC Core Layer, Security in the DC, Fabric Extenders, Virtualization Overview, Challenges, Defining Virtualization and Benefits, Virtualization Risks, Types of Virtualization, Virtualization Technologies, VSS, VRF, vPC, Device Contexts, Server Virtualization, Server Scaling, Virtual Switching, Network Virtualization Design Considerations, Access Control, Path Isolation, Services Edge, Data Center Interconnect, DCI Use Cases, DCI Transport Options, DCI L2 Considerations, Load Balancing in the DC, Application Load Balancing, Network Load Balancing.	**12**
III	**Wireless LAN Design:** Wireless LAN Technologies, WLAN Standards, ISM and UNII Frequencies, Summary of WLAN Standards, Service Set Identifier, WLAN Layer 2 Access Method, WLAN Security, Unauthorized Access, WLAN Security Design Approach, IEEE 802.1X-2001 Port-Based Authentication, Dynamic WEP Keys and LEAP, Controlling WLAN Access to Servers, WLAN Authentication, Authentication Options, WLAN Controller Components, WLC Interface Types, AP Controller Equipment	**12**

	Scaling, Roaming and Mobility Groups, Intracontroller Roaming, Layer 2 Intercontroller Roaming, Layer 3 Intercontroller Roaming, Mobility Groups, WLAN Design, Controller Redundancy Design: Deterministic vs. Dynamic, N+1 WLC Redundancy, N+N WLC Redundancy, N+N+1 WLC Redundancy, Radio Management and Radio Groups, RF Groups, RF Site Survey, Using EoIP Tunnels for Guest Services, Wireless Mesh for Outdoor Wireless, Mesh Design Recommendations, Campus Design Considerations, Power over Ethernet (PoE), Wireless and Quality of Service (QoS), Branch Design Considerations, Local MAC, REAP, Hybrid REAP, Branch Office Controller Options. **WAN Technologies and the Enterprise Edge:** WAN and Enterprise Edge Overview, Definition of WAN, WAN Edge Module, Enterprise Edge Modules, WAN Transport Technologies, ISDN, ISDN BRI Service, ISDN PRI Service, Digital Subscriber Line, Cable, Wireless, Frame Relay, Time-Division Multiplexing, Metro Ethernet, SONET/SDH, Multiprotocol Label Switching (MPLS), Dark Fiber, Dense Wavelength-Division Multiplexing, Ordering WAN Technology and Contracts, WAN and Edge Design Methodologies, Response Time, Throughput, Reliability, Bandwidth Considerations, WAN Link Categories, Optimizing Bandwidth Using QoS, Queuing, Traffic Shaping and Policing, Classification, Congestion Management, Priority Queuing, Custom Queuing, Weighted Fair Queuing, Class-Based Weighted Fair Queuing, Low-Latency Queuing, Traffic Shaping and Policing, Link Efficiency, Window Size, DMZ Connectivity, Segmenting DMZs, DMZ Services, Internet Connectivity, Centralized Internet (Branch) vs. Direct Internet (Branch), High Availability for the Internet Edge, VPN Network Design. **WAN Design** Traditional WAN Technologies Hub-and-Spoke Topology Full-Mesh Topology Partial-Mesh Topology Point-to-Point Topology Remote Site Connectivity Enterprise VPN vs. Service Provider VPN Enterprise Managed VPN: IPsec IPsec Direct Encapsulation Generic Routing Encapsulation IPsec DMVPN IPsec Virtual Tunnel Interface Design GETVPN Service Provider–Managed Offerings ,Metro Ethernet Service Provider VPNs: L2 vs. L3 ,Virtual Private Wire Services VPWS L2 VPN Considerations ,Virtual Private LAN Services VPLS L2 VPN Considerations ,MPLS, MPLS Layer 3 Design Overview MPLS L3 VPN Considerations ,VPN Benefits WAN Backup Design WAN Backup over the Internet Enterprise WAN Architecture Cisco Enterprise MAN/WAN Enterprise WAN/MAN Architecture Comparison ,Enterprise WAN Components Comparing Hardware and Software Enterprise Branch Architecture Branch Design Branch	

	Connectivity Redundancy for Branches Single WAN Carrier vs. Dual WAN Carriers Single MPLS Carrier Site ,Dual MPLS Carriers Hybrid WAN: L3 VPN with IPsec VPN ,Internet for Branches Flat Layer 2 vs. Collapsed Core ,Enterprise Branch Profiles Small Branch Design Medium Branch Design Large Branch Design Enterprise Teleworker Design ,ISRs for Teleworkers	
IV	Internet Protocol Version 4 Design,IPv4 Header ToS IPv4 Fragmentation IPv4 Addressing ,IPv4 Address Classes Class A Addresses Class B Addresses ,Class C Addresses Class D Addresses Class E Addresses ,IPv4 Address Types IPv4 Private Addresses NAT ,IPv4 Address Subnets Mask Nomenclature IP Address Subnet Design Example Determining the Network Portion of an IP Address Variable-Length Subnet Masks, Loopback Addresses IP Telephony Networks ,IPv4 Addressing Design Goal of IPv4 Address Design , Plan for Future Use of IPv4 Addresses , Performing Route Summarization , Plan for a Hierarchical IP Address Network , Private and Public IP Address and NAT Guidelines , Steps for Creating an IPv4 Address Plan Case Study: IP Address Subnet Allocation , Address Assignment and Name Resolution , Recommended Practices of IP Address Assignment , BOOTP DHCP DNS , Internet Protocol Version 6 Design, IPv6 Header IPv6 Address Representation IPv4-Compatible IPv6 Addresses IPv6 Prefix Representation IPv6 Address Scope Types and Address Allocations IPv6 Address Allocations IPv6 Unicast Address Global Unicast Addresses Link-Local Addresses , Unique Local IPv6 Address Global Aggregatable IPv6 Address , IPv4-Compatible IPv6 Address IPv6 Anycast Addresses , IPv6 Multicast Addresses IPv6 Mechanisms ICMPv6 , IPv6 Neighbor Discovery Protocol IPv6 Name Resolution , Path MTU Discovery IPv6 Address-Assignment Strategies , Manual Configuration SLAAC of Link-Local Address , SLAAC of Globally Unique IPv6 Address DHCPv6 , DHCPv6 Lite IPv6 Security IPv6 Routing Protocols RIPng OSPFv3 , BGP4 Multiprotocol Extensions (MP-BGP) for IPv6 , IPv6 Addressing Design , Planning for Addressing with IPv6 , Route Summarization with IPv6 IPv6 Private Addressing IPv6 for the Enterprise IPv6 Address Allocation , Partly Linked IPv4 Address into IPv6, Whole IPv4 Address Linked into IPv6 IPv6 Addresses Allocated Per Location and/or Type , IPv4-to-IPv6 Transition Mechanisms and Deployment Models , Dual-Stack Mechanism IPv6 over IPv4 Tunnels , Protocol Translation Mechanisms IPv6 Deployment Models , Dual-Stack Model Hybrid Model Service Block Model ,IPv6 Deployment Model Comparison IPv6 Comparison with IPv4 ,OSPF, BGP, Route Manipulation, and IP Multicast,OSPFv2 OSPFv2 Metric OSPFv2 Adjacencies and Hello Timers , OSPFv2 Areas OSPF Area Design Considerations OSPF Router Types OSPF DRs LSA Types Autonomous System External Path Types OSPF Stub Area Types Stub Areas Totally Stubby Areas ,	**12**

	NSSAs Virtual Links OSPFv2 Router Authentication , OSPFv2 Summary OSPFv3 OSPFv3 Changes from OSPFv2, OSPFv3 Areas and Router Types OSPFv3 LSAs OSPFv3 Summary BGP BGP Neighbors eBGP iBGP Route Reflectors Confederations BGP Administrative Distance , BGP Attributes, Weight, and the BGP Decision Process BGP Path Attributes Next-Hop Attribute Local Preference Attribute Origin Attribute Autonomous System Path Attribute MED Attribute Community Attribute Atomic Aggregate and Aggregator Attributes Weight BGP Decision Process , BGP Summary , Route Manipulation PBR Route Summarization Route Redistribution Default Metric OSPF Redistribution Route Filtering Transit Traffic Routing Protocols on the Hierarchical Network Infrastructure IP Multicast Review , Multicast Addresses Layer 3 to Layer 2 Mapping IGMP , IGMPv1 IGMPv2 IGMPv3 CGMP IGMP Snooping , Sparse Versus Dense Multicast Multicast Source and Shared Trees PIM PIM-SM PIM DR Auto-RP PIMv2 Bootstrap Router , DVMRP IPv6 Multicast Addresses	
V	Managing Security Network Security Overview Security Legislation Security Threats Reconnaissance and Port Scanning Vulnerability Scanners Unauthorized Access Security Risks Targets Loss of Availability Integrity Violations and Confidentiality Breaches , Security Policy and Process Security Policy Defined , Basic Approach of a Security Policy Purpose of Security Policies, Security Policy Components Risk Assessment , Risk Index Continuous Security Integrating Security Mechanisms into Network Design Trust and Identity Management , Trust Domains of Trust Identity Passwords Tokens Certificates , Network Access Control Secure Services Encryption Fundamentals Encryption Keys VPN Protocols , Transmission Confidentiality Data Integrity Threat Defense , Physical Security Infrastructure Protection Security Management Solutions Security Solution Network Security Platforms , Trust and Identity Technologies Firewall Fundamentals , Types of Firewalls Next-Gen Firewalls NAT Placement , Firewall Guidelines Firewall ACLs , Identity and Access Control Deployments Detecting and Mitigating Threats IPS/IDS Fundamentals IPS/IDS Guidelines , Threat Detection and Mitigation Technologies , Threat-Detection and Threat-Mitigation Solutions , FirePOWER IPS Security Management Applications , Security Platform Solutions Security Management Network Integrating Security into Network Devices IOS Security , ISR G2 Security Hardware Options Securing the Enterprise , Implementing Security in the Campus Implementing Security in the Data Center Implementing Security in the Enterprise Edge Network Management Protocols, Simple Network Management Protocol SNMP Components , MIB SNMP Message Versions	**12**

	SNMPv1 SNMPv2 SNMPv3 , Other Network Management Technologies RMON , RMON2 NetFlow Compared to RMON and SNMP , CDP LLDP Syslog	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	CCDA200-310Official Cert Guide	ANTHONY BRUNO, CCIE No. 2738 STEVE JORDAN, CCIE No. 11293	**Cisco Press**		
2.	Network Warrior	Gary A Donabue	**O Reilly**	2nd	2011

B. Sc. (Information Technology)		**Semester – VI**	
Course Name: IT Services Management		**Course Code: USIT606 (Elective I)**	
Periods per week (1 Period is 50 minutes),		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	**Details**	**Lectures**
I	**IT Service Management:** Introduction, What is service management? What are services? Business Process, Principles of Service management: Specialisation and Coordination, The agency principle, Encapsulation, Principles of systems, The service Life Cycle, Functions and processes across the life cycle. **Service Strategy Principles:** Value creation, Service Assets, Service Provider Service Structures, Service Strategy Principles. **Service Strategy:**Define the market, Develop the offerings, Develop Strategic Assets, Prepare for execution. **Challenges, Critical Success factors and risks:**Complexity, Coordination and Control, Preserving value, Effectiveness in measurement, Risks.	**12**
II	**Service Design:** Fundamentals, **Service Design Principles:** Goals, Balanced Design, Identifying Service requirements, identifying and documenting business requirements and drivers, Design activities, Design aspects, Subsequent design activities, Design constraints, Service oriented architecture, Business Service Management, Service Design Models **Service Design Processes:**Service Catalogue Management, Service Level Management, Capacity Management, Availability Management, IT Service Continuity Management, Information Security	**12**

	Management, Supplier Management **Challenges, Critical Success factors and risks:**Challenges, Risks	
III	**Service Transition:** Fundamentals, **Service Transition Principles:** Principles Supporting Service Transition, Policies for Service Transition **Service Transition Processes:** Transition planning and support, Change Management, Service Asses Configuration Management, Service and Deployment Management, Service Validation and Testing, Evaluation, Knowledge Management. **Challenges, Critical Success factors and risks:**Challenges, Critical Success factors, Risks, Service Transition under difficult Conditions.	**12**
IV	**Service Operation:** Fundamentals, **Service Operation Principles:** Functions, groups, teams, departments and divisions, Achieving balance in service operations, Providing service, Operation staff involvement in service design and service transition, Operational Health, Communication, Documentation **Service Operation Processes:**Event Management, Incident Management, Request fulfilment, Problem Management, Access Management, Operational activities of processes covered in other lifecycle phases. **Challenges, Critical Success factors and risks:**Challenges, Critical Success factors, Risks	**12**
V	**Continual Service Improvement(CSI) Principles:** CSI Approach, CSI and organizational change, Ownership, CSI register, External and Internal drivers, Service level management, Knowledge management, The Deming cycle, Service Measurement, IT governance, Frameworks, models, standards and quality Systems, CSI inputs and outputs. **CSI Process:** The seven step improvement process. **CSI Methods nad Techniques:** Methods and techniques, Assessments, benchmarking, Service Measurement, Metrics, Return on Investment, Service reporting, CSI and other service management processes, **Organising for CSI:**Organisational development, Functions, roles, Customer Engagement, Responsibility model - RACI, Competence and training. **Technology considerations:** Tools to support CSI activities. **Implementing CSI:**Critical Considerations for implementing CSI,The start, Governance, CSI and organisational change, Communication Strategy and Plan	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	ITIL v3 Foundation Complete Certification Kit				2009
2.	ITIL v3 Service Strategy		OGC/TSO		

3.	ITIL v3 Service Transition		OGC/TSO		
4.	ITIL v3 Service Operation		OGC/TSO		
5.	ITIL Continual Service Improvement		TSO	2011	2011

B. Sc. (Information Technology)		**Semester – VI**	
Course Name: Cyber Laws		**Course Code: USIT607 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Power of Arrest Without Warrant Under the IT Act, 2000:** A Critique, Crimes of this Millennium, Section 80 of the IT Act, 2000 – A Weapon or a Farce? Forgetting the Line Between Cognizable and Non-Cognizable Offences, Necessity of Arrest without Warrant from Any Place, Public or Otherwise, Check and Balances Against Arbitrary Arrests,Arrest for "About to Commit" an Offence Under the IT Act: A Tribute to Draco, Arrest, But NO Punishment! **Cyber Crime and Criminal Justice: Penalties, Adjudication and Appeals Under the IT Act,2000:** Concept of "Cyber Crime " and the IT Act , 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cyber Cheating, Virus on the Internet, Defamation, Harassment and E-mail Abuse, Cyber Pornography, Other IT Act Offences, Monetary Penalties, Adjudication and Appeals Under IT Act , 2000, Network Service Providers, Jurisdiction and Cyber Crime, Nature of Cyber Criminality, Strategies to Tackle Cyber Crime and Trends, Criminal Justice in India and Implications on Cyber Crime.	**12**
II	**Contracts in the Infotech World:** Contracts in the Infotech World, Click-Wrap and Shrink-Wrap Contract: Status under the Indian	**12**

	Contract Act, 1872, Contract Formation Under the Indian Contract Act, 1872, Contract Formation on the Internet, Terms and Conditions of Contracts. **Jurisdiction in the Cyber World:** Questioning the Jurisdiction and Validity of the Present Law of Jurisdiction, Civil Law of Jurisdiction in India, Cause of Action, Jurisdiction and the Information Technology Act,2000, Foreign Judgements in India, Place of Cause of Action in Contractual and IPR Disputes, Exclusion Clauses in Contracts, Abuse of Exclusion Clauses, Objection of Lack of Jurisdiction, Misuse of the Law of Jurisdiction, Legal Principles on Jurisdiction in the United State of America, Jurisdiction Disputes w.r.t. the Internet in the United State of America.	
III	**Battling Cyber Squatters and Copyright Protection in the Cyber World:** Concept of Domain Name and Reply to Cyber Squatters, Meta-Tagging, Legislative and Other Innovative Moves Against Cyber Squatting, The Battle Between Freedom and Control on the Internet, Works in Which Copyright Subsists and meaning of Copyright, Copyright Ownership and Assignment, License of Copyright, Copyright Terms and Respect for Foreign Works, Copyright Infringement, Remedies and Offences, Copyright Protection of Content on the Internet; Copyright Notice, Disclaimer and Acknowledgement, Downloading for Viewing Content on the Internet, Hyper-Linking and Framing, Liability of ISPs for Copyright Violation in the Cyber World: Legal Developments in the US, Napster and its Cousins: A Revolution on the Internet but a Crisis for Copyright Owners, Computer Software Piracy.	**12**
IV	**E-Commerce Taxation: Real Problems in the Virtual World:** A Tug of War on the Concept of 'Permanent Establishment', Finding the PE in Cross Border E-Commerce, The United Nations Model Tax Treaty, The Law of Double Taxation Avoidance Agreements and Taxable Jurisdiction Over Non-Residents, Under the Income Tax Act, 1961, Tax Agents of Non-Residents under the Income Tax Act,1961 and the Relevance to E-Commerce, Source versus Residence and Classification between Business Income and Royalty, The Impact of the Internet on Customer Duties, Taxation Policies in India: At a Glance. **Digital Signature, Certifying Authorities and E-Governance:** Digital Signatures, Digital Signature Certificate, Certifying Authorities and Liability in the Event of Digital Signature Compromise, E-Governance in India: A Warning to Babudom!	**12**
V	**The Indian Evidence Act of 1872 v. Information Technology Act, 2000:** Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages, Other Amendments in the Indian Evidence Act by the IT Act, Amendments to the Bankers Books Evidence Act, 1891 and Reserve Bank of India	**12**

	Act, 1934. **Protection of Cyber Consumers in India:** Are Cyber Consumers Covered Under the Consumer Protection Act? Goods and Services, Consumer Complaint, Defect in Goods and Deficiency in Services, Restrictive and Unfair Trade Practices, Instances of Unfair Trade Practices, Reliefs Under CPA, Beware Consumers, Consumer Foras, Jurisdiction and Implications on cyber Consumers in India, Applicability of CPA to Manufacturers, Distributors, Retailers and Service Providers Based in Foreign Lands Whose Goods are Sold or Services Provided to a Consumer in India. Amendments in Indian IT Act 2000	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Cyber Law Simplified	Vivek Sood	TMH Education		2001
2.	Cybersecurity Law	Jeff Kosseff	Wiley		2017

B. Sc. (Information Technology)		**Semester – VI**	
Course Name: Project Implementation		**Course Code: USIT6P1**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

The details are given in Appendix – I

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing Practical		**Course Code: USIT6P2**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	Details
1	**Configure Routers**
a	OSPF MD5 authentication.
b	NTP.
c	to log messages to the syslog server.
d	to support SSH connections.
2	**Configure AAA Authentication**
a	Configure a local user account on Router and configure authenticate on the console and vty lines using local AAA
b	Verify local AAA authentication from the Router console and the PC-A client
3	**Configuring Extended ACLs**
a	**Configure, Apply and Verify an Extended Numbered ACL**
4	**Configure IP ACLs to Mitigate Attacks and IPV6 ACLs**

a	Verify connectivity among devices before firewall configuration.
b	Use ACLs to ensure remote access to the routers is available only from management station PC-C.
c	Configure ACLs on to mitigate attacks.
d	Configuring IPv6 ACLs
5	**Configuring a Zone-Based Policy Firewall**
6	Configure IOS Intrusion Prevention System (IPS) Using the CLI
a	Enable IOS IPS.
b	Modify an IPS signature.
7	**Layer 2 Security**
a	Assign the Central switch as the root bridge.
b	Secure spanning-tree parameters to prevent STP manipulation attacks.
c	Enable port security to prevent CAM table overflow attacks.
8	**Layer 2 VLAN Security**
9	**Configure and Verify a Site-to-Site IPsec VPN Using CLI**
10	**Configuring ASA Basic Settings and Firewall Using CLI**
a	Configure basic ASA settings and interface security levels using CLI
b	Configure routing, address translation, and inspection policy using CLI
c	Configure DHCP, AAA, and SSH
d	Configure a DMZ, Static NAT, and ACLs

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence Practical		**Course Code: USIT6P3**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	Details
1	Import the legacy data from different sources such as (Excel , SqlServer, Oracle etc.) and load in the target system. (You can download sample database such as Adventureworks, Northwind, foodmart etc.)
2	Perform the Extraction Transformation and Loading (ETL) process to construct the database in the Sqlserver.
3	a. Create the Data staging area for the selected database. b. Create the cube with suitable dimension and fact tables based on ROLAP, MOLAP and HOLAP model.
4	a.Create the ETL map and setup the schedule for execution. b. Execute the MDX queries to extract the data from the datawarehouse.
5	a. Import the datawarehouse data in Microsoft Excel and create the Pivot table and Pivot Chart.

	b. Import the cube in Microsoft Excel and create the Pivot table and Pivot Chart to perform data analysis.
6	Apply the what – if Analysis for data visualization. Design and generate necessary reports based on the datawarehouse data.
7	Perform the data classification using classification algorithm.
8	Perform the data clustering using clustering algorithm.
9	Perform the Linear regression on the given datawarehouse data.
10	Perform the logistic regression on the given datawarehouse data.

The BI tools such as Tableau / Power BI / BIRT / R / Excel or any other can be used.

B. Sc. (Information Technology)		**Semester – VI**	
Course Name: Principles of Geographical Information System Practical		**Course Code: USIT6P4 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	**Details**
0	Familiarizing Quantum GIS: Installation of QGIS, datasets for both Vector and Raster data, Maps.
1	Creating and Managing Vector Data: Adding vector layers, setting properties, formatting, calculating line lengths and statistics
2	Exploring and Managing Raster data: Adding raster layers, raster styling and analysis, raster mosaicking and clipping
3	Making a Map, Working with Attributes, Importing Spreadsheets or CSV files Using Plugins, Searching and Downloading OpenStreetMap Data

4	Working with attributes, terrain Data
5	Working with Projections and WMS Data
6	Georeferencing Topo Sheets and Scanned Maps Georeferencing Aerial Imagery Digitizing Map Data
7	Managing Data Tables and Saptial data Sets: Table joins, spatial joins, points in polygon analysis, performing spatial queries
8	Advanced GIS Operations 1:Nearest Neighbor Analysis, Sampling Raster Data using Points or Polygons, Interpolating Point Data
9	Advance GIS Operations 2: Batch Processing using Processing Framework Automating Complex Workflows using Processing Modeler Automating Map Creation withPrint Composer Atlas
10	Validating Map data

B. Sc. (Information Technology)		**Semester – VI**	
Course Name: Advanced Networking Practical		**Course Code: USIT6P5 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	**Details**
1	**Configuring OSPF – I**
a	Single-Area OSPF Link Costs and Interface Priorities
b	Multi-Area OSPF with Stub Areas and Authentication
2	**Configuring OSPF – II**
a	OSPF Virtual Links and Area Summarization
b	OSPF over Frame Relay
3	**Redistribution and Administrative Distances**
a	Redistribution Between RIP and OSPF
b	Manipulating Administrative Distances

4	**BGP**
a	Configuring BGP with Default Routing
b	Using the AS_PATH Attribute
c	BGP Route Reflectors and Route Filters
5	**IPv6**
a	Configuring OSPF for IPv6
b	Configuring 6to4 Tunnels
6	**VLANs and EtherChannel**
a	Static VLANS, VLAN Trunking, and VTP Domains and Modes
b	Configuring EtherChannel
7	**Spanning Tree Protocol**
a	Spanning Tree Protocol (STP) Default Behavior
b	Modifying Default Spanning Tree Behavior
8	**VLAN and Spanning Tree**
a	Per-VLAN Spanning Tree Behavior
b	Multiple Spanning Tree
9	**Internal VLAN Routing**
a	Inter-VLAN Routing with an External Router
b	Inter-VLAN Routing with an Internal Route Processor
10	**Configure NAT Services**

B. Sc. (Information Technology)		Semester – VI	
Course Name: Advanced Mobile Programming Practical		**Course Code: USIT6P6**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

Practical No	Details
1	**Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals:** Creating a Project, Android Components, Activities, Services, Content Providers, Broadcast Receivers, Interface overview, Creating Android Virtual device, USB debugging mode, Android Application Overview. Simple "Hello World" program.
2	**Programming Resources** Android Resources: (Color, Theme, String, Drawable, Dimension, Image),
3	**Programming Activities and fragments** Activity Life Cycle, Activity methods, Multiple Activities, Life Cycle of fragments and multiple fragments.
4	**Programs related to different Layouts**

	Coordinate, Linear, Relative, Table, Absolute, Frame, List View, Grid View.
5	**Programming UI elements** AppBar, Fragments, UI Components
6	**Programming menus, dialog, dialog fragments**
7	**Programs on Intents, Events, Listeners and Adapters** The Android Intent Class, Using Events and Event Listeners
8	**Programs on Services, notification and broadcast receivers**
9	**Database Programming with SQLite**
10	**Programming threads, handles and asynchronized programs**
11	**Programming Media API and Telephone API**
12	**Programming Security and permissions**
13	**Programming Network Communications and Services (JSON)**

APPENDIX – 1

Project Dissertation Semester V and Project Implementation Semester VI

Chapter 1 to 4 should be submitted in Semester V in spiral binding. These chapter have also to be included in Semester VI report. Semester VI report has to be hard bound with golden embossing. Students will be evaluated based on the dissertation in semester V and dissertation and viva voce in Semester VI.

I. OBJECTIVES

- Describe the Systems Development Life Cycle (SDLC).
- Evaluate systems requirements.
- Complete a problem definition.
- Evaluate a problem definition.
- Determine how to collect information to determine requirements.

- Perform and evaluate feasibility studies like cost-benefit analysis, technical feasibility, time feasibility and Operational feasibility for the project.
- Work on data collection methods for fact finding.
- Construct and evaluate data flow diagrams.
- Construct and evaluate data dictionaries.
- Evaluate methods of process description to include structured English, decision tables and decision trees.
- Evaluate alternative tools for the analysis process.
- Create and evaluate such alternative graphical tools as systems flow charts and state transition diagrams.
- Decide the S/W requirement specifications and H/W requirement specifications.
- Plan the systems design phase of the SDLC.
- Distinguish between logical and physical design requirements.
- Design and evaluate system outputs.
- Design and evaluate systems inputs.
- Design and evaluate validity checks for input data.
- Design and evaluate user interfaces for input.
- Design and evaluate file structures to include the use of indexes.
- Estimate storage requirements.
- Explain the various file update processes based on the standard file organizations.
- Decide various data structures.
- Construct and evaluate entity-relationship (ER) diagrams for RDBMS related projects.
- Perform normalization for the unnormalized tables for RDBMS related projects
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.

- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.
- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.
- Work effectively as an individual or as a team member to produce correct, efficient, well-organized and documented programs in a reasonable time.
- Recognize problems that are amenable to computer solutions, and knowledge of the tool necessary for solving such problems.
- Develop of the ability to assess the implications of work performed.
- Get good exposure and command in one or more application areas and on the software
- Develop quality software using the software engineering principles
- Develop of the ability to communicate effectively.

II. Type of the Project

The majority of the students are expected to work on a real-life project preferably in some industry/ Research and Development Laboratories/Educational Institution/Software Company. Students are encouraged to work in the areas listed below. However, it is ***not mandatory*** for a

student to work on a real-life project. The student can formulate a project problem with the help of her/his Guide and submit the project proposal of the same. **Approval of the project proposal is mandatory**. If approved, the student can commence working on it, and complete it. Use the latest versions of the software packages for the development of the project.

III. SOFTWARE AND BROAD AREAS OF APPLICATION

FRONT END / GUI Tools	.Net Technologies,Java
DBMS/BACK END	Oracle, SQL Plus, MY SQL, SQL Server,
LANGUAGES	C, C++, Java, VC++, C#, R,Python
SCRIPTING LANGUAGES	PHP,JSP, SHELL Scripts (Unix), TcL/TK,
.NET Platform	F#,C#. Net, Visual C#. Net, ASP.Net
MIDDLE WARE (COMPONENT) TECHNOLOGIES	COM/DCOM, Active-X, EJB
UNIX INTERNALS	Device Drivers, RPC, Threads, Socket programming
NETWORK/WIRELESS TECHNOLOGIES	-
REALTIME OPERATING SYSTEM/ EMBEDDED SKILLS	LINUX, Raspberry Pi, Arduino, 8051
APPLICATION AREAS	Financial / Insurance / Manufacturing / Multimedia / Computer Graphics / Instructional Design/ Database Management System/ Internet / Intranet / Computer Networking-Communication Software development/ E-Commerce/ ERP/ MRP/ TCP-IP programming / Routing protocols programming/ Socket programming.

IV.Introduction

The project report should be documented with scientific approach to the solution of the problem that the students have sought to address. The project report should be prepared in order to solve the problem in a methodical and professional manner, making due references to appropriate techniques, technologies and professional standards. The student should start the documentation process from the first phase of software development so that one can easily identify the issues to be focused upon in the ultimate project report. The student should also include the details from

the project diary, in which they will record the progress of their project throughout the course. The project report should contain enough details to enable examiners to evaluate the work. The important points should be highlighted in the body of the report, with details often referred to appendices.

1.1 PROJECT REPORT:

Title Page

Original Copy of the Approved Proforma of the Project Proposal

Certificate of Authenticated work

Role and Responsibility Form

Abstract

Acknowledgement

Table of Contents

Table of Figures

CHAPTER 1: INTRODUCTION

1.1 Background

1.2 Objectives

1.3 Purpose, Scope, and Applicability

1.3.1 Purpose

1.3.2 Scope

1.3.3 Applicability

1.4 Achievements

1.5 Organisation of Report

CHAPTER 2: SURVEY OF TECHNOLOGIES

CHAPTER 3: REQUIREMENTS AND ANALYSIS

3.1 Problem Definition

3.2 Requirements Specification

3.3 Planning and Scheduling

3.4 Software and Hardware Requirements

3.5 Preliminary Product Description

3.6 Conceptual Models

CHAPTER 4: SYSTEM DESIGN

4.1 Basic Modules

4.2 Data Design

4.2.1 Schema Design

4.2.2 Data Integrity and Constraints

4.3 Procedural Design

4.3.1 Logic Diagrams

4.3.2 Data Structures

4.3.3 Algorithms Design

4.4 User interface design

4.5 Security Issues

4.6 Test Cases Design

The documentation should use tools like star UML, Visuo for windows, Rational Rose for design as part of Software Project Management Practical Course. The documentation should be spiral bound for semester V and the entire documentation should be hard bound during semester VI.

CHAPTER 5: IMPLEMENTATION AND TESTING

5.1 Implementation Approaches

5.2 Coding Details and Code Efficiency

5.2.1 Code Efficiency

5.3 Testing Approach

5.3.1 Unit Testing

5.3.2 Integrated Testing

5.3.3 Beta Testing

5.4 Modifications and Improvements

5.5 Test Cases

CHAPTER 6: RESULTS AND DISCUSSION

6.1 Test Reports

6.2 User Documentation

CHAPTER 7: CONCLUSIONS

7.1 Conclusion

7.1.1 Significance of the System

V. EXPLANATION OF CONTENTS

Title Page

Sample format of Title page is given in Appendix 1 of this block. Students should follow the given format.

Original Copy of the Approved Proforma of the Project Proposal

Sample Proforma of Project Proposal is given in Appendix 2 of this block. Students should follow the given format.

Certificate of Authenticated work

Sample format of Certificate of Authenticated work is given in Appendix 3 of this block. Students should follow the given format.

Role and Responsibility Form

Sample format for Role and Responsibility Form is given in Appendix 4 of this block.
Students should follow the given format.

Abstract

This should be one/two short paragraphs (100-150 words total), summarising the project work. It is important that this is not just a re-statement of the original project outline. A suggested flow is background, project aims and main achievements. From the abstract, a reader should be able to ascertain if the project is of interest to them and, it should present results of which they may wish to know more details.

Acknowledgements

This should express student's gratitude to those who have helped in the preparation of project.

Table of Contents: The table of contents gives the readers a view of the detailed structure of the report. The students would need to provide section and subsection headings with associated pages. The formatting details of these sections and subsections are given below.

Table of Figures: List of all Figures, Tables, Graphs, Charts etc. along with their page numbers in a table of figures.

Chapter 1: Introduction

The introduction has several parts as given below:

Background: A description of the background and context of the project and its relation to work already done in the area. Summarise existing work in the area concerned with the project work.

Objectives: Concise statement of the aims and objectives of the project. Define exactly what is going to be done in the project; the objectives should be about 30 /40 words.

Purpose, Scope and Applicability: The description of Purpose, Scope, and Applicability are given below:

• Purpose: Description of the topic of the project that answers questions on why this project is being done. How the project could improve the system its significance and theoretical framework.

• Scope: A brief overview of the methodology, assumptions and limitations. The students should answer the question: What are the main issues being covered in the project? What are the main functions of the project?

• Applicability: The student should explain the direct and indirect applications of their work. Briefly discuss how this project will serve the computer world and people.

Achievements: Explain what knowledge the student achieved after the completion of the work. What contributions has the project made to the chosen area? Goals achieved - describes the

degree to which the findings support the original objectives laid out by the project. The goals may be partially or fully achieved, or exceeded.

Organisation of Report: Summarising the remaining chapters of the project report, in effect, giving the reader an overview of what is to come in the project report.

Chapter 2: Survey of Technologies

In this chapter Survey of Technologies should demonstrate the students awareness and understanding of Available Technologies related to the topic of the project. The student should give the detail of all the related technologies that are necessary to complete the project. The should describe the technologies available in the chosen area and present a comparative study of all those Available Technologies. Explain why the student selected the one technology for the completion of the objectives of the project.

Chapter 3: Requirements and Analysis

Problem Definition: Define the problem on which the students are working in the project.
Provide details of the overall problem and then divide the problem in to sub-problems. Define each sub-problem clearly.
Requirements Specification: In this phase the student should define the requirements of the system, independent of how these requirements will be accomplished. The Requirements Specification describes the things in the system and the actions that can be done on these things. Identify the operation and problems of the existing system.
Planning and Scheduling: Planning and scheduling is a complicated part of software development. Planning, for our purposes, can be thought of as determining all the small tasks that must be carried out in order to accomplish the goal. Planning also takes into account, rules, known as constraints, which, control when certain tasks can or cannot happen. Scheduling can be thought of as determining whether adequate resources are available to carry out the plan. The student should show the Gantt chart and Program Evaluation Review Technique (PERT).

Software and Hardware Requirements: Define the details of all the software and hardware needed for the development and implementation of the project.

• Hardware Requirement: In this section, the equipment, graphics card, numeric co-processor, mouse, disk capacity, RAM capacity etc. necessary to run the software must be noted.
• Software Requirements: In this section, the operating system, the compiler, testing tools, linker, and the libraries etc. necessary to compile, link and install the software must be listed.
Preliminary Product Description: Identify the requirements and objectives of the new system. Define the functions and operation of the application/system the students are developing as project.

Conceptual Models: The student should understand the problem domain and produce a model of the system, which describes operations that can be performed on the system, and the allowable sequences of those operations. Conceptual Models could consist of complete Data Flow Diagrams, ER diagrams, Object-oriented diagrams, System Flowcharts etc.

Chapter 4: System Design

Describes desired features and operations in detail, including screen layouts, business rules, process diagrams, pseudocode and other documentation.
Basic Modules: The students should follow the divide and conquer theory, so divide the overall problem into more manageable parts and develop each part or module separately. When all modules are ready, the student should integrate all the modules into one system. In this phase, the student should briefly describe all the modules and the functionality of these modules.
Data Design: Data design will consist of how data is organised, managed and manipulated.
• Schema Design: Define the structure and explanation of schemas used in the project.
• Data Integrity and Constraints: Define and explain all the validity checks and constraints provided to maintain data integrity.
Procedural Design: Procedural design is a systematic way for developing algorithms or procedurals.

• Logic Diagrams: Define the systematical flow of procedure that improves its comprehension and helps the programmer during implementation. e.g., Control Flow Chart, Process Diagrams etc.
• Data Structures: Create and define the data structure used in procedures.
• Algorithms Design: With proper explanations of input data, output data, logic of processes, design and explain the working of algorithms.

User Interface Design: Define user, task, environment analysis and how to map those requirements in order to develop a "User Interface". Describe the external and internal components and the architecture of user interface. Show some rough pictorial views of the user interface and its components.

Security Issues: Discuss Real-time considerations and Security issues related to the project and explain how the student intends avoiding those security problems. What are the security policy plans and architecture?

Test Cases Design: Define test cases, which will provide easy detection of errors and mistakes with in a minimum period of time and with the least effort. Explain the different conditions in which the students wish to ensure the correct working of theproject.

Chapter 5: Implementation and Testing
Implementation Approaches: Define the plan of implementation, and the standards the students have used in the implementation.
Coding Details and Code Efficiency: Students not need include full source code, instead, include only the important codes (algorithms, applets code, forms code etc). The program code should contain comments needed for explaining the work a piece of code does. Comments may be needed to explain why it does it, or, why it does a particular way.

The student can explain the function of the code with a shot of the output screen of that program code.

• Code Efficiency: The student should explain how the code is efficient and how the students have handled code optimisation.

Testing Approach: Testing should be according to the scheme presented in the system design chapter and should follow some suitable model – e.g., category partition, state machine-based. Both functional testing and user-acceptance testing are appropriate. Explain the approach of testing.

• Unit Testing: Unit testing deals with testing a unit or module as a whole. This would test the interaction of many functions but, do confine the test within one module.

• Integrated Testing: Brings all the modules together into a special testing environment, then checks for errors, bugs and interoperability. It deals with tests for the entire application. Application limits and features are tested here.

Modifications and Improvements: Once the students finish the testing they are bound to be faced with bugs, errors and they will need to modify your source code to improve the system. Define what modification are implemented in the system and how it improved the system.

Chapter 6: Results and Discussion

Test Reports: Explain the test results and reports based on the test cases, which should show that theproject is capable of facing any problematic situation and that it works fine in different conditions. Take the different sample inputs and show the outputs.

User Documentation: Define the working of the software; explain its different functions, components with screen shots. The user document should provide all the details of the product in such a way that any user reading the manual, is able to understand the working and functionality of the document.

Chapter 7: Conclusions

Conclusion: The conclusions can be summarised in a fairly short chapter (2 or 3 pages). This chapter brings together many of the points that would have made in the other chapters.

Limitations of the System: Explain the limitations encountered during the testing of the project that the students were not able to modify. List the criticisms accepted during the demonstrations of the project.

Future Scope of the Project describes two things: firstly, new areas of investigation prompted by developments in this project, and secondly, parts of the current work that was not completed due to time constraints and/or problems encountered.

REFERENCES

It is very important that the students acknowledge the work of others that they have used or adapted in their own work, or that provides the essential background or context to the project. The use of references is the standard way to do this. Please follow the given standard for the references for books, journals, and online material. The citation is mandatory in both the reports.
E.g:

Linhares, A., & Brum, P. (2007). Understanding our understanding of strategic scenarios: What role do chunks play? *Cognitive Science*, *31*(6), 989-1007. https://doi.org/doi:10.1080/03640210701703725

Lipson, Charles (2011). Cite right : A quick guide to citation styles; MLA, APA, Chicago, the sciences, professions, and more (2nd ed.). Chicago [u.a.]: University of Chicago Press. p. 187. ISBN 9780226484648.

Elaine Ritchie, J Knite. (2001). *Artificial Intelligence, Chapter 2 , p.p 23 - 44.* Tata McGrawHill.

GLOSSARY

If you the students any acronyms, abbreviations, symbols, or uncommon terms in the project report then their meaning should be explained where they first occur. If they go on to use any of them extensively then it is helpful to list them in this section and define the meaning.

APPENDICES

These may be provided to include further details of results, mathematical derivations, certain illustrative parts of the program code (e.g., class interfaces), user documentation etc.

In particular, if there are technical details of the work done that might be useful to others who wish to build on this work, but that are not sufficiently important to the project as a whole to

justify being discussed in the main body of the project, then they should be included as appendices.

VI. SUMMARY

Project development usually involves an engineering approach to the design and development of a software system that fulfils a practical need. Projects also often form an important focus for discussion at interviews with future employers as they provide a detailed example of what the students are capable of achieving. In this course the students can choose your project topic from the lists given in Unit 4: Category-wise Problem Definition.

VII. FURTHER READINGS

1. Modern Systems Analysis and Design; Jeffrey A. Hoffer, Joey F. George, Joseph,S. Valacich; Pearson Education; Third Edition; 2002.
2. ISO/IEC 12207: Software Life Cycle Process (http://www.software.org/quagmire/descriptions/iso-iec12207.asp).
3. IEEE 1063: Software User Documentation (http://ieeexplore.ieee.org).
4. ISO/IEC: 18019: Guidelines for the Design and Preparation of User Documentation for Application Software.
5. http://www.sce.carleton.ca/squall.
6. http://en.tldp.org/HOWTO/Software-Release-Practice-HOWTO/documentation.html.
7. http://www.sei.cmu.edu/cmm/

PROFORMA FOR THE APPROVAL PROJECT PROPOSAL

(Note:All entries of the proforma of approval should be filled up with appropriate and complete information. Incomplete proforma of approval in any respect will be summarily rejected.)

PNR **No.: ……** Rollno**: _____**

1. Name of the Student

_____

2. Title of the Project

_____

3. Name of the Guide

_____

4. Teaching experience of the Guide _____

5. Is this your first submission? Yes ☐ No ☐

Signature of the Student Signature of the Guide

Date: …… Date: …….

Signature of the Coordinator

Date: ……

(All the text in the report should be in times new roman)

TITLE OF THE PROJECT (NOT EXCEEDING 2 LINES, 24 BOLD, ALL CAPS)

A Project Report (12 Bold)
Submitted in partial fulfillment of the
Requirements for the award of the Degree of (size-12)

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)(14 BOLD, CAPS)

By(12 Bold)

Name of The Student (size-15, title case)
Seat Number (size-15)

Under the esteemed guidance of (13 bold)
Mr./Mrs. Name of The Guide (15 bold, title case)
Designation (14 Bold, title case)

COLLEGE LOGO

DEPARTMENT OF INFORMATION TECHNOLOGY(12 BOLD, CAPS)
COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (12, Title case, bold, italic)
CITY, PIN CODE(12 bold, CAPS)
MAHARASHTRA (12 bold, CAPS)
YEAR (12 bold)

COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (13, bold, italic)
CITY-MAHARASHTRA-PINCODE(13 bold, CAPS)

DEPARTMENT OF INFORMATION TECHNOLOGY (14 BOLD, CAPS)

College Logo

CERTIFICATE (14 BOLD, CAPS, underlined, centered)

This is to certify that the project entitled, **"Title of The Project "**, is bonafied work of **NAME OF THE STUDENT** bearing Seat.No: (**NUMBER**) submitted in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE in INFORMATION TECHNOLOGY from University of Mumbai. (12, times new roman, justified)

Internal Guide (12 bold) **Coordinator**

(Don't write names of lecturers or HOD)

External Examiner

Date: **College Seal**

COMPANY CERTIFICATE (if applicable)

(Project Abstract page format)

Abstract (20bold, caps, centered)

Content (12, justified)

Note: Entire document should be with <u>1.5</u>
<u>line spacing and all paragraphs should start with 1 tab space.</u>

ACKNOWLEDGEMENT
(20, BOLD, ALL CAPS, CENTERED)

The acknowledgement should be in times new roman, 12 font with 1.5 line spacing, justified.

(Declaration page format)

DECLARATION (20 bold, centered, allcaps)

Content (12, justified)

I here by declare that the project entitled, "**Title of the Project**" done at **place where the project is done**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)** tobe submitted as final semester project as part of our curriculum.

Name and Signature of the Student

TABLE OF CONTENTS (20bold, caps, centered)

Should be generated automatically using word processing software.

List of Tables (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

List of Figures (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

(Project Introduction page format)

Chapter 1

Introduction (20 Bold, centered)

Content or text (12, justified)

Note: Introduction has to cover brief description of the project with minimum 4 pages.

Chapter 2

System Analysis (20 bold, Centered)

Subheadings are as shown below with following format (16 bold, CAPS)

2.1 Existing System (16 Bold)

2.1.1 ---------- (14 bold, title case)

2.1.1.1 ---------- (12 bold, title case)

2.2 Proposed System

2.3 Requirement Analysis

2.4 Hardware Requirements

2.5 Software Requirements

2.6 Justification of Platform – (how h/w & s/w satisfying the project)

Table 2.1: Caption

Chapter 3

System Design (20 bold, centered)

Subheadings are as shown below with following format (16 bold, CAPS)
Specify figures as Fig 11.1 – caption

3.1 Module Division
3.2 Data Dictionary
3.3 E-R Diagrams
3.4 Data Flow Diagrams / UML

Note: write brief description at the bottom of all diagrams

Sample Figure

Fig. 3.1: Caption

Chapter 4

Implementation and Testing (20 bold, centered)

4.1 Code (Place Core segments)

Content includes description about coding phase in your project (Font-12)

(* don't include complete code-----just description)

4.2 Testing Approach

Subheadings are as shown below with following format (16 bold, CAPS)

4.2.1 Unit Testing

4.2.2 Integration Testing

Note:

- Explain about above testing methods
- Explain how the above techniques are applied in your project

Provide Test plans, test cases, etc relevant to your project

Chapter 5

Results and Discussions(20 bold, centered)

Note: Place Screen Shots and write the functionality of each screen at the bottom

Chapter 6

Conclusion and Future Work (20 bold, centered)

The conclusions can be summarized in a fairly short chapter around 300 words. Also include limitations of your system and future scope (12, justified)

Chapter 7

References (20 bold, centered)

Content (12, LEFT)

[1] Title of the book, Author

[2] Full URL of online references

[3] ----------

*** <u>NOTE ABOUT PROJECT VIVA VOCE:</u>**

Student may be asked to write code for problem during VIVA to demonstrate his coding capabilities and he/she may be asked to write any segment of coding used in the in the project. The project can be done in group of at most four students. However, the length and depth of the project should be justified for the projects done in group. A big project can be modularised and different modules can be assigned as separate project to different students.

Marks Distribution:

Semester V: 50 Marks

Documentation: 50 marks

Semester VI: 150 Marks

Documentation: 50 Marks:

Implementation and Viva Voce: 100 Marks

The plagiarism should be maintained as per the UGC guidelines.

UNIVERSITY OF MUMBAI

No. UG/ 89 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty is invited to this office Circular No. UG/21 of 2016-17, dated 30th June, 2016 relating to syllabus of Bachelor of Management Studies (B.M.S.) degree course.

Their attention is also invited to University Circular No. UG/109 of 2016-17 dated 25th October, 2016 for F.Y.B.M.S. (Sem. I & II) and University Circular No. UG/261 of 2017-18 dated 23rd October, 2017 for S.Y. B.M.S. (Sem. III & IV) respectively.

They are hereby informed that the recommendations made by the Board of Studies in Business Management at its meeting held on 28th February, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.44 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.M.S. (Sem. V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
27th July, 2018

(Dr. Dinesh Kamble)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.44/05/05/2018

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No. UG/ 89 -A of 2018 MUMBAI-400 032 27th July, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Commerce & Management,
2) The Director, Board of Examinations and Evaluation,
3) The Director, Board of Students Development,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses
of
Bachelor of Management Studies (BMS) Programme at Third Year

Semester V and VI

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year- 2018-2019)

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

TYBMS

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**	1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	***Core Course (CC)***		***2***	***Core Course (CC)***	
5	Logistics & Supply Chain Management	**04**	5	Operation Research	**04**
3	**Ability Enhancement Course (AEC)**		**3**	**Ability Enhancement Course (AEC)**	
6	Corporate Communication & Public Relations	**04**	6	Project Work	**04**
	Total Credits	**20**		**Total Credits**	**20**

✓ ***Note:*** *Project work is considered as a special course involving application of knowledge in solving/analysing/exploring a real life situation/ difficult problem. Project work would be of 04 credits. A project work may be undertaken in any area of Elective Courses/ study area selected*

****List of group of Elective Courses(EC) for Semester V (Any Four)***		***** List of group of Elective Courses(EC) for Semester VI (Any Four)***	
Group A: Finance Electives			
1	Investment Analysis& Portfolio Management	1	International Finance
2	Commodity & Derivatives Market	2	Innovative Financial Services
3	Wealth Management	3	Project Management
4	Financial Accounting	4	Strategic Financial Management
5	Risk Management	5	Financing Rural Development
6	Direct Taxes	6	Indirect Taxes
Group B:Marketing Electives			
1	Services Marketing	1	Brand Management
2	E-Commerce & Digital Marketing	2	Retail Management
3	Sales & Distribution Management	3	International Marketing
4	Customer Relationship Management	4	Media Planning & Management
5	Industrial Marketing	5	Sports Marketing
6	Strategic Marketing Management	6	Marketing of Non Profit Organisation
Group C: Human Resource Electives			
1	Finance for HR Professionals & Compensation Management	1	HRM in Global Perspective
2	Strategic Human Resource Management & HR Policies	2	Organisational Development
3	Performance Management & Career Planning	3	HRM in Service Sector Management
4	Industrial Relations	4	Workforce Diversity
5	Talent & Competency Management	5	Human Resource Accounting & Audit
6	Stress Management	6	Indian Ethos in Management
Note: Group selected in Semester III will continue in Semester V &Semester VI			

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester V

No. of Courses	Semester V	Credits
1	***Elective Courses (EC)***	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**
2	***Core Course (CC)***	
5	Logistics & Supply Chain Management	**04**
3	**Ability Enhancement Course (AEC)**	
6	Corporate Communication & Public Relations	**04**
	Total Credits	**20**

List of group of Elective Courses(EC)for Semester V (Any Four)	
Group A: Finance Electives	
1	Investment Analysis & Portfolio Management
2	Commodity & Derivatives Market
3	Wealth Management
4	Financial Accounting
5	Risk Management
6	Direct Taxes
Group B:Marketing Electives	
1	Services Marketing
2	E-Commerce & Digital Marketing
3	Sales & Distribution Management
4	Customer Relationship Management
5	Industrial Marketing
6	Strategic Marketing Management
Group C: Human Resource Electives	
1	Finance for HR Professionals & Compensation Management
2	Strategic Human Resource Management & HR Policies
3	Performance Management & Career Planning
4	Industrial Relations
5	Talent & Competency Management
6	Stress Management

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

1. Investment Analysis and Portfolio Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Investment Environment	15
2	Risk - Return Relationship	15
3	Portfolio Management and Security Analysis	15
4	Theories, Capital Asset Pricing Model and Portfolio Performance Measurement	15
	Total	**60**

Objectives

SN	Objectives
1	To acquaint the learners with various concepts of finance
2	To understand the terms which are often confronted while reading newspaper, magazines etc for better correlation with the practical world
3	To understand various models and techniques of security and portfolio analysis

SN	Modules/ Units
1	**Introduction to Investment Environment**
	a) Introduction to Investment Environment • Introduction, Investment Process, Criteria for Investment, Types of Investors, Investment V/s Speculation V/s Gambling, Investment Avenues, Factors Influencing Selection of Investment Alternatives **b) Capital Market in India** • Introduction, Concepts of Investment Banks its Role and Functions, Stock Market Index, The NASDAQ, SDL, NSDL, Benefits of Depository Settlement, Online Share Trading and its Advantages, Concepts of Small cap, Large cap, Midcap and Penny stocks
2	**Risk - Return Relationship**
	a) Meaning, Types of Risk- Systematic and Unsystematic risk, Measurement of Beta, Standard Deviation, Variance, Reduction of Risk through Diversification. Practical Problems on Calculation of Standard Deviation, Variance and Beta.
3	**Portfolio Management and Security Analysis**
	a) Portfolio Management: • Meaning and Concept, Portfolio Management Process, Objectives, Basic Principles, Factors affecting Investment Decisions in Portfolio Management, Portfolio Strategy Mix. **b) Security Analysis:** • Fundamental Analysis, Economic Analysis, Industry Analysis, Company Analysis, Technical Analysis - Basic Principles of Technical Analysis., Uses of Charts: Line Chart, Bar Chart, Candlestick Chart, Mathematical Indicators: Moving Averages, Oscillators.
4	**Theories, Capital Asset Pricing Model and Portfolio Performance Measurement**
	a) Theories: • Dow Jones Theory, Elloit Wave Theory, Efficient Market Theory **b) Capital Asset Pricing Model:** • Assumptions of CAPM, CAPM Equation, Capital Market Line, Security Market Line **c) Portfolio Performance Measurement:** • Meaning of Portfolio Evaluation, Sharpe's Ratio (Basic Problems), Treynor's Ratio (Basic Problems), Jensen's Differential Returns (Basic Problems)

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

2. Commodity and Derivatives Market

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Commodities Market and Derivatives Market	15
2	Futures and Hedging	15
3	Options and Option Pricing Models	15
4	Trading, Clearing & Settlement In Derivatives Market and Types of Risk	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concepts related to Commodities and Derivatives market
2	To study the various aspects related to options and futures
3	To acquaint learners with the trading, clearing and settlement mechanism in derivates market.

SN	Modules/ Units
1	**Introduction to Commodities Market and Derivatives Market**
	a) Introduction to Commodities Market : • Meaning, History & Origin, Types of Commodities Traded, Structure of Commodities Market in India, Participants in Commodities Market, Trading in Commodities in India(Cash & Derivative Segment), Commodity Exchanges in India & Abroad, Reasons for Investing in Commodities **b) Introduction to Derivatives Market:** • Meaning, History & Origin, Elements of a Derivative Contract, Factors Driving Growth of Derivatives Market, Types of Derivatives, Types of Underlying Assets, Participants in Derivatives Market, Advantages & Disadvantages of Trading in Derivatives Market, Current Volumes of Derivative Trade in India, Difference between Forwards & Futures.
2	**Futures and Hedging**
	a) Futures: • Futures Contract Specification, Terminologies, Concept of Convergence, Relationship between Futures Price & Expected Spot Price, Basis & Basis Risk, Pricing of Futures Contract, Cost of Carry Model **b) Hedging:** • Speculation & Arbitrage using Futures, Long Hedge – Short Hedge, Cash & Carry Arbitrage, Reverse Cash & Carry Arbitrage, Payoff Charts & Diagrams for Futures Contract, Perfect & Imperfect Hedge
3	**Options and Option Pricing Models**
	a) Options: • Options Contract Specifications, Terminologies, Call Option, Put Option, Difference between Futures & Options, Trading of Options, Valuation of Options Contract, Factors affecting Option Premium, Payoff Charts & Diagrams for Options Contract, Basic Understanding of Option Strategies **b) Options Pricing Models:** • Binomial Option Pricing Model, Black - Scholes Option Pricing Model
4	**Trading, Clearing & Settlement In Derivatives Market and Types of Risk**
	a) Trading, Clearing & Settlement In Derivatives Market: • Meaning and Concept, SEBI Guidelines, Trading Mechanism – Types of Orders, Clearing Mechanism – NSCCL – its Objectives & Functions, Settlement Mechanism – Types of Settlement **b) Types of Risk:** • Value at Risk, Methods of calculating VaR, Risk Management Measures , Types of Margins, SPAN Margin

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

3. Wealth Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Insurance Planning and Investment Planning	15
3	Financial Mathematics/ Tax and Estate Planning	15
4	Retirement Planning/ Income Streams & Tax Savings Schemes	15
	Total	**60**

Objectives

SN	Objectives
1	To provide an overview of various aspects related to wealth management
2	To study the relevance and importance of Insurance in wealth management
3	To acquaint the learners with issues related to taxation in wealth management
4	To understand various components of retirement planning

SN	Modules/ Units
1	**Introduction**
	a) Introduction To Wealth Management: • Meaning of WM, Scope of WM, Components of WM, Process of WM, WM Needs & Expectation of Clients,Code of Ethics for Wealth Manager **b) Personal Financial Statement Analysis:** • Financial Literacy, Financial Goals and Planning, Cash Flow Analysis, Building Financial Plans, Life Cycle Management. **c) Economic Environment Analysis:** • Interest Rate, Yield Curves, Real Return, Key Indicators-Leading, Lagging, Concurrent
2	**Insurance Planning and Investment Planning**
	a) Insurance Planning: • Meaning, Basic Principles of Insurance, Functions and Characteristics of Insurance, Rights and Responsibilities of Insurer and Insured, Types of life Insurance Policies, Types of General Insurance Policies, Health Insurance – Mediclaim – Calculation of Human Life Value - Belth Method/CPT **b) Investment Planning:** • Types of Investment Risk, Risk Profiling of Investors & Asset Allocation (Life Cycle Model), Asset Allocation Strategies(Strategic, Tactical, Life-Cycle based), Goal-based Financial Planning, Active & Passive Investment Strategies
3	**Financial Mathematics/ Tax and Estate Planning**
	a) Financial Mathematics: • Calculation of Returns (CAGR ,Post-tax Returns etc.), Total Assets, Net Worth Calculations, Financial Ratios **b) Tax and Estate Planning:** • Tax Planning Concepts, Assessment Year, Financial Year, Income Tax Slabs, TDS, Advance Tax, LTCG, STCG, Carry Forward & Set-off, Estate Planning Concepts –Types of Will – Requirements of a Valid Will– Trust – Deductions - Exemptions
4	**Retirement Planning/ Income Streams & Tax Savings Schemes**
	a) Retirement Planning: • Understanding of different Salary Components, Introduction to Retirement Planning, Purpose & Need, Life Cycle Planning, Financial Objectives in Retirement Planning, Wealth Creation (Factors and Principles), Retirement (Evaluation & Planning), Pre & Post-Retirement Strategies - Tax Treatment **b) Income Streams & Tax Savings Schemes:** • Pension Schemes, Annuities- Types of Annuities, Various Income Tax Savings Schemes

Elective Courses (EC)

Group A: Finance Electives

4. Financial Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Preparation of Final Accounts of Companies	15
2	Underwriting of Shares & Debentures	12
3	Accounting of Transactions of Foreign Currency	15
4	Investment Accounting (w.r.t. Accounting Standard- 13)	10
5	Ethical Behaviour and Implications for Accountants	08
Total		**60**

Objectives

SN	Objectives
01	To acquaint the learners in preparation of final accounts of companies
02	To study provisions relating to underwriting of shares and debentures
03	To study accounting of foreign currency and investment
04	To understand the need of ethical behaviour in accountancy

Sr. No.	Modules / Units
1	**Preparation of Final Accounts of Companies**
	Relevant provisions of Companies Act related to preparation of Final Accounts (excluding cash flow statement) Preparation of financial statements as per Companies Act (excluding cash flow statement) AS 1 in relation to final accounts of companies (disclosure of accounting policies)
2	**Underwriting of Shares & Debentures**
	Introduction, Underwriting, Underwriting Commission Provision of Companies Act with respect to Payment of underwriting commission Underwriters, Sub-Underwriters, Brokers and Manager to Issues Types of underwriting, Abatement Clause Marked, Unmarked and Firm-underwriting applications, Liability of the underwriters in respect of underwriting contract- Practical problems
3	**Accounting of Transactions of Foreign Currency**
	In relation to purchase and sale of goods, services, assets, loan and credit transactions. Computation and treatment of exchange rate differences.
4	**Investment Accounting (w.r.t. Accounting Standard- 13)**
	For shares (variable income bearing securities) For Debentures/Preference shares (fixed income bearing securities) Accounting for transactions of purchase and sale of investments with ex and cum interest prices and finding cost of investment sold and carrying cost as per weighted average method (Excl. brokerage). Columnar format for investment account.
5	**Ethical Behaviour and Implications for Accountants**
	Introduction, Meaning of ethical behavior Financial Reports – link between law, corporate governance, corporate social responsibility and ethics. Need of ethical behavior in accounting profession . Implications of ethical values for the principles versus rule based approaches to accounting standards The principal based approach and ethics The accounting standard setting process and ethics The IFAC Code of Ethics for Professional Accountants Contents of Research Report in Ethical Practices Implications of unethical behavior for financial reports Company Codes of Ethics The increasing role of Whistle – Blowing

Elective Courses (EC)

Group A: Finance Electives

5. Risk Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction, Risk Measurement and Control	15
2	Risk Avoidance and ERM	15
3	Risk Governance and Assurance	15
4	Risk Management in Insurance	15
	Total	**60**

Objectives

SN	Objectives
1	To familiarize the student with the fundamental aspects of risk management and control
2	To give a comprehensive overview of risk governance and assurance with special reference to insurance sector
3	To introduce the basic concepts, functions, process, techniques of risk management

SN	Modules/ Units
1	**Introduction, Risk Measurement and Control**
	a) Introduction, Risk Measurement and Control • Definition, Risk Process, Risk Organization, Key Risks –Interest, Market, Credit, Currency, Liquidity, Legal, Operational • Risk Management V/s Risk Measurement – Managing Risk, Diversification, Investment Strategies and Introduction to Quantitative Risk Measurement and its Limitations • Principals of Risk - Alpha, Beta, R squared, Standard Deviation, Risk Exposure Analysis, Risk Immunization, Risk and Summary Measures –Simulation Method, Duration Analysis, Linear and other Statistical Techniques for Internal Control
2	**Risk Avoidance and ERM**
	a) Risk Hedging Instruments and Mechanism: • Forwards, Futures, Options, Swaps and Arbitrage Techniques, Risk Return Trade off, Markowitz Risk Return Model, Arbitrage Theory, System Audit Significance in Risk Mitigation **b) Enterprise Risk Management:** • Risk Management V/s Enterprise Risk Management, Integrated Enterprise Risk Management, ERM Framework, ERM Process, ERM Matrix, SWOT Analysis, Sample Risk Register
3	**Risk Governance and Assurance**
	a) Risk Governance: • Importance and Scope of Risk Governance, Risk and Three Lines of Defense, Risk Management and Corporate Governance **b) Risk Assurance:** • Purpose and Sources of Risk Assurance, Nature of Risk Assurance, Reports and Challenges of Risk **c) Risk and Stakeholders Expectations:** • Identifying the Range of Stakeholders and Responding to Stakeholders Expectations
4	**Risk Management in Insurance**
	a) Insurance Industry: • Global Perspective, Regulatory Framework in India, IRDA - Reforms, Powers, Functions and Duties. Role and Importance of Actuary **b) Players of Insurance Business:** • Life and Non- Life Insurance, Reinsurance, Bancassurance, Alternative Risk Trance, Insurance Securitization, Pricing of Insurance products, Expected Claim Costs, Risk Classification **c) Claim Management:** • General Guidelines, Life Insurance, Maturity, Death, Fire, Marine, Motor Insurance and Calculation of Discounted Expected Claim Cost and Fair Premium

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

6. Direct Taxes

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Definitions and Residential Status	10
2	Heads of Income – I	15
3	Heads of Income - II	15
4	Deductions under Chapter VI A	10
5	Computation of Taxable Income of Individuals	10
Total		**60**

Objectives

SN	Objectives
01	To understand the provisions of determining residential status of individual
02	To study various heads of income
03	To study deductions from total income
04	To compute taxable income of Individuals

Sr. No.	Modules / Units
1	**Definitions and Residential Status**
	Basic Terms (S. 2,3,4) Assessee, Assessment, Assessment Year, Annual Value, Business, Capital Assets, Income, Previous Year, Person, Transfer. Determination of Residential Status of Individual, Scope of Total Income (S.5)
2	**Heads of Income – I**
	Salary (S.15-17) Income from House Property (S. 22-27) Profit & Gain from Business and Profession(S. 28, 30,31,32, 35, 35D,36,37, 40, 40A and 43B)
3	**Heads of Income – II**
	Capital Gain (S. 45, 48, 49, 50 and 54) Income from other sources (S.56- 59) Exclusions from Total Income (S.10) (Exclusions related to specified heads to be covered with relevant heads of income)
4	**Deductions under Chapter VI A**
	Deductions from Total Income S. 80C, 80CCC, 80D, 80DD, 80E, 80U, 80TTA
5	**Computation of Taxable Income of Individuals.**
	Computation of Total Income and Taxable Income of Individuals

Note: The Syllabus is restricted to study of particular sections, specifically mentioned rules and notifications only.

1. All modules / units include Computational problems / Case Study**.**

2. The Law In force on 1st April immediately preceding the commencement of Academic year will be applicable for ensuing Examinations.

Elective Courses (EC)

Group B: Marketing Electives

1. Service Marketing

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction of Services Marketing	15
2	Key Elements of Services Marketing Mix	15
3	Managing Quality Aspects of Services Marketing	15
4	Marketing of Services	15
	Total	**60**

Objectives

SN	Objectives
1	To understand distinctive features of services and key elements in services marketing
2	To provide insight into ways to improve service quality and productivity
3	To understand marketing of different services in Indian context

SN	Modules/ Units
1	**Introduction of Services Marketing**
	• Services Marketing Concept, Distinctive Characteristics of Services, Services Marketing Triangle, Purchase Process for Services, Marketing Challenges of Services • Role of Services in Modern Economy, Services Marketing Environment • Goods vs Services Marketing, Goods Services Continuum • Consumer Behaviour, Positioning a Service in the Market Place • Variations in Customer Involvement, Impact of Service Recovery Efforts on Consumer Loyalty • Type of Contact: High Contact Services and Low Contact Services • Sensitivity to Customers' Reluctance to Change
2	**Key Elements of Services Marketing Mix**
	• The Service Product, Pricing Mix, Promotion & Communication Mix, Place/Distribution of Service, People, Physical Evidence, Process-Service Mapping-Flowcharting • Branding of Services – Problems and Solutions • Options for Service Delivery
3	**Managing Quality Aspects of Services Marketing**
	• Improving Service Quality and Productivity • Service Quality – GAP Model, Benchmarking, Measuring Service Quality -Zone of Tolerance and Improving Service Quality • The SERVQUAL Model • Defining Productivity – Improving Productivity • Demand and Capacity Alignment
4	**Marketing of Services**
	• International and Global Strategies in Services Marketing: Services in the Global Economy- Moving from Domestic to Transnational Marketing • Factors Favouring Transnational Strategy • Elements of Transnational Strategy • Recent Trends in Marketing Of Services in: Tourism, Hospitality, Healthcare, Banking, Insurance, Education, IT and Entertainment Industry • Ethics in Services Marketing: Meaning, Importance, Unethical Practices in Service Sector

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

2. E-Commerce and Digital Marketing

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to E-commerce	15
2	E-Business & Applications	15
3	Payment, Security, Privacy &Legal Issues in E-Commerce	15
4	Digital Marketing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand increasing significance of E-Commerce and its applications in Business and Various Sectors
2	To provide an insight on Digital Marketing activities on various Social Media platforms and its emerging significance in Business
3	To understand Latest Trends and Practices in E-Commerce and Digital Marketing, along with its Challenges and Opportunities for an Organisation

SN	Modules/ Units
1	**Introduction to E-commerce**
	• Ecommerce- Meaning, Features of E-commerce, Categories of E-commerce, Advantages &Limitations of E-Commerce, Traditional Commerce &E-Commerce • Ecommerce Environmental Factors: Economic, Technological, Legal , Cultural & Social • Factors Responsible for Growth of E-Commerce, Issues in Implementing E-Commerce, Myths of E-Commerce • Impact of E-Commerce on Business, Ecommerce in India • Trends in E-Commerce in Various Sectors: Retail, Banking, Tourism, Government, Education • Meaning of M-Commerce, Benefits of M-Commerce, Trends in M-Commerce
2	**E-Business & Applications**
	• E-Business: Meaning, Launching an E-Business, Different phases of Launching an E-Business • Important Concepts in E-Business: Data Warehouse, Customer Relationship Management , Supply Chain Management, Enterprise Resource Planning • Bricks and Clicks business models in E-Business: Brick and Mortar, Pure Online, Bricks and Clicks, Advantages of Bricks & Clicks Business Model, Superiority of Bricks and Clicks E-Business Applications: E-Procurement, E-Communication, E-Delivery, E-Auction, E-Trading. • Electronic Data Interchange (EDI) in E-Business: Meaning of EDI, Benefits of EDI, Drawbacks of EDI, Applications of EDI. • Website : Design and Development of Website, Advantages of Website, Principles of Web Design, Life Cycle Approach for Building a Website, Different Ways of Building a Website
3	**Payment, Security, Privacy &Legal Issues in E-Commerce**
	• Issues Relating to Privacy and Security in E-Business • Electronic Payment Systems: Features, Different Payment Systems :Debit Card, Credit Card ,Smart Card, E-cash, E-Cheque, E-wallet, Electronic Fund Transfer. • Payment Gateway: Introduction, Payment Gateway Process, Payment Gateway Types, Advantages and Disadvantages of Payment Gateway. • Types of Transaction Security • E-Commerce Laws: Need for E-Commerce laws, E-Commerce laws in India, Legal Issues in E-commerce in India, IT Act 2000

SN	Modules/ Units
4	**Digital Marketing**
	• Introduction to Digital Marketing, Advantages and Limitations of Digital Marketing. • Various Activities of Digital Marketing: Search Engine Optimization, Search Engine Marketing, Content Marketing & Content Influencer Marketing, Campaign Marketing, Email Marketing, Display Advertising, Blog Marketing, Viral Marketing, Podcasts & Vodcasts. • Digital Marketing on various Social Media platforms. • Online Advertisement, Online Marketing Research, Online PR • Web Analytics • Promoting Web Traffic • Latest developments and Strategies in Digital Marketing.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

3. Sales and Distribution Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction	15
2	Market Analysis and Selling	15
3	Distribution Channel Management	15
4	Performance Evaluation, Ethics and Trends	15
	Total	**60**

Objectives

SN	Objectives
1	To develop understanding of the sales & distribution processes in organizations
2	To get familiarized with concepts, approaches and the practical aspects of the key decision making variables in sales management and distribution channel management

SN	Modules/ Units
1	**Introduction**
	a) Sales Management: • Meaning, Role of Sales Department, Evolution of Sales Management • Interface of Sales with Other Management Functions • Qualities of a Sales Manager • Sales Management: Meaning, Developments in Sales Management- Effectiveness to Efficiency, Multidisciplinary Approach, Internal Marketing, Increased Use of Internet, CRM, Professionalism in Selling. • Structure of Sales Organization – Functional, Product Based, Market Based, Territory Based, Combination or Hybrid Structure **b) Distribution Management:** • Meaning, Importance, Role of Distribution, Role of Intermediaries, Evolution of Distribution Channels. **c) Integration of Marketing, Sales and Distribution**
2	**Market Analysis and Selling**
	a) Market Analysis: • Market Analysis and Sales Forecasting, Methods of Sales Forecasting • Types of Sales Quotas – Value Quota, Volume Quota, Activity Quota, Combination Quota • Factors Determining Fixation of Sales Quota • Assigning Territories to Salespeople **b) Selling:** • Process of Selling, Methods of Closing a Sale, Reasons for Unsuccessful Closing • Theories of Selling – Stimulus Response Theory, Product Orientation Theory, Need Satisfaction Theory • Selling Skills – Communication Skill, Listening Skill, Trust Building Skill, Negotiation Skill, Problem Solving Skill, Conflict Management Skill • Selling Strategies – Softsell Vs. Hardsell Strategy, Client Centered Strategy, Product-Price Strategy, Win-Win Strategy, Negotiation Strategy • Difference Between Consumer Selling and Organizational Selling • Difference Between National Selling and International Selling

SN	Modules/ Units
3	**Distribution Channel Management**
	• Management of Distribution Channel – Meaning & Need • Channel Partners- Wholesalers, Distributors and Retailers & their Functions in Distribution Channel, Difference Between a Distributor and a Wholesaler • Choice of Distribution System – Intensive, Selective, Exclusive • Factors Affecting Distribution Strategy – Locational Demand, Product Characteristics, Pricing Policy, Speed or Efficiency, Distribution Cost • Factors Affecting Effective Management Of Distribution Channels ▪ Channel Design ▪ Channel Policy ▪ Channel Conflicts: Meaning, Types – Vertical, Horizontal, Multichannel, Reasons for Channel Conflict ▪ Resolution of Conflicts: Methods – Kenneth Thomas's Five Styles of Conflict Resolution ▪ Motivating Channel Members ▪ Selecting Channel Partners ▪ Evaluating Channels ▪ Channel Control
4	**Performance Evaluation, Ethics and Trends**
	a) Evaluation & Control of Sales Performance: • Sales Performance – Meaning • Methods of Supervision and Control of Sales Force • Sales Performance Evaluation Criteria- Key Result Areas (KRAs) • Sales Performance Review • Sales Management Audit **b) Measuring Distribution Channel Performance:** • Evaluating Channels- Effectiveness, Efficiency and Equity • Control of Channel – Instruments of Control – Contract or Agreement, Budgets and Reports, Distribution Audit **c) Ethics in Sales Management** **d) New Trends in Sales and Distribution Management**

Elective Courses (EC)

Group B: Marketing Electives

4. Customer Relationship Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Customer Relationship Management	15
2	CRM Marketing Initiatives, Customer Service and Data Management	15
3	CRM Strategy, Planning, Implementation and Evaluation	15
4	CRM New Horizons	15
	Total	**60**

Objectives

SN	Objectives
1	To understand concept of Customer Relationship Management (CRM) and implementation of Customer Relationship Management
2	To provide insight into CRM marketing initiatives, customer service and designing CRM strategy
3	To understand new trends in CRM, challenges and opportunities for organizations

SN	Modules/ Units
1	**Introduction to Customer Relationship Management**
	• Concept, Evolution of Customer Relationships: Customers as strangers, acquaintances, friends and partners • Objectives, Benefits of CRM to Customers and Organisations, Customer Profitability Segments, Components of CRM: Information, Process, Technology and People, Barriers to CRM • Relationship Marketing and CRM: Relationship Development Strategies: Organizational Pervasive Approach, Managing Customer Emotions, Brand Building through Relationship Marketing, Service Level Agreements, Relationship Challenges
2	**CRM Marketing Initiatives, Customer Service and Data Management**
	• CRM Marketing Initiatives: Cross-Selling and Up-Selling, Customer Retention, Behaviour Prediction, Customer Profitability and Value Modeling, Channel Optimization, Personalization and Event-Based Marketing • CRM and Customer Service: Call Center and Customer Care: Call Routing, Contact Center Sales-Support, Web Based Self Service, Customer Satisfaction Measurement, Call-Scripting, Cyber Agents and Workforce Management • CRM and Data Management: Types of Data: Reference Data, Transactional Data, Warehouse Data and Business View Data, Identifying Data Quality Issues, Planning and Getting Information Quality, Using Tools to Manage Data, Types of Data Analysis: Online Analytical Processing (OLAP), Clickstream Analysis, Personalisation and Collaborative Filtering, Data Reporting
3	**CRM Strategy, Planning, Implementation and Evaluation**
	• Understanding Customers: Customer Value, Customer Care, Company Profit Chain: Satisfaction, Loyalty, Retention and Profits • Objectives of CRM Strategy, The CRM Strategy Cycle: Acquisition, Retention and Win Back, Complexities of CRM Strategy • Planning and Implementation of CRM: Business to Business CRM, Sales and CRM, Sales Force Automation, Sales Process/ Activity Management, Sales Territory Management, Contact Management, Lead Management, Configuration Support, Knowledge Management CRM Implementation: Steps- Business Planning, Architecture and Design, Technology Selection, Development, Delivery and Measurement • CRM Evaluation: Basic Measures: Service Quality, Customer Satisfaction and Loyalty, Company 3E Measures: Efficiency, Effectiveness and Employee Change

4	**CRM New Horizons**
	• e-CRM: Concept, Different Levels of E- CRM, Privacy in E-CRM: • Software App for Customer Service: ▪ Activity Management, Agent Management, Case Assignment, Contract Management, Customer Self Service, Email Response Management, Escalation, Inbound Communication Management, Invoicing, Outbound Communication Management, Queuing and Routing, Scheduling • Social Networking and CRM • Mobile-CRM • CRM Trends, Challenges and Opportunities • Ethical Issues in CRM

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

5. Industrial Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Industrial Marketing -An Introduction, Marketing Environment and Buying Behaviour	15
2	Industrial Marketing Research and Segmentation, Targeting and Positioning in Industrial Market	15
3	Industrial Marketing Mix	15
4	Emerging Trends in Industrial Marketing	15
Total		**60**

Objectives

SN	Objectives
01	To understand basics of industrial marketing, Marketing Environment, Segmenting Targeting Positioning, channel strategy, marketing communication and pricing
02	To provide knowledge of industrial market structure and how they function
03	To provide understanding of the various attributes and models applicable in Industrial Marketing
04	To acquaint the students with trends in Industrial Marketing

Sr. No.	Modules / Units
1	**Industrial Marketing -An Introduction, Marketing Environment and Buying Behaviour**
	• **Introduction to Industrial Marketing**: Introduction, Definition, Features, Industrial versus Consumer marketing, Classification of Industrial products and Services • **Industrial Marketing Environment**: Technological; Customer; Competitive, Legal and Economic Environment; Responsibility of industrial Marketing Manager in planning, Coordination, Execution and control • **Industrial Buying and Buying Behaviour**: Procurement function; Purchase policy; Organization buying processes, Profile of Business buyers: Buying Centres; Buying Centres Roles; Buying Centre Members, Vender Analysis: Criteria for evaluating potential vendor; Vendor Rating, Models of industrial buying Behaviour
2	**Industrial Marketing Research and Segmentation, Targeting and Positioning in Industrial Market**
	• **Industrial Marketing Research**: Introduction, Classification of Industrial Marketing Research, Industrial Marketing Research Process, Role and Scope of Industrial Marketing Research, Advantages and limitations of Industrial Marketing Research, Role of Industrial Marketing Research in Marketing Information System and Decision Support System. • **Segmentation, Targeting and Positioning in Industrial Market**: Introduction to segmentation; Criteria for market segmentation; Basis of Market segmentation, choosing the market segmentation, Target Market: Concept, Approaches to Target Market, Positioning: Concept, Objectives of positioning, Positioning of Products and services; Effective Positioning; positioning process.
3	**Industrial Marketing Mix**
	• **Industrial Products and New Product Development**: Introduction to Industrial Products; Product Policy; Product Classification; Introduction to new product development; New industrial products; stages in New product development. • **Industrial Pricing**: Introduction to industrial Pricing; Factors influencing industrial pricing decision; Types of pricing; Leasing; Bidding; Negotiation • **Industrial Marketing Communication**: Advertising, Personal selling and Sales promotion: Role of advertising in B2B Market; various media options; Advertising on the internet; Using Advertising Agencies for industrial Marketers; Personal Selling in industrial Marketing; Different steps in Personal Selling; Sales promotion in industrial marketing. • **Marketing Channels and Physical Distribution of Industrial Products**: Industrial marketing channels; Indirect and direct marketing channels; Importance of marketing channels; Factors affecting selection of Marketing Channels; Process of designing the channel structure: Analyzing the channel objectives, constraints, channel tasks, channel alternatives and selecting the channel
4	**Emerging Trends in Industrial Marketing**
	• **Business Networks** : Business Networks in Industrial marketing, Relationship in Business networks , Technology and Business networks • **E-Procurement in Industrial Market**: Meaning , Importance of E-procurement , Implementation of E-procurement • **E-Commerce**: Definition of E-Commerce, Advantages and disadvantages of B2B E-Commerce, Role of E-Commerce in the context B2B marketer, Forms of B2B E-Commerce, Electronic Data Interchange; E-payments; E-security

Elective Courses (EC)

Group B: Marketing Electives

6. Strategic Marketing Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Strategic Marketing Management	15
2	Segmenting, Targeting, Positioning and Creation of Value in the context of Strategic Marketing	15
3	Strategic Decisions in Product, Services and Branding	15
4	Strategic Decisions in Pricing, Promotion and Distribution and strategic growth management	15
Total		**60**

Objectives

SN	Objectives
01	To understand marketing strategies and their impact on business models
02	To learn strategic marketing tactics related to product, price, service, brand, positioning, incentives and communication for business growth.
03	To learn the various marketing strategies adopted by Companies to create a competitive advantage

Sr. No.	Modules / Units
1	**Introduction to Strategic Marketing Management**
	• **Marketing**: Nature of Marketing, marketing as an art, science and business discipline, marketing as a value creation process • **Strategic decisions**: Nature of strategy, the marketing strategy interface, difference between marketing planning and strategic planning • **Identifying the market**: The five C framework-customer, company, collaborator, competitor, context • **The 7 tactics of Marketing mix**: Product, service, brand, price ,incentives, communication and distribution • **Business Model and Strategic Marketing Planning**: Meaning, Role of Business models in marketing management, Strategies for developing a business models: top-down business model generation, bottom up business model generation, The G-STIC frame work for marketing planning: Goal-Strategy-Tactics-Implementation-control
2	**Segmenting, Targeting, Positioning and Creation of Value in the context of Strategic Marketing:**
	• **Segmentation:** Essence of segmentation, Factors to be considered while segmenting, key segmenting principles- relevance, similarity, exclusivity • **Identifying Target Customers**: Factors to be considered while targeting, targeting strategies-One for all strategy, one for each strategy, Strategic Targeting criteria: target attractiveness, target compatibility Essential strategic assets for target compatibility: business infrastructure, collaborator networks, human capital, intellectual property, strong brands, established customer base, synergistic offerings, access to scarce resources and capital. • **Creating Customer Value through Positioning:** Role of strategic positioning, strategic positioning options: The quality option, value option, the pioneer, a narrow product focus, target segment focus; strategies for creating superior customer value. **Creating Company Value:** Understanding Company Value: Monetary, functional and psychological value; strategically managing profits--increasing sales revenue-through volume, optimizing price, lowering costs **Creating Collaborator Value**: Meaning of collaborators, collaboration as business process, advantages and drawbacks of collaboration, levels of strategic collaboration: explicit, implicit; alternatives to collaboration: horizontal and vertical integration, managing collaborator relations; gaining collaborator power: offering differentiation; collaborator size, strategic importance, switching costs

3	**Strategic Decisions in Product, Services and Branding**
	• **Managing Product and Services**: factors affecting product and service decisions- performance, consistency, reliability, durability, compatibility, ease of use, technological design, degree of customization, physical aspects, style, packaging. **Managing New Products**: Forecasting new product demand using Primary Data and secondary data: offering specific forecasting, forecasting by analogy, category based forecasting. **New product adoption:** Understanding new product adoption, factors influencing diffusion of new offering, new product development process, managing risk in new products- market risk and technological risk, Moore's Model of adoption of new technologies, managing product life cycle at various stages, extending Product lifecycle. • **Managing Product Lines**: Managing vertical, upscale, downscale, horizontal product-Line Extensions, Managing Product Line Cannibalization, Managing Product lines to gain and defend market position-The Fighting Brand Strategy, The sandwich strategy, The Good-better-best strategy • **Brand Tactics**: Brand: Meaning, brand identity, brand as value creation process brand hierarchy-Individual and umbrella branding, brand extension: vertical and horizontal, brand equity and brand power, measuring brand equity-cost based approach, market based approach and financial based approach.
4	**Strategic Decisions in Pricing, Promotion and Distribution and strategic growth management**
	A) Managing Price: Major approaches to strategic pricing-cost based pricing, competitive pricing, demand pricing; Price sensitivity: meaning, psychological pricing, Five psychological pricing effects: reference price effects, price quantity effects, price tier effects, price ending effects, product line effects; Understanding competitive pricing and price wars: factors affecting price wars, Approach for developing a strategic response to competitors price cut, Other pricing strategies-captive pricing, cross price elasticity, deceptive pricing, everyday low pricing, experience curve pricing, loss leader pricing, horizontal price fixing, price signalling. **B) Managing Promotions and incentives**: Promotion mix strategy, Factors affecting strategic decisions in promotion mix, Promotion expenditure strategy, Methods to determine promotion expenditure-Breakdown Method, Buildup Method, Push and Pull promotions. Managing incentives as a value creation process, Goals of using customer incentives, Monetary incentives for customers, Non monetary incentives for customers. Collaborator incentives meaning, monetary incentives-slotting allowance, stocking allowance, cooperative advertising allowance, market development allowance, display allowance, spiffs **C) Managing distribution**: Distribution as value creation process, distribution channel design process- Channel structure: Direct, indirect and hybrid channel; channel coordination- common ownership, contractual relationship, implicit channel coordination; channel type, channel coverage, channel exclusivity **D) Strategic Growth Management**: Gaining market position: strategies to gain market position: steal share strategy, market growth strategy, market innovation strategy; Pioneering new markets: Meaning, Types of Pioneers: technology, product, business model, markets; benefits and drawbacks of being a Pioneer. **Defending market position**: Strategies to defend market position- ignoring competitors' action, repositioning the existing offer- repositioning to increase value for current customers, repositioning to attract new customers.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group C: Human Resource Electives

1. Finance for HR Professionals and Compensation Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Compensation Plans and HR Professionals	15
2	Incentives and Wages	15
3	Compensation to Special Groups and Recent Trends	15
4	Legal and Ethical issues in Compensation	15
	Total	**60**

Objectives

SN	Objectives
1	To orient HR professionals with financial concepts to enable them to make prudent HR decisions
2	To understand the various compensation plans
3	To study the issues related to compensation management and understand the legal framework of compensation management

SN	Modules/ Units
1	**Compensation Plans and HR Professionals**
	• Meaning, Objectives of Compensation Plans, Role of HR Professionals in Compensation Plans, Types of Compensation: Financial and non-financial, Factors Influencing Compensation • Compensation Tools: Job based and Skill based, Models: Distributive Justice Model and Labour Market Model, Dimensions of Compensation • 3 Ps Compensation Concept, Benefits of Compensation: Personal, Health and Safety, Welfare, Social Security • Pay Structure: Meaning, Features, Factors, Designing the Compensation System, Compensation Scenario in India.
2	**Incentives and Wages**
	• Incentive Plans – Meaning and Types: Piecework, Team, Incentives for Managers and Executives, Salespeople, Merit pay, Scanlon Pay, Profit Sharing Plan, ESOP, Gain Sharing, Earning at Risk plan, Technology and Incentives. Prerequisites of an Effective Incentive System • Wage Differentials: Concepts, Factors contributing to Wage Differentials, Types of Wage Differentials, Importance of Wage Differentials, Elements of a Good Wage Plan. • Theories of Wages: Subsistence Theory, Wage Fund Theory, Marginal Productivity Theory, Residual Claimant Theory, Bargaining Theory.
3	**Compensation to Special Groups and Recent Trends**
	• Compensation for Special Groups: Team Based pay, Remunerating Professionals, Contract Employees, Corporate Directors, CEOs, Expatriates and Executives. • Human Resource Accounting – Meaning, Features, Objectives and Methods • Recent Trends: Golden Parachutes, e-Compensation, Salary Progression Curve, Competency and Skill based, Broad banding and New Pay, Cafeteria approach – Features, Advantages and Disadvantages.
4	**Legal and Ethical issues in Compensation**
	• Legal Framework of Compensation in India: Wage Policy in India, Payment of Bonus Act 1965, Equal Remuneration Act 1976, Payment of Wages Act 1936, Payment of Gratuity Act 1972, Employee Compensation Act 1923, Employees Provident Funds and Miscellaneous Provision Act 1952. • Pay Commissions, Wage Boards, Adjudication, Legal considerations, COBRA requirement, Pay Restructuring in Mergers and Acquisitions, Current Issues and Challenges in Compensation Management, Ethics in Compensation Management.

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Elective Courses (EC)

Group C: Human Resource Electives

2. Strategic Human Resource Management and HR Policies

Modules at a Glance

SN	Modules	No. of Lectures
1	SHRM - An Overview	15
2	HR Strategies	15
3	HR Policies	15
4	Recent Trends in SHRM	15
	Total	**60**

Objectives

SN	Objectives
1	To understand human resource management from a strategic perspective
2	To link the HRM functions to corporate strategies in order to understand HR as a strategic resource
3	To understand the relationship between strategic human resource management and organizational performance
4	To apply the theories and concepts relevant to strategic human resource management in contemporary organizations
5	To understand the purpose and process of developing Human Resource Policies

SN	Modules/ Units
1	**SHRM - An Overview**
	• Strategic Human Resource Management (SHRM) – Meaning, Features, Evolution, Objectives, Advantages, Barriers to SHRM, SHRM v/s Traditional HRM, Steps in SHRM, Roles in SHRM - Top Management, Front-line Management, HR, Changing Role of HR Professionals, Models of SHRM – High Performance Working Model, High Commitment Management Model, High Involvement Management Model • HR Environment –Environmental trends and HR Challenges • Linking SHRM and Business Performance
2	**HR Strategies**
	• Developing HR Strategies to Support Organisational Strategies, Resourcing Strategy – Meaning and Objectives, Strategic HR Planning – Meaning, Advantages, Interaction between Strategic Planning and HRP, Managing HR Surplus and Shortages, Strategic Recruitment and Selection – Meaning and Need, Strategic Human Resource Development – Meaning, Advantages and Process, Strategic Compensation as a Competitive Advantage, Rewards Strategies – Meaning, Importance, Employee Relations Strategy, Retention Strategies, Strategies for Enhancing Employee Work Performance
3	**HR Policies**
	• Human Resource Policies – Meaning, Features, Purpose of HR Policies, Process of Developing HR Policies, Factors affecting HR Policies, Areas of HR Policies in Organisation, Requisites of a Sound HR Policies – Recruitment, Selection, Training and Development, Performance Appraisal, Compensation, Promotion, Outsourcing, Retrenchment, Barriers to Effective Implementation of HR Policies and Ways to Overcome These Barriers, Need for Reviewing and Updating HR Policies, Importance of Strategic HR Policies to Maintain Workplace Harmony
4	**Recent Trends in SHRM**
	• i.e. Mentoring • Employee Engagement – Meaning, Factors Influencing Employee Engagement, Strategies for Enhancing Employee Engagement • Contemporary Approaches to HR Evaluation – Balance Score Card, HR Score Card, Benchmarking and Business Excellence Model • Competency based HRM – Meaning, Types of Competencies, Benefits of Competencies for Effective Execution of HRM Functions. • Human Capital Management –Meaning and Role • New Approaches to Recruitment – Employer Branding, Special Event Recruiting, Contest Recruitment, e - Recruitment • Strategic International Human Resource Management – Meaning and Features, International SHRM Strategic Issues, Approaches to Strategic International HRM.

Elective Courses (EC)

Group C: Human Resource Electives

3. Performance Management and Career Planning

Modules at a Glance

SN	Modules	No. of Lectures
1	Performance Management – An Overview	15
2	Performance Management Process	15
3	Ethics, Under Performance and Key Issues in Performance Management	15
4	Career Planning and Development	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of performance management in organizations
2	To review performance appraisal systems
3	To understand the significance of career planning and practices

SN	Modules/ Units
1	**Performance Management – An Overview**
	• Performance Management– Meaning, Features, Components of Performance Management, Evolution, Objectives, Need and Importance, Scope, Performance Management Process, Pre-Requisites of Performance Management, Linkage of Performance Management with other HR functions, Performance Management and Performance Appraisal, Performance Management Cycle • Best Practices in Performance Management, Future of Performance Management. • Role of Technology in Performance Management
2	**Performance Management Process**
	• Performance Planning – Meaning, Objectives, Steps for Setting Performance Criteria, Performance Benchmarking • Performance Managing – Meaning, Objectives, Process • Performance Appraisal – Meaning, Approaches of Performance Appraisal – Trait Approach, Behaviour Approach, Result Approach • Performance Monitoring–Meaning, Objectives and Process • Performance Management Implementation – Strategies for Effective Implementation of Performance Management • Linking Performance Management to Compensation • Concept of High Performance Teams
3	**Ethics, Under Performance and Key Issues in Performance Management**
	• Ethical Performance Management - Meaning, Principles, Significance of Ethics in Performance Management, Ethical Issues in Performance Management, Code of Ethics in Performance Management, Building Ethical Performance Culture, Future Implications of Ethics in Performance Management • Under Performers and Approaches to Manage Under Performers, Retraining • Key Issues and Challenges in Performance Management • Potential Appraisal: Steps, Advantages and Limitations. • Pay Criteria -Performance related pay, Competence related pay, Team based pay, Contribution related pay.
4	**Career Planning and Development**
	• Career Planning - Meaning, Objectives, Benefits and Limitations, Steps in Career Planning, Factors affecting Individual Career Planning, Role of Mentor in Career Planning, Requisites of Effective Career Planning • Career Development – Meaning, Role of employer and employee in Career Development, Career Development Initiatives • Role of Technology in Career Planning and Development • Career Models – Pyramidal Model, Obsolescence Model, Japanese Career Model • New Organizational Structures and Changing Career Patterns

Elective Courses (EC)

Group C: Human Resource Electives

4. Industrial Relations

Modules at a Glance

SN	Modules	No. of Lectures
1	Industrial Relations- An overview	15
2	Industrial Disputes	15
3	Trade Unions and Collective Bargaining	15
4	Industrial Relations Related Laws in India	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of performance management in organizations
2	To review performance appraisal systems
3	To understand the significance of career planning and practices

SN	Modules/ Units
1	**Industrial Relations- An overview**
	• Meaning, Objectives, Characteristics of a good Industrial Relations System/Principles of a good IR/Essentials of good IR, Scope, Significance/Need and Importance of IR, Major Stakeholders of IR, Evolution of IR in India, Factors affecting IR, Role of State, Employers and Unions in IR, Changing Dimensions of IR in India, Impact of Liberalisation, Privatisation and Globalisation on Industrial Relations, Issues and Challenges of industrial relations in India
2	**Industrial Disputes**
	a) Industrial Disputes: • Meaning of Industrial Dispute, Causes, Forms/Types, Consequences/Effects, Methods of Settling Industrial Disputes (Arbitration, Joint Consultations, Works Committee, Conciliation, Adjudication etc) • Concepts Related to Industrial Disputes (Relevant Examples): Strike, Layoff, Lockout, Retrenchment **b) Employee Discipline:** • Meaning, Determinants, Causes of Indiscipline, Code of Discipline and its Enforcement. **c) Grievance Handling:** • Meaning of Grievances, Causes of Grievances, Guidelines for Grievance Handling, Grievance Redressal Procedure in India. **d) Workers' Participation in Management:** • Meaning and Types with Respect to India
3	**Trade Unions and Collective Bargaining**
	a) Trade Unions: • Meaning, Features, Objectives, Role of Trade Unions, Functions/Activities, Types, Evolution of Trade Unions across Globe, Evolution of Trade Unions in India, Structure of Trade Unions in India, Recognition of Trade Unions, Rights and Privileges of Registered Trade Unions, Impact of Globalisation on Trade Unions in India, Central Organisations of Indian Trade Unions : INTUC, AITUC, HMS,UTUC, Problems of Trade Unions in India. **b) Collective Bargaining:** • Meaning, Features, Importance, Scope, Collective Bargaining Process, Prerequisites of Collective Bargaining, Types of Collective Bargaining Contracts, Levels of Collective Bargaining, Growth of Collective Bargaining in India, Obstacles to Collective Bargaining in India.

SN	Modules/ Units
4	**Industrial Relations Related Laws in India**
	• Role of Judiciary in Industrial Relations: Labour Court, Industrial Tribunal, National Tribunal • The Trade Unions Act, 1926; • The Industrial Employment (Standing Orders) Act, 1946; • The Industrial Disputes Act, 1947; • The Factories' Act, 1948 • The Minimum Wages Act, 1948

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Elective Courses (EC)

Group C:Human Resource Electives

5. Talent & Competency Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Talent Management	15
2	Talent Management System	15
3	Contemporary Issues and Current Trends in Talent Management	15
4	Competency Management and Competency Mapping	15
Total		**60**

Objectives

SN	Objectives
01	To understand key talent management & competency management concepts
02	To understand the concept and importance of competency mapping
03	To understand the role of talent management and competency management in building sustainable competitive advantage to an organization
04	To know the ethical and legal obligations associated with talent management

Sr. No.	Modules / Units
1	**Introduction to Talent Management**
	• Talent Management – Meaning, History, Scope of Talent Management, Need of Talent Management • Benefits and Limitations of Talent Management • Principles of Talent Management • Source of Talent Management • Talent Gap – Meaning, Strategies to Fill Gaps • The Talent Value Chain • Role of HR in Talent Management • Role of Talent Management in building Sustainable Competitive Advantage to an Organization
2	**Talent Management System**
	• Talent Management System – Meaning, Key Elements of Talent Management System • Critical Success Factors to Create Talent Management System • Building Blocks for Talent Management - Introduction, Effective Talent Management System, Building Blocks of Effective Talent Management System • Life Cycle of Talent Management - Meaning, Steps in Talent Management Process, Importance of Talent Management Process, Essentials of Talent Management Process • Approaches to Talent Management • Talent Management Strategy – Meaning, Developing a Talent Management Strategy, Mapping Business Strategies and Talent Management Strategies • Talent Management and Succession Planning
3	**Contemporary Issues and Current Trends in Talent Management**
	• Role of Information Technology in Effective Talent Management Systems, Talent Management Information System, Creating Business Value through Information Technology, Five Steps to a Talent Management Information Strategy • Contemporary Talent Management Issues, Talent Management Challenges • Current Trends in Talent Management • Best Practices of Talent Management • Ethical and Legal Obligations Associated with Talent Management • Talent Management in India
4	**Competency Management and Competency Mapping**
	• Concept of Competency and Competence, Competence v/s Competency • Types of Competencies, Benefits and Limitations of implementing competencies • Iceberg Model of Competency • Competency Management – Meaning, Features and Objectives • Benefits and Challenges of Competency Management • Competency Development – Meaning, Process • Competency Mapping - Meaning, Features, Need and importance of competency mapping • Methods of Competency Mapping, Steps in Competency Mapping

Elective Courses (EC)

Group C:Human Resource Electives

6. Stress Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Understanding Stress	15
2	Managing Stress – I	15
3	Managing Stress – II	15
4	Stress Management Leading to Success	15
Total		**60**

Objectives

SN	Objectives
01	To understand the nature and causes of stress in organizations
02	To familiarize the learners with the stress prevention mechanism
03	To understand the strategies that help cope with stress
04	To be able to apply stress management principles in order to achieve high levels of performance
05	To enable to learners to adopt effective strategies, plans and techniques to deal with stress

Sr. No.	Modules / Units
1	**Understanding Stress**
	• Stress – concept, features, types of stress • Relation between Stressors and Stress • Potential Sources of Stress – Environmental, Organizational and Individual • Consequences of Stress – Physiological, Psychological and Behavioural Symptoms • Stress at work place – Meaning, Reasons • Impact of Stress on Performance • Work Stress Model • Burnout – Concept • Stress v/s Burnout
2	**Managing Stress – I**
	• Pre-requisites of Stress-free Life • Anxiety - Meaning, Mechanisms to cope up with anxiety • Relaxation - Concept and Techniques • Time Management - Meaning, Importance of Time Management • Approaches to Time Management • Stress Management - Concept, Benefits • Managing Stress at Individual level • Role of Organization in Managing Stress/ Stress Management Techniques • Approaches to Manage Stress - Action oriented, Emotion oriented, Acceptance oriented.
3	**Managing Stress – II**
	• Models of Stress Management - Transactional Model, Health Realization/ Innate Health Model • General Adaption Syndrome (GAS) - Concept, Stages • Measurement of Stress Reaction - The Physiological Response, The Cognitive Response, The Behavioural Response. • Stress prevention mechanism - Stress management through mind control and purification theory and practice of yoga education. • Stress management interventions: primary, secondary, tertiary. • Meditation – Meaning, Importance • Role of Pranayama, Mantras, Nutrition, Music, Non-violence in stress control
4	**Stress Management Leading to Success**
	• Eustress – Concept, Factors affecting Eustress • Stress Management Therapy - Concept, Benefits • Stress Counselling - Concept • Value education for stress management • Stress and New Technology • Stress Audit Process • Assessment of Stress - Tools and Methods • Future of Stress Management

Core Course (CC)

5. Logistics and Supply Chain Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Overview of Logistics and Supply Chain Management	15
2	Elements of Logistics Mix	15
3	Inventory Management, Logistics Costing, Performance Management and Logistical Network Analysis	15
4	Recent Trends in Logistics and Supply Chain Management	15
	Total	**60**

Objectives

SN	Objectives
1	To provide students with basic understanding of concepts of logistics and supply chain management
2	To introduce students to the key activities performed by the logistics function
3	To provide an insight in to the nature of supply chain, its functions and supply chain systems
4	To understand global trends in logistics and supply chain management

SN	Modules/ Units
1	**Overview of Logistics and Supply Chain Management**
	a) Introduction to Logistics Management • Meaning, Basic Concepts of Logistics- Logistical Performance Cycle, Inbound Logistics, Inprocess Logistics, Outbound Logistics, Logistical Competency, Integrated Logistics , Reverse Logistics and Green Logistics • Objectives of Logistics, Importance of Logistics, Scope of Logistics, Logistical Functions/Logistic Mix, Changing Logistics Environment **b) Introduction to Supply Chain Management** • Meaning, Objectives, Functions, Participants of Supply Chain, Role of Logistics in Supply Chain, Comparison between Logistics and Supply Chain Management, Channel Management and Channel Integration **c) Customer Service: Key Element of Logistics** • Meaning of Customer Service, Objectives, Elements, Levels of customer service, Rights of Customers **d) Demand Forecasting** • Meaning, Objectives ,Approaches to Forecasting, Forecasting Methods, Forecasting Techniques, (Numerical on Simple Moving Average, Weighted Moving Average)
2	**Elements of Logistics Mix**
	a) Transportation • Introduction, Principles and Participants in Transportation, Transport Functionality, Factors Influencing Transportation Decisions, Modes of Transportation- Railways, Roadways, Airways, Waterways, Ropeways, Pipeline, Transportation Infrastructure, Intermodal Transportation **b) Warehousing** • Introduction, Warehouse Functionality, Benefits of Warehousing, Warehouse Operating Principles, Types of Warehouses, Warehousing Strategies, Factors affecting Warehousing **c) Materials Handling** • Meaning, Objectives, Principles of Materials Handling, Systems of Materials Handling, Equipments used for Materials Handling, Factors affecting Materials Handling Equipments **d) Packaging** • Introduction, Objectives of Packaging, Functions/Benefits of Packaging, Design Considerations in Packaging, Types of Packaging Material, Packaging Costs

SN	Modules/ Units
3	**Inventory Management, Logistics Costing, Performance Management and Logistical Network Analysis**
	a) Inventory Management • Meaning, Objectives, Functions, Importance, Techniques of Inventory Management (Numericals - EOQ and Reorder levels) **b) Logistics Costing** • Meaning, Total Cost Approach, Activity Based Costing, Mission Based Costing **c) Performance Measurement in Supply Chain** • Meaning, Objectives of Performance Measurement, Types of Performance Measurement, Dimensions of Performance Measurement, Characteristics of Ideal Measurement System **d) Logistical Network Analysis** • Meaning, Objectives, Importance, Scope, RORO/LASH
4	**Recent Trends in Logistics and Supply Chain Management**
	a) Information Technology in Logistics • Introduction, Objectives, Role of Information Technology in Logistics and Supply Chain Management, Logistical Information System, Principles of Logistical Information System, Types of Logistical Information System, Logistical Information Functionality, Information Technology Infrastructure **b) Modern Logistics Infrastructure** • Golden Quadrilateral, Logistics Parks, Deep Water Ports, Dedicated Freight Corridor, Inland Container Depots/Container Freight Stations, Maritime Logistics, Double Stack Containers/Unit Trains **c) Logistics Outsourcing** • Meaning, Objectives, Benefits/Advantages of Outsourcing, Third Party Logistics Provider, Fourth Party Logistics Provider, Drawbacks of Outsourcing, Selection of Logistics Service Provider, Outsourcing-Value Proposition **d) Logistics in the Global Environment** • Managing the Global Supply Chain, Impact of Globalization on Logistics and Supply Chain Management, Global Logistics Trends, Global Issues and Challenges in Logistics and Supply Chain Management

Ability Enhancement Courses (AEC)

6. Corporate Communication & Public Relations

Modules at a Glance

SN	Modules	No. of Lectures
1	Foundation of Corporate Communication	15
2	Understanding Public Relations	15
3	Functions of Corporate Communication and Public Relations	15
4	Emerging Technology in Corporate Communication and Public Relations	15
	Total	**60**

Objectives

SN	Objectives
1	To provide the students with basic understanding of the concepts of corporate communication and public relations
2	To introduce the various elements of corporate communication and consider their roles in managing organizations
3	To examine how various elements of corporate communication must be coordinated to communicate effectively
4	To develop critical understanding of the different practices associated with corporate communication

SN	Modules/ Units
1	**Foundation of Corporate Communication**
	a) Corporate Communication: Scope and Relevance • Introduction, Meaning, Scope, Corporate Communication in India, Need/ Relevance of Corporate Communication in Contemporary Scenario **b) Keys concept in Corporate Communication** • Corporate Identity: Meaning and Features, Corporate Image: Meaning, Factors Influencing Corporate Image, Corporate Reputation: Meaning, Advantages of Good Corporate Reputation **c) Ethics and Law in Corporate Communication** • Importance of Ethics in Corporate Communication, Corporate Communication and Professional Code of Ethics, Mass Media Laws: Defamation, Invasion of Privacy, Copyright Act, Digital Piracy, RTI
2	**Understanding Public Relations**
	a) Fundamental of Public Relations: • Introduction, Meaning, Essentials of Public Relations, Objectives of Public Relations, Scope of Public Relations, Significance of Public Relations in Business **b) Emergence of Public Relations:** • Tracing Growth of Public Relations, Public Relations in India, Reasons for Emerging International Public Relations **c) Public Relations Environment:** • Introduction, Social and Cultural Issues, Economic Issues, Political Issues, Legal Issues **d) Theories used in Public Relations:** • Systems Theory, Situational Theory, Social Exchange Theory, Diffusion Theory
3	**Functions of Corporate Communication and Public Relations**
	a) Media Relations: • Introduction, Importance of Media Relations, Sources of Media Information, Building Effective Media Relations, Principles of Good Media Relations **b) Employee Communication:** • Introduction, Sources of Employee Communications, Organizing Employee Communications, Benefits of Good Employee Communications, Steps in Implementing An Effective Employee Communications Programme, Role of Management in Employee Communications **c) Crisis Communication:** • Introduction, Impact of Crisis, Role of Communication in Crisis, Guidelines for Handling Crisis, Trust Building **d) Financial Communication:** • Introduction, Tracing the Growth of Financial Communication in India, Audiences for Financial Communication, Financial Advertising

SN	Modules/ Units
4	**Emerging Technology in Corporate Communication and Public Relations**
	a) Contribution of Technology to Corporate Communication • Introduction, Today's Communication Technology, Importance of Technology to Corporate Communication, Functions of Communication Technology in Corporate Communication, Types of Communication Technology, New Media: Web Conferencing, Really Simple Syndication (RSS) **b) Information Technology in Corporate Communication** • Introduction, E-media Relations, E-internal Communication, E-brand Identity and Company Reputation **c) Corporate Blogging** • Introduction, Defining Corporate Blogging, Characteristics of a Blog, Types of Corporate Blogs, Role of Corporate Blogs, Making a Business Blog

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Investment Analysis & Portfolio Management
• *Kevin. S, Security Analysis and Portfolio Management* • *Donald Fischer & Ronald Jordon, Security Analysis & Portfolio Management* • *Prasanna Chandra, Security Analysis & Portfolio Management* • *Sudhindhra Bhatt, Security Analysis and Portfolio Management.*
Commodity & Derivatives Market
• *John C. Hull & Basu -Futures, options & other derivatives* • *Robert McDonald, Derivatives market, Pearson education* • *John Hull, Fundamentals of futures & options* • *Ankit Gala & Jitendra Gala, Guide to Indian Commodity market, Buzzingstock publishing house* • *K.Sasidharan & Alex K. Mathews, Option trading – bull market strategies, McGraw Hill publication* • *Niti Chatnani, Commodity markets, McGraw Hill Publication* • *S.Kevin, Commodities & financial derivatives, PHI learning Pvt ltd* • *Suni K Parmeswaran, Futures & options, McGraw Hill*
Wealth Management
• *Harold Evensky, Wealth Management, McGraw Hill Publication* • *NCFM, CFP, IIBF, etc, Wealth Management modules* • *Harold Evensky, The new wealth Management, CFA Institute Investment Series Publication*
Financial Accounting
• *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.* • *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.* • *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi* • *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers* • *Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition)*
Risk Management
• *Thomas S. Coleman, Quantitative Risk Management : A Practical Guide to Financial Risk* • *Steve Peterson, Investment Theory and Risk Management* • *Risk Management , M/s Macmillan India Limited* • *Theory & Practice of Treasury Risk Management: M/s Taxman Publications Ltd.* • *Sim Segal, Corporate Value of ERM* • *Dr. G Kotreshwar, Risk Management : Insurance and Derivatives, Himalaya Publishing House*
Direct Taxes
• *Income Tax Act- Bare act* • *Dr V K Singhania-Direct Tax Law & Practice*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Services Marketing
• *Valarie A. Zeuhaml &Mary Jo Bitner, Service Marketing, Tata McgrawHill, 6th Edition* • *Christoper Lovelock, JochenWirtz, Jayanta Chatterjee, Service Marketing People, Technology, Strategy – A South Asian Perspective , Pearson Education, 7th Edition* • *Ramneek Kapoor, Justin Paul &Biplab Halder, Services Marketing-Concepts And Practices, McgrawHill, 2011* • *Harsh V.Verma, Services Marketing Text &Cases, Pearson Education, 2nd Edition* • *K. Ram Mohan Rao, Services Marketing, Pearson Education, 2nd Edition, 2011* • *C. Bhattacharjee, Service Sector Management, Jaico Publishing House, Mumbai, 2008* • *Govind Apte, Services Marketing, Oxford Press, 2004*
E-Commerce & Digital Marketing
• *D Nidhi ,E-Commerce Concepts and Applications, ,Edn 2011, International Book house P.ltd* • *Bajaj Kamlesh K,E-Commerce- The cutting edge of Business* • *Whiteley David, E-Commerce Technologies and Apllications-2013* • *E-Business & E-Commerce Management 3rd Ed, Pearson Education* • *Kalokota & Robinson,E-Business 2.0 Road map for Success, Pearson Education* • *Elias M. Awad ,Electronic Commerce, 3rd Edition, Pearson Education* • *Erfan Turban et.al ,Electronic Commerce - A Managerial Perspective, Pearson Education* • *R. Kalokota, Andrew V. Winston, Electronic Commerce - A Manger's Guide, Pearson Education* • *Tripathi, E-Commerce, Jaico Publishing House, Mumbai, Edn. 2010.*
Sales & Distribution Management
• *A. Nag, Sales And Distribution Management, Mcgraw Hill, 2013 Edition* • *Richard R. Still, Edward W. Cundiff, Norman A.P. Govoni, Sales Management, Pearson Education, 5th Edition* • *Krishna K. Havaldar, Vasant M. Cavale, Sales And Distribution Management – Text & Cases, Mcgraw Hill Education, 2nd Edition, 2011* • *Dr.Matin Khan, Sakes And Distribution Management, Excel Books, 1st Edition* • *Kotler & Armstrong, Principles Of Marketing – South Asian Perspective, Pearson Education, 13th Edition*
Customer Relationship Management
• *Baran Roger J. & Robert J. Galka (2014), Customer Relationship Management: The Foundation of Contemporary Marketing Strategy, Routledge Taylor & Francis Group.* • *Anderrson Kristin and Carol Kerr (2002), Customer Relationship Management, Tata McGraw-Hill.* • *Ed Peelen, Customer Relationship Management, Pearson Education* • *Bhasin Jaspreet Kaur (2012), Customer Relationship Management, Dreamtech Press.* • *Judith W. Kincaid (2006), Customer Relationship Management Getting it Right, Pearson Education.* • *Jill Dyche' (2007), The CTM Handbook: A Business Guide to Customer Relationship Management, Pearson Education.* • *Valarie A Zeithmal, Mary Jo Bitner, Dwayne D Gremler and Ajay Pandit (2010), Services Marketing Integrating Customer Focus Across the Firm, Tata McGraw Hill.* • *Urvashi Makkar and Harinder Kumar Makkar (2013), CRM Customer Relationship Management, McGraw Hill Education.*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Industrial Marketing
• *Industrial Marketing: A practices in India by S.L. Gupta, Sanjeev Bahadur, and Hitesh Gupta: Excel Books (First Edition)* • *Industrial Marketing by Hory, Sankar and Mukerjee by Excel Books (First Edition)* • *Industrial Marketing: A Process of Creating and Maintaining Exchange by Krishnamacharyulu , Lalitha R, Publisher: Jaico Book House* • *Industrial Marketing by Ghosh, Publisher: Oxford University Press* • *Industrial Marketing by K. K. Havaldar, Publisher: Tata McGraw-Hill Publishing Company limited* • *Industrial Marketing Management by Govindarajan, Publisher: Vikas Publishing House Pvt. Ltd.* • *Industrial Marketing by Phadtare M. T, Publisher: Prentice Hall of India Private Limited*
Strategic Marketing Management
• *Alexander Chernav, Strategic management, Eight Edition ,June 2014,Cerebellum press* • *Richardn m.s Wilson, Collin Gilligan, Strategic marketing management,3rd edition, Elsevier* • *Subhash .C.Jain, Marketing Strategy, India edition, cengage learning* • *Sharan Jagpal, Marketng strategy, oxford university press* • *David A. Aker, Startegic Market Management, John Wiley & Sons, 2001* • *Philip Kotler, Kevin Keller, Abraham Koshy, Mithileshwar Jha, Marketing Management, Pearson, 13th edition*
Finance for HR Professionals & Compensation Management
• *Gary Dessler, Biju Varkkey, Human Resource Management, Pearson, 12th edition* • *Mick Marchington and Adrian Wilkinson, Human Resource Management at Work – People Management and Development- IIIrd Edition,* • *Shashi K. Gupta, Rosy Joshi, Human Resource Management, Kalyani Publishers* • *Gary Dessler, Framework for HRM, 3rd Edition, Pearson Education* • *Ashwathappa, Human Resource Management* • *Luis.R.Gomez, David.B.Balkin, Robert. L. Cardy, Managing Human Resources – IVth Edition, (Eastern Economy Edition)* • *Milkovich, George T, Newman J.M, Compensation, Tata Mc Graw Hill.* • *Henderson, R.O, Compensation Management, Pearson Edition .* • *BD Singh, Compensation and Reward Management, Excel Books.* • *Karen Permant, Joe Knight, Financial Intelligence for HR Professionals* • *Sharma A.M, Understanding Wage system, Himalaya Publishing House, Mumbai.*
Strategic Human Resource Management & HR Policies
• *Michael Armstrong, Angela Baron, Handbook of Strategic HRM, Jaico publishing House* • *Armstrong M.-Strategic Human Resource Management_ A Guide to Action (2006)* • *Strategic Human Resource Management, Tanuja Agarwal* • *Strategic Human Resource Management, Jeffrey A. Mello* • *Gary Dessler, Human Resource Management, PHI, New Delhi, 2003* • *Charles R. Greer, Strategic Human Resource Management, Pearson Education, 2003* • *Rajib Lochan Dhar, Strategic Human Resource Management, Excel Books, NewDelhi, 2008*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Performance Management & Career Planning
• *Shashi K. Gupta, Rosy Joshi, Human Resource Management, Kalyani Publishers* • *Armstrong, Michael, Baron, Performance Management, Jaico Publishers* • *Robert Bacal, Performance Management, McGraw-Hill Education, 2007* • *T.V. Rao, Performance Management and Appraisal Systems: HR Tools for Global Competitiveness, Response Books, New Delhi, 2007.* • *Davinder Sharma, Performance Appraisal and Management, Himalaya Publishing House.* • *A.S. Kohli, T.Deb, Performance Management, Oxford University Press.* • *Herman Agnuinis, Performance Management, Second edition, Pearson Education.*
Industrial Relations
• *Davar R S: Personnel Management and Industrial Relations in India* • *Mamoria C B: Industrial Relations* • *Charles Myeres: Industrial Relations in India* • *Arun Monappa: Industrial Relations* • *Sharma A M : Industrial Relations* • *Ahuja K K : Industrial Relations Theory and Practice* • *C.S. Vekata Ratnam : Globalisation and Labour-Management Relations* • *Srivastava K D: Laws relating to Trade Unions and Unfair Labour Practice* • *A.M.Sarma: A conceptual and legal frame work* • *Farnham, David and John Pimlot, Understanding Industrial Relations, London: Cassell* • *Ratna Sen, Industrial Relations in India, Shifting Paradigms, Macmillan India Ltd., New Delhi, 2009.* • *C.S.Venkata Ratnam, Globalisation and Labour Management Relations, Response Books, 2010.* • *Srivastava, Industrial Relations and Labour Laws, Vikas, 6 th edition, 2012.* • *P.R.N Sinha, Indu Bala Sinha, Seema Priyardarshini Shekhar. Industrial Relations, Trade Unions and Labour Legislation.* • *Srivastava, S. C. :Industrial Relations and Labour Laws, Vikas Publishing House Pvt Ltd, New Delhi.* • *Sinha, P.R.N., Sinha, Indu Bala and Shekhar, Seema Priyadarshini Industrial Relations, Trade Unions and Labour Legislation, Pearson Education, New Delhi.*
Talent & Competency Management
• *Dessler Gary, A Framework for Human Resource Management, Pearson Publication, 7th Edition.* • *Dessler Gary, Varkkey Biju, Fundamentals of Human Resource Management, Pearson Publication,14th Edition Rao VSP, Human Resource Management, Vikas Publishing, New Delhi* • *K. Aswathappa – Human Resources and Personnel Management, Tata McGraw Hill* • *Robbins SP, Timothy A, Judge & Sanghi Seema, Organizational Behaviour, Pearson Education, New Delhi,13th edition.* • *Lance A Berger, Dorothy R Berger, Talent Management Hand Book, McGraw Hill* • *Hasan, M., Singh, A. K., Dhamija, S. (eds.), Talent management in India: Challenges and opportunities, Atlantic Publication* • *Seema Sanghi: The Handbook of Competency Mapping: Understanding, Designing and Implementing Competency Models in Organizations, Sage Publishing*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Stress Management
• *Stress management by Susan R. Gregson* • *Stress management: Leading to Success By B Hiriyappa* • *Strategic Stress Management: An Organizational Approach by V. Sutherland, C. Cooper* • *Stress Management: An Integrated Approach to Therapy by Dorothy H.G. Cotton* • *Stress Management by A. K. Rai* • *Organizational Stress Management: A Strategic Approach By A. Weinberg, V. Sutherland, C. Cooper* • *Stress Management by Dr. Nivedita*
Logistics and Supply Chain Management
• *David Simchi Levi, Philip Kaminshy, Edith Simchi Levi, Designing & Managing the Supply Chain - Concepts, Strategies and Case Studies Logistics* • *Donald Waters, An Introduction to Supply Chain* • *Martin Christopher, Logistics & Supply Chain Management - Strategies for Reducing Cost & Improving Services* • *Vinod Sople, Logistic Management - The Supply Chain Imperative* • *Donald J Bowersox & David J Closs, Logistic Management - The Integrated Supply Chain Process* • *Alan Rushton, Phil Croucher, Peter Baker, The Handbook of Logistics and Distribution Management- Understanding the Supply Chain* • *Donald J. Bowersox & David J Closs, Logistical Management-The Integrated Supply Chain Process, McGraw Hill Education* • *Ronald H Ballou & Samir K Srivastava, Business Logistics/ Supply Chain Management- Pearson* • *Donald J Bowersox, David J Closs & M Bixby Cooper, Supply Chain Logistics Management- The McGraw Hill Companies*
Corporate Communication & Public Relations
• *Richard R. Dolphin, The Fundamentals of Corporate Communication* • *Joep Cornelissen, Corporate Communications: Theory and Practice* • *James L.Horton,Integrating Corporate Communication:The Cost Effective Use of Message & Medium* • *Sandra Oliver, Handbook of Corporate Communication & Public Relations A Cross-Cultural Approach* • *Rosella Gambetti, Stephen Quigley, Managing Corporate Communication* • *Joseph Fernandez, Corporate Communications: A 21st Century Primer* • *C.B.M. van Riel, Chris Blackburn, Principles of Corporate Communication* • *Jaishri Jethwaney, Corporate Communication: Principles and Practice*

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester VI

No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***	
1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	***Core Course (CC)***	
5	Operation Research	**04**
3	***Ability Enhancement Course (AEC)***	
6	Project Work	**04**
	Total Credits	**20**

***** List of group of Elective Courses(EC)for Semester VI (Any Four)***	
Group A: Finance Electives (Any four Courses)	
1	International Finance
2	Innovative Financial Services
3	Project Management
4	Strategic Financial Management
5	Financing Rural Development
6	Indirect Taxes
Group B:Marketing Electives (Any four Courses)	
1	Brand Management
2	Retail Management
3	International Marketing
4	Media Planning & Management
5	Sports Marketing
6	Marketing of Non Profit Organisation
Group C: Human Resource Electives (Any four Courses)	
1	HRM in Global Perspective
2	Organisational Development
3	HRM in Service Sector Management
4	Workforce Diversity
5	Human Resource Accounting & Audit
6	Indian Ethos in Management

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

1. International Finance

Modules at a Glance

SN	Modules	No. of Lectures
1	Fundamentals of International Finance	15
2	Foreign Exchange Markets, Exchange Rate Determination & Currency Derivatives	15
3	World Financial Markets & Institutions & Risks	15
4	Foreign Exchange Risk, Appraisal & Tax Management	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to familiarize the student with the fundamental aspects of various issues associated with International Finance
2	The course aims to give a comprehensive overview of International Finance as a separate area in International Business
3	To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of International Finance in this Globalised Market

SN	Modules/ Units
1	**Fundamentals of International Finance**
	a) Introduction to International Finance: • Meaning/ Importance of International Finance, Scope of International Finance, Globalization of the World Economy, Goals of International Finance, The Emerging Challenges in International Finance **b) Balance of Payment:** • Introduction to Balance of Payment, Accounting Principles in Balance of Payment, Components of Balance of Payments, Balance of Payment Identity Indian Heritage in Business, Management, Production and Consumption. **c) International Monetary Systems:** • Evolution of International Monetary System , Gold Standard System , Bretton Woods System, Flexible Exchange Rate Regimes – 1973 to Present, Current Exchange Rate Arrangements, European Monetary System, Fixed & Flexible Exchange Rate System **d) An introduction to Exchange Rates:** • Foreign Bank Note Market, Spot Foreign Exchange Market • Exchange Rate Quotations ▪ Direct & Indirect Rates ▪ Cross Currency Rates ▪ Spread & Spread % • Factors Affecting Exchange Rates
2	**Foreign Exchange Markets, Exchange Rate Determination & Currency Derivatives**
	a) Foreign Exchange Markets: • Introduction to Foreign Exchange Markets, Structure of Foreign Exchange Markets, Types of Transactions & Settlement Date, Exchange Rate Quotations & Arbitrage, Forward Quotations (Annualized Forward Margin) **b) International Parity Relationships & Foreign Exchange Rate:** • Interest Rate Parity, Purchasing Power Parity & Fishers Parity, Forecasting Exchange Rates (Efficient Market Approach, Fundamental Approach, Technical Approach, Performance of the Forecasters), Global Financial Markets & Interest Rates (Domestic & Offshore Markets, Money Market Instruments) **c) Currency & Interest Rate Futures:** • Introduction to Currency Options (Option on Spot, Futures & Futures Style Options), Futures Contracts, Markets & the Trading Process, Hedging & Speculation with Interest Rate Futures, Currency Options in India

SN	Modules/ Units
3	**World Financial Markets & Institutions & Risks**
	a) Euro Currency Bond Markets: • Introduction to Euro Currency Market, Origin of Euro Currency Market, Euro Bond Market (Deposit, Loan, Notes Market), Types of Euro Bonds, Innovation in the Euro Bond Markets, Competitive Advantages of Euro Banks, Control & Regulation of Euro Bond Market **b) International Equity Markets & Investments:** • Introduction to International Equity Market, International Equity Market Benchmarks, Risk & Return from Foreign Equity Investments, Equity Financing in the International Markets, Depository Receipts – ADR,GDR,IDR **c) International Foreign Exchange Markets:** • Meaning of International Foreign Exchange Market, FERA v/s FEMA, Scope & Significance of Foreign Exchange Markets, Role of Forex Manager, FDI v/s FPI, Role of FEDAI in Foreign Exchange Market **d) International Capital Budgeting:** • Meaning of Capital Budgeting, Capital Budgeting Decisions, Incremental Cash Flows, Cash Flows at Subsidiary and Parent Company, Repatriation of Profits, Capital Budgeting Techniques – NPV
4	**Foreign Exchange Risk, Appraisal & Tax Management**
	a) Foreign Exchange Risk Management: • Introduction to Foreign Exchange Risk Management, Types of Risk, Trade & Exchange Risk, Portfolio Management in Foreign Assets, Arbitrage & Speculation **b) International Tax Environment:** • Meaning of International Tax Environment, Objectives of Taxation, Types of Taxation, Benefits towards Parties doing Business Internationally, Tax Havens, Tax Liabilities **c) International Project Appraisal:** • Meaning of Project Appraisal, Review of Net Present Value Approach (NPV), Option Approach to Project Appraisal, Project Appraisal in the International Context, Practice of Investment Appraisal

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

2. Innovative Financial Services

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Traditional Financial Services	15
2	Issue Management and Securitization	15
3	Financial Services and its Mechanism	15
4	Consumer Finance and Credit Rating	15
	Total	**60**

Objectives

SN	Objectives
1	To familiarize the learners with the fundamental aspects of various issues associated with various Financial Services
2	To give a comprehensive overview of emerging financial services in the light of globalization
3	To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of financial services

SN	Modules/ Units
1	**Introduction to Traditional Financial Services**
	a) Financial Services: • Concept, Objectives/Functions, Characteristics, Financial Service Market, Financial Service Market Constituents, Growth of Financial Services in India, Problems in Financial Services Sector, Banking and Non-Banking Companies, Regulatory Framework **b) Factoring and Forfaiting:** • Introduction, Types of Factoring, Theoretical Framework, Factoring Cost, Advantages and Disadvantages of Factoring, Factoring in India, Factoring v/s Forfaiting, Working of Forfaiting, Benefits and Drawbacks of Forfaiting, Practical Problems. **c) Bill Discounting:** • Introduction, Framework, Bill Market Schemes, Factoring V/s Bill Discounting in Receivable Management.
2	**Issue Management and Securitization**
	a) Issue Management and Intermediaries: • Introduction, Merchant Bankers/ Lead Managers, Underwriters, Bankers to an Issue, Brokers to an Issue **b) Stock Broking:** • Introduction, Stock Brokers, SubBrokers, Foreign Brokers, Trading and Clearing/Self Clearing Members, Stock Trading (Cash and Normal) Derivative Trading **c) Securitization:** • Definition, Securitization v/s Factoring, Features of Securitization, Pass Through Certificates, Securitization Mechanism, Special Purpose Vehicle, Securitisable Assets, Benefits of Securitization, New Guidelines on Securitization
3	**Financial Services and its Mechanism**
	a) Lease and Hire-Purchase: • Meaning, Types of Lease - Finance Lease, Operating Lease, Advantages and Disadvantages of Leasing, Leasing in India, Legal Aspects of Leasing. • Definition of Hire Purchase, Hire Purchase and Installment Sale Characteristics, Hire Purchase and Leasing, Advantages of Hire Purchase, Problems of Hire Purchase. **b) Housing Finance:** • Introduction, Housing Finance Industry, Housing Finance Policy Aspect, Sources of Funds, Market of Housing Finance, Housing Finance in India- Major Issues, Housing Finance in India – Growth Factors, Housing Finance Institutions in India, National Housing Bank (NHB), Guidelines for Asset Liability Management System in HFC, Fair Trade Practice Code for HFC's, Housing Finance Agencies

SN	Modules/ Units
	c) Venture Capital: Introduction, Features of Venture Capital, Types of Venture Capital Financing Stages, Disinvestment mechanisms, Venture Capital Investment process, Indian Scenario
4	**Consumer Finance and Credit Rating**
	a) Consumer Finance: • Introduction, Sources, Types of Products, Consumer Finance Practice in India, Mechanics of Consumer Finance, Terms, Pricing, Marketing and Insurance of Consumer Finance, Consumer Credit Scoring, Case for and against Consumer Finance **b) Plastic Money:** • Growth of Plastic Money Services in India, Types of Plastic Cards- Credit card- Debit Card- Smart card- Add-on Cards, Performance of Credit Cards and Debit Cards, Benefits of Credit Cards, Dangers of Debit Cards, Prevention of Frauds and Misuse, Consumer Protection. Indian Scenario. • Smart Cards- Features, Types, Security Features and Financial Applications **c) Credit Rating:** • Meaning, Origin, Features, Advantages of Rating, Regulatory Framework, Credit Rating Agencies, Credit Rating Process, Credit Rating Symbols. Credit Rating Agencies in India, Limitations of Rating

Elective Courses (EC)

Group A: Finance Electives

3. Project Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Project Management & Project Initiation	15
2	Analyzing Project Feasibility	15
3	Budgeting, Cost & Risk Estimation in Project Management	15
4	New Dimensions in Project Management	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to familiarize the learners with the fundamental aspects of various issues associated with Project Management
2	To give a comprehensive overview of Project Management as a separate area of Management
3	To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of Project Management

SN	Modules/ Units
1	**Introduction to Project Management & Project Initiation**
	a) Introduction to Project Management: • Meaning/Definition of Project & Project Management, Classification of Projects, Why Project Management, Characteristics/Importance of Project Management, Need for Project Management (Objectives), History of Project Management **b) Organizational Structure (Project Organization):** • Meaning/Definition of Organizational Structure, Organizational Work Flow, Developing Work Integration Positions, Types of Organizational Structure, Forms of Organization, Strategic Business Units (SBU) in Project Management. **c) Project Initiation:** • **Project Selection**-Meaning of Project Selection, Importance of Project Selection, Criteria for Project Selection (Models), Types of Project Selection, Understanding Risk & Uncertainty in Project Selection • **Project Manager**-Meaning of Project Manager, Role of Project Manager, Importance of Project Manager, Role of Consultants in Project Management, Selecting Criteria for Project Manager • **Project Planning**-Importance of Project Planning, Functions of Project Planning, System Integration, Project Management Life Cycle, Conflicts & Negotiation Handling in Project Management, Planning Cycle & Master Production Scheduling
2	**Analyzing Project Feasibility**
	a) Project Feasibility Analysis: • Meaning/Definition of Project Feasibility, Importance of Project Feasibility, Scope of Project Feasibility • Types of Project Feasibility- Market Feasibility, Technical Feasibility, Financial Feasibility, Economic Viability, Operational Feasibility • SWOT Analysis (Environment Impact Assessment, Social Cost Benefit Analysis) **b) Market Analysis:** • Meaning of Market Analysis**,** Demand Forecasting**,** Product Mix Analysis**,** Customer Requirement Analysis **c) Technical Analysis:** • Meaning of Technical Analysis, Use of Various Informational Tools for Analyzing, Advancement in the Era of E- Commerce in Project Management **d) Operational Analysis:** • Meaning of Operation Management, Importance of Operation Management, Operation Strategy - Levels of Decisions, Production Planning & Control, Material Management - Work Study & Method Study, Lean Operations

SN	Modules/ Units
3	**Budgeting, Cost & Risk Estimation in Project Management**
	a) Funds Estimation in Project: • Means of Financing, Types of Financing, Sources of Finance, Government Assistance towards Project Management for Start ups, Cost Control (Operating Cycle, Budgets & Allocations), Determining Financial Needs for Projects, Impact of Leveraging on Cost of Finance **b) Risk Management in Projects:** • What is Risk, Types of Risk in Projects, Risk Management Process, Risk Analysis & Identification, Impact of Risk Handling Measures, Work break Down Structure, New Venture Valuation (Asset Based, Earnings Based, Discounted Cash flow Models) **c) Cost Benefit Analysis in Projects** • Introduction to Cost Benefit Analysis, Efficient Investment Analysis, Cash - Flow Projections, Financial Criteria for Capital Allocation, Strategic Investment Decisions
4	**New Dimensions in Project Management**
	a) Modern Development in Project Management: • Introduction to Modern Development in Project Management, Project Management Maturity Model (PMMM), Continuous Improvement, Developing Effective Procedural Documentation, Capacity Planning **b) Project Monitoring & Controlling:** • Introduction to Project Monitoring & Controlling, The Planning – Monitoring-Controlling Cycle, Computerized Project Management Information System (PMIS), Balance in Control System in Project Management, Project Auditing – Life Cycle **c) Project Termination & Solving Project Management Problems:** • Meaning of Project Termination, Reasons for Termination of Projects, Process for Terminating Projects, Strategy/ Ways to Solve Project Management Problems, Project Review & Administrative Aspects, Execution Tools for Closing of Projects

Elective Courses (EC)

Group A: Finance Electives

4. Strategic Financial Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Dividend Decision and XBRL	15
2	Capital Budgeting and Capital Rationing	15
3	Shareholder Value and Corporate Governance/ Corporate Restructuring	15
4	Financial Management in Banking Sector and Working Capital Financing	15
	Total	**60**

Objectives

SN	Objectives
1	To match the needs of current market scenario and upgrade the learner's skills and knowledge for long term sustainability
2	Changing scenario in Banking Sector and the inclination of learners towards choosing banking as a career option has made study of financial management in banking sector inevitable
3	To acquaint learners with contemporary issues related to financial management

SN	Modules/ Units
1	**Dividend Decision and XBRL**
	a) Dividend Decision: • Meaning and Forms of Dividend, Dividend-Modigliani and Miller's Approach, Walter Model, Gordon Model, Factors determining Dividend Policy, Types of Dividend Policy **b) XBRL:** • Introduction, Advantages and Disadvantages, Features and Users
2	**Capital Budgeting and Capital Rationing**
	a) Capital Budgeting: • Risk and Uncertainty in Capital Budgeting, Risk Adjusted Cut off Rate, Certainty Equivalent Method, Sensitivity Technique, Probability Technique, Standard Deviation Method, Co-efficient of Variation Method, Decision Tree Analysis, Construction of Decision Tree. **b) Capital Rationing:** • Meaning, Advantages, Disadvantages, Practical Problems
3	**Shareholder Value and Corporate Governance/Corporate Restructuring**
	a) Shareholder Value and Corporate Governance: • Financial Goals and Strategy, Shareholder Value Creation: EVA and MVA Approach, Theories of Corporate Governance, Practices of Corporate Governance in India **b) Corporate Restructuring:** • Meaning, Types, Limitations of Merger, Amalgamation, Acquisition, Takeover, Determination of Firm's Value, Effect of Merger on EPS and MPS, Pre Merger and Post Merger Impact.
4	**Financial Management in Banking Sector and Working Capital Financing**
	a) Financial Management in Banking Sector: • An Introduction, Classification of Investments, NPA & their Provisioning, Classes of Advances, Capital Adequacy Norms, Rebate on Bill Discounting, Treatment of Interest on Advances **b) Working Capital Financing:** • Maximum Permissible Bank Finance (Tandon Committee), Cost of issuing Commercial Paper and Trade Credit, Matching Approach, Aggressive Approach, Conservative Approach

Elective Courses (EC)

Group A: Finance Electives

5. Financing Rural Development

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Rural Banking	10
2	Micro Finance	15
3	MSME Finance	10
4	Final Accounts of the Banking Companies	15
5	Risk Management in Rural Finance	10
Total		**60**

Objectives

SN	Objectives
01	To acquaint the learners with the concept of rural banking
02	To give an overview of micro finance and MSME finance
03	To study the provisions of final accounts of the Banking Companies
04	To understand risk management in rural finance

Sr. No.	Modules / Units
1	**Rural Banking**
	Rural India – Demographic Features, Characteristics of Rural Society, Economic Features, Infrastructure in Rural Areas, Agriculture Economy, Rural Issues and Rural Development Policies, Sources and Pattern of agriculture in India, Trends in Agricultural Finance. Institutional Framework – Regulation of Rural Financial Services, Rural Credit Institutions, Financing Agriculture/ Allied Activities, Financing Rural Non Farm Sector, Priority Sector Lending, Rural Housing and Education Loans. Rural Banking – Financial Needs of the Poor, Role of Rural Banking, Transaction Costs, Risk Costs, Financing Poor as Bankable Opportunities Micro Credit and Self Help Groups.
2	**Micro Finance**
	Introduction – Emergence of Microfinance, Definition, Meaning and Scope, Importance and Assumptions. Lessons from International Experience. Models – Models of Microfinance across the world, Portfolio Securitization, SHG-2, National Rural Livelihood Mission, Impact of Microfinance, Impact Assessment and Monitoring, Microfinance and Poverty Assessment Tools. Financial Products and Services – Objectives, Introduction, The role of MFI – Minimalist V/s Integrated, Financial services/ products, Non – Financial Services, Designing Microfinance Models, Liquidity Management, The Revenue Model of an MFI**,** Cost, Volume and Profit Analysis, Measuring Operating Efficiency and Productivity in MFI's, Factors affecting Operating Expenses, Operating Efficiency.
3	**MSME Finance**
	Institutional Framework – Central Government, NIMSME, Indian Institute of Entrepreneurship Guwahati, NIESBUD, NSIC, Organizations under the control of State Government, SIDBI, CGTMSE, SMERA, SSI Association in India, Changing Role of MSME Associations , Policy Orientation & Resource Allocation. Financing Options & Modes – Financing MSME, Why lend to MSME Sector, Debt Finance, Equity Finance, Options for Financing MSME's, Financial Products and their Access, Existing MSME Loan Products and their Nature, Common Guidelines for lending to MSME Sector, Factoring, Credit Process, Credit Assessment, Costs and Risks specific to MSME Lending, Risk Rating, Monitoring and Review of Lending.
4	**Final Accounts of the Banking Companies**
	Legal Provision in Banking Regulation Act, 1949 relating to Accounts. Statutory reserves including Cash Reserve and Statutory Liquidity Ratio. Bill purchase and discounted, Rebate of Bill Discounted. Final Accounts in prescribed form Non – performing assets and Income from non – performing assets, Classification of Advances, standard, sub – standard, doubtful and provisioning requirement.
5	**Risk Management in Rural Finance**
	An Introduction –Objectives, Introduction , Types of risks for MFI's, Risk Management Framework for MFI's Indicators of Credit Risk, Portfolio at Risk (PAR), Causes of high Credit Risk , Impact of Delinquencies, Managing Credit Risk, Transaction Risk, Process, System & Technology, Relationship and Portfolio Risk. Cash Planning and Co-ordination between Operation Manager and Finance Manager. Compliance to State Acts, Revised Guidelines on Priority Sector, Compliance to RBI Guidelines on NBFC – MFI's, Self Regulation.

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Elective Courses (EC)

Group A: Finance Electives

6.Indirect Taxes

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Indirect Taxation and GST	10
2	Concept of Supply	20
3	Registration and Computation of GST	20
4	Filing of Returns	10
Total		**60**

Objectives

SN	Objectives
01	To understand the basics of GST
02	To study the registration and computation of GST
03	To acquaint the students with filing of returns in GST

Sr. No.	Modules / Units
1	**Introduction to Indirect Taxation and GST**
	A. Basics for Taxation - Direct Taxes and Indirect Taxes – Difference, Advantages and Disadvantages, Sources and Authority of Taxes in India (Art 246 of the Indian Constitution) **B. Introduction to GST** – Genesis of GST in India, Power to tax GST (Constitutional Provisions), Extent and Commencement, Meaning and Definition of GST, Benefits of GST, Conceptual Framework – CGST, IGST,SGST,UTGST, Imports of goods or services or both, Export of goods or services or both, Taxes subsumed and not subsumed under GST. **C. Definitions** – Goods (2(52) of CGST Act), Services (2(102) of CGST Act), Money (2(75) of CGST Act), Securities (2(101) of SCRA Act,1956), India(2(56) of CGST Act), Persons (2(84) of CGST Act),Taxable Person (2(107) of CGST Act), Business (2(17) of CGST Act), Consideration(2(31) of CGST Act), E- Commerce Operator (2(45) of CGST Act), Supplier(2(105) of CGST Act),Recipient(2(93) of CGST Act) **D. Levy and Collection of GST** – Levy and Collection of CGST, IGST, SGST,UTGST (Sec 9 of CGST Act), Composition Scheme under GST (Sec 10 of CGST Act), Power to Grant Exemption (Sec 11 of CGST Act)GST Rate Schedule for Goods and Services.
2	**Concept of Supply**
	A. Taxable Event Supply– Meaning and Scope of Supply (Section 7 Subsection 1, 2 and 3 of Act) Schedule I, Schedule II, Schedule III, Composite and Mixed Supplies (Sec 8 of CGST Act) **B. Place of Supply** – Location of Supplier of Goods and Services, Place of Supply of Goods (Sec 10, 11,12 and 13 of IGST Act), Special Provision for Payment of Tax by a Supplier of Online Information Database Access Retrieval. **C. Time of Supply**- Time of Supply (Sec 31 of CGST Act), Issue of Invoice by the Supplier (Sec 31 (1) and Sec 31(2)of CGST Act), Continuous Supply of Goods and Services, Goods Sent on Approval (Sec 31(7) of CGST Act) **D. Value of Supply** – Determination of Value of Supply (Sec 15 of CGST Act and CGST Rules 2017), Input Tax Credit (Sec 2(62) of CGST Act) Capital Goods (Sec 2(19) of CGST Act), Input Sec 2(59) of CGST Act), Input Service (Sec 2(60) of CGST Act). Eligibility and Conditions for taking Input Tax Credit (Sec 16 of CGST Act)
3	**Registration and Computation of GST**
	A. Registration – Persons liable for Registration (Sec 22 of the Act), Persons not liable for Registration, Procedure for Registration (Sec 25 of the Act), Deemed Registration(Sec 26 of the Act), Special Provisions (Sec 27 of the Act), Amendment, Cancellation and Revocation of Registration(Sec 28,Sec29and Sec 31 of the Act) **B. Computation of GST –** Computation of GST under Inter State and Intra State Supplies. **C. Payment of Tax-** Payment of Tax, Interest and other Amounts(Sec 49 of the Act), Interest on delayed Payment (Sec 50 of the Act), TDS (Sec 51 of the Act), TCS (Sec 52 of the Act)
4	**Filing of Returns**
	A. Documentation- Tax Invoices (Sec 31 and 32 of the Act), Credit and Debit notes(Sec 34 of the Act), Electronic Way Bill **B. Returns –**Types of Returns and Provisions relating to filing of Returns (Sec 37 to Sec 48 of the Act)

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Elective Courses (EC)

Group B: Marketing Electives

1. Brand Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Brand Management	15
2	Planning and Implementing Brand Marketing Programs	15
3	Measuring and Interpreting Brand Performance	15
4	Growing and Sustaining Brand Equity	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the meaning and significance of Brand Management
2	To Know how to build, sustain and grow brands
3	To know the various sources of brand equity

SN	Modules/ Units
1	**Introduction to Brand Management**
	a) Introduction to Brand Management: • Meaning of Brand, Branding, Brand Management, Importance of Branding to Consumers, Firms, Brands v/s Products, Scope of Branding, Branding Challenges and Opportunities, Strategic Brand Management Process, Customer Based Brand Equity model (CBBE), Sources of Brand Equity, Steps of Brand Building including Brand Building Blocks, Brand Positioning: Meaning, Importance, Basis
2	**Planning and Implementing Brand Marketing Programs**
	a) Planning and Implementing Brand Marketing Programs: • Brand Elements: Meaning, Criteria for choosing Brand Elements, Types of Brand Elements • Integrating Marketing Programs and Activities • Personalising Marketing: Experiential Marketing, One to One Marketing, Permission Marketing • Product Strategy: Perceived Quality and Relationship Marketing • Pricing Strategy: Setting Prices to Build Brand Equity • Channel Strategy: Direct, Indirect Channels • Promotion Strategy: Developing Integrated Marketing Communication Programs • Leveraging Secondary Brand Associations to Build Brand Equity: Companies, Countries, Channel of Distribution, Co-branding, Characters, Events.
3	**Measuring and Interpreting Brand Performance**
	a) The Brand Value Chain **b) Measuring Sources of Brand Equity:** • **Qualitative Research Techniques**: Projective Techniques: Completion, Comparison, Brand Personality and Values: The Big Five, Free Association • **Quantitative Research Techniques:** Brand Awareness: Recognition, Recall, Brand Image, Brand Responses **c) Young and Rubicam's Brand Asset Valuator** **d) Measuring Outcomes of Brand Equity** • **Comparative Methods**: Brand based Comparative Approaches, Marketing Based Comparative Approaches, Conjoint Analysis • **Holistic Methods:** Residual Approaches, Valuation Approaches: Historical Perspectives and Interbrand's Brand Valuation Methodology

4	Growing and Sustaining Brand Equity
	a) Designing & Implementing Branding Strategies: • **Brand Architecture**: Meaning of Brand Architecture, The Brand-Product Matri, Breadth of a Branding Strategy, Depth of a Branding Strategy • **Brand Hierarchy:** Meaning of Brand Hierarchy, Building Equity at Different Hierarchy Levels • **Cause Marketing to Build Brand Equity:** Meaning of Cause Marketing, Advantages, Green Marketing **b) Brand Extensions:** • Meaning, Advantages, Disadvantages, Brand Extension and Brand Equity **c) Managing Brands over Time:** • Reinforcing Brands, Revatilising Brands **d) Building Global Customer Based Brand Equity**

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Elective Courses (EC)

Group B: Marketing Electives

2. Retail Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Retail Management- An overview	15
2	Retail Consumer and Retail Strategy	15
3	Merchandise Management and Pricing	15
4	Managing and Sustaining Retail	15
	Total	**60**

Objectives

SN	Objectives
1	To familiarize the students with retail management concepts and operations
2	To provide understanding of retail management and types of retailers
3	To develop an understanding of retail management terminology including merchandize management, store management and retail strategy.
4	To acquaint the students with legal and ethical aspects of retail management
5	To create awareness about emerging trends in retail management

SN	Modules/ Units
1	**Retail Management- An overview**
	a) Retail Management: • Introduction and Meaning, Significance, Factors Influencing Retail Management, Scope of Retail Management **b) Retail Formats:** • Concept of Organized Retailing: Factors Responsible for the Growth of Organized Retail in India, Multichannel Retailing: Meaning and Types, E-tailing: Meaning, Advantages and Limitations **c) Emerging Trends in Retailing** • Impact of Globalization on Retailing • I.T in Retail: Importance, Advantages and Limitations, Applications of I.T. in Retail: EDI, Bar Coding, RFID Tags, Electronic Surveillance, Electronic Shelf Labels • FDI in Retailing: Meaning, Need for FDI in Indian Retail Scenario • Franchising: Meaning, Types, Advantages and Limitations, Franchising in India • Green Retailing • Airport Retailing
2	**Retail Consumer and Retail Strategy**
	a) Retail Consumer/Shopper: • Meaning of Retail Shopper, Factors Influencing Retail Shoppers, Changing Profile of Retail Shoppers, Market Research as a Tool for Understanding Retail Markets and Shoppers **b) CRM in Retail:** • Meaning, Objectives • Customer Retention Approaches: Frequent Shopper Programme, Special Customer Services, Personalization, Community **c) Retail Strategy:** • Meaning, Steps in Developing Retail Strategy, Retail Value Chain **d) Store Location Selection:** • Meaning, Types of Retail Locations, Factors Influencing Store Location **e) HRM in Retail:** • Meaning, Significance, Functions • Organization Structure in Retail: Meaning, Factors Influencing Designing Organization Structure, Organization Structure for Small Stores/Single Stores/Independent Retailers and Retail Store Chain/Department Store

SN	Modules/ Units
3	**Merchandise Management and Pricing**
	a) Merchandise Management • Concept, Types of Merchandise, Principles of Merchandising, Merchandise Planning- Meaning and Process, Merchandise Category – Meaning, Importance, Components, Role of Category Captain, Merchandise Procurement/Sourcing- Meaning, Process, Sources for Merchandise **b) Buying Function:** • Meaning, Buying Cycle, Factors Affecting Buying Functions, Functions of Buying for Different Types of Organizations Young and Rubicam's Brand Asset Valuator- Independent Store, Retail Chain, Non-store Retailer **c) Concept of Lifestyle Merchandising** **d) Private Label** • Meaning, Need and Importance, Private Labels in India **e) Retail Pricing** • Meaning, Considerations in Setting Retail Pricing • Pricing Strategies: High/ Low Pricing: Meaning, Benefits, Everyday Low Pricing: Meaning, Benefits, Market Skimming, Market Penetration, Leader Pricing, Odd Pricing, Single Pricing, Multiple Pricing, Anchor Pricing • Variable Pricing and Price Discrimination- Meaning Types: ▪ Individualized Variable Pricing/First Degree Price ▪ Self-Selected Variable Pricing/ Second Degree Price Discrimination- Clearance and Promotional Markdowns, Coupons, Price Bundling, Multiple – Unit Pricing ▪ Variable Pricing by Market Segment/ Third Degree Price Discrimination
4	**Managing and Sustaining Retail**
	a) Retail Store Operations: • Meaning, Responsibilities of Store Manager, The 5 S's of Retail Operations (Systems, Standards, Stock, Space, Staff) **b) Store Design and Layout:** • Store Design- Meaning, Objectives, Principles, Elements of Exterior and Interior Store Design, Store Atmospherics and Aesthetics • Store Layout- Meaning, Types: Grid, Racetrack, Free Form • Signage and Graphics: Meaning, Significance, Concept of Digital Signage • Feature Areas: Meaning, Types: Windows, Entrances, Freestanding Displays, End Caps, Promotional Aisles, Walls, Dressing Rooms, Cash Wraps

SN	Modules/ Units
	c) Visual Merchandising and Display: • Visual Merchandising- Meaning, Significance, Tools Used for Visual Merchandising • The Concept of Planogram • Display- Meaning, Methods of Display, Errors in Creating Display **d) Mall Management** • Meaning and Components: Positioning, Zoning, Promotion and Marketing, Facility Management, Finance Management **e) Legal and Ethical Aspects of Retailing** • Licenses/Permissions Required to Start Retail Store in India • Ethical Issues in Retailing **Career Options in Retailing**

Elective Courses (EC)

Group B: Marketing Electives

3. International Marketing

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to International Marketing & Trade	15
2	International Marketing Environment and Marketing Research	15
3	International Marketing Mix	15
4	Developments in International Marketing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand International Marketing, its Advantages and Challenges.
2	To provide an insight on the dynamics of International Marketing Environment.
3	To understand the relevance of International Marketing Mix decisions and recent developments in Global Market

SN	Modules/ Units
1	**Introduction to International Marketing & Trade**
	a) Introduction of International Marketing: • Meaning, Features of International Marketing, Need and Drivers of International Marketing, Process of International Marketing, Phases of International Marketing, Benefits of International Marketing, Challenges of International Marketing, Difference between Domestic and International Marketing, Different Orientations of International Marketing : EPRG Framework, Entering International Markets :Exporting, Licensing, Franchising, Mergers and Acquisition, Joint Ventures, Strategic Alliance, Wholly Owned Subsidiaries, Contract Manufacturing and Turnkey Projects, Concept of Globalization **b) Introduction to International Trade:** • Concept of International Trade, Barriers to Trade: Tariff and Non Tariff, Trading Blocs : SAARC, ASEAN, NAFTA, EU, OPEC
2	**International Marketing Environment and Marketing Research**
	a) International Marketing Environment: • Economic Environment : International Economic Institution (World Bank, IMF, IFC) ,International Economic Integration (Free Trade Agreement, Customs Union, Common Market, Economic Union) • Political and Legal Environment: Political System (Democracy, Authoritarianism, Communism), Political Risk, Political Instability, Political Intervention. Legal Systems (Common Law, Civil Law, Theocratic Law), Legal Differences, Anti Dumping Law and Import License. • Cultural Environment : Concept , Elements of Culture (Language, Religion, Values and Attitude , Manners and Customs, Aesthetics and Education) , HOFSTEDE's Six Dimension of Culture , Cultural Values (Individualism v/s Collectivism) **b) Marketing Research:** • Introduction, Need for Conducting International Marketing Research, International Marketing Research Process, Scope of International Marketing Research, IT in Marketing Research
3	**International Marketing Mix**
	a) International Product Decision • International Product Line Decisions, Product Standardization v/s Adaptation Argument, International Product Life Cycle, Role of Packaging and Labelling in International Markets, Branding Decisions in International Markets, International Market Segmentation and Targeting, International Product Positioning

SN	Modules/ Units
	b) International Pricing Decision: • Concept of International Pricing, Objectives of International Pricing, Factors Affecting International Pricing • International Pricing Methods: Cost Based, Demand Based, Competition Based , Value Pricing, Target Return Pricing and Going Rate Pricing • International Pricing Strategies : Skimming Pricing, Penetration Pricing , Predatory Pricing • International Pricing Issues : Gray Market , Counter Trade, Dumping, Transfer Pricing **c) International Distribution Decisions** • Concept of International Distribution Channels, Types of International Distribution Channels, Factors Influencing Selection of International Distribution Channel **d) International Promotion Decisions** • Concept of International Promotion Decision • Planning International Promotional Campaigns: Steps - Determine the Target Audience, Determine Specific Campaigns, Determine Budget, Determine Message, Determine Campaign Approach and Determine Campaign Effectiveness • Standardization V/S Adaptation of International Promotional Strategies • International Promotional Tools/Elements
4	**Developments in International Marketing**
	a) Introduction -Developing International Marketing Plan: • Preparing International Marketing Plan, Examining International Organisational Design, Controlling International Marketing Operations, Devising International Marketing Plan **b) International strategies:** • Need for International Strategies, Types of International Strategies **c) International Marketing of Services** • Concept of International Service Marketing, Features of International Service Marketing, Need of International Service Marketing, Drivers of Global Service Marketing, Advantages and Disadvantages of Global Service Marketing, Service Culture

Elective Courses (EC)

Group B: Marketing Electives

4. Media Planning and Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Overview of Media and Media Planning	15
2	Media Mix & Media Strategy	15
3	Media Budgeting, Buying & Scheduling	15
4	Media Measurement, Evaluation	15
	Total	**60**

Objectives

SN	Objectives
1	To understand Media Planning, Strategy and Management with reference to current business scenario.
2	To know the basic characteristics of all media to ensure most effective use of advertising budget.
3	To provide an insight on Media Planning, Budgeting, Scheduling and Evaluating the Different Media Buys.

SN	Modules/ Units
1	**Overview of Media and Media Planning**
	a) Overview of Media and Media Planning: • Meaning of Media & Features of Media, Meaning of Media Planning , Scope of Media planning , Media Planning Elements, Role of Media in Business, Media Planning Process, Impact of Marketing Objectives on Media Planning, Factors Influencing Media Planning Decisions, Role and Importance of Media in Consumer Buying Decision, Role of Media Planner, Challenges of Media Planning, Organization Structure of Media Company, Regulatory Framework and Legal Aspects in Media Planning **b) Media Research:** • Meaning, Role and Importance • Sources of Media Research : Audit Bureau of Circulation, Press Audits, National Readership Survey/IRS, Businessmen's Readership Survey, TRP, National Television Study, ADMAR Satellite Cable Network Study, Reach and Coverage Study, ClB Listenership Survey
2	**Media Mix and Media Strategy**
	a) Media Mix: • Meaning, Need for Media Mix, Identifying Audience for Mass Media , Factors Affecting Media Mix Decision, Types of Media Mix Decisions: Broad Media Classes, Media Vehicles, Media Units, Deciding Ideal Media Mix **b) Media Choices:** • **Print Meaning-** Factors Affecting Selection of Print Media Decisions , Types of Print Media, Advantages and Limitations • **Television-** Meaning, Factors Affecting Selection of Television Media Decisions, Advantages and Limitations • **Radio-** Meaning, Factors Affecting Selection of Radio Media Decision, Advantages and Limitations • **Out of Home (OOH)-** Meaning, Types of OOH, Factors Affecting OOH Planning Decision, Advantages and Limitations **c) Emerging Media:** • Online, Mobile, Gaming, In flight, In Store, Interactive Media **d) Media Strategy:** • Meaning, Need for Media Strategy, Situation Analysis for Media Strategy and its Components • Steps in Formulating Media Strategies: Defining the Target Group, Market Prioritization, Media Weights, Media Mix, Media Scheduling.

SN	Modules/ Units
3	**Media Budgeting, Buying & Scheduling**
	a) Media Budget • Meaning • Factors to be considered while Framing a Budget: Advertising Task, Competitive Framework, Market Dominance, Market Coverage, Media Cost, Market Task, Pricing ,Frequency of Purchase • Importance of Media Budget. • Methods of Setting Media Budget - Status Quo, Inflation Adjusted, Advertising Sales, Case Rate & Advertising Margin Method, Share of Market, Yardstick Method, Effective Frequency & Reach Method & Margin Analysis ROI Based Approach, Experimental Approach, Break Even Planning. **b) Media Buying:** • Meaning, Role of Media Buyer, Objectives of Media Buying, • Buying Process: Buying Brief, Environmental Analysis, Science and Art of Buying, Benchmarking Buying Plan Presentation Deal Management and Post Buy • Buying brief: Concept & Elements of Buying Brief, Art of Media Buying – Negotiation in Media Buying, Plan Presentation and Client Feedback • Criteria in Media Buying **c) Media Scheduling** • Meaning, Importance • Factors Affecting Scheduling: Sales Pattern, Purchase Cycle, Product Availability, Competitive Activity, Marketing Task, Budget Constraints, Target Group. • Scheduling Patterns – Continuity, Flighting, Pulsing • Scheduling Strategies for Creating Impact: Road Block , Day or Day part • Emphasis, Multiple Spotting, Teasers

SN	Modules/ Units
4	**Developments in International Marketing**
	a) Media Measurement: • **Basic Metrics:** Reach, Cumulative/Frequency Reach, Discrete & Cumulative distribution, Average Opportunity to See (AOTS), Effective frequency/Reach • **Television Metrics:** Dairy v/s Peoplemeter,TRP,/TVR, Program Reach & Time Spent, Stickiness Index, Ad Viewership • **Radio Metrics:** Arbitron Radio Rating • **Print Metrics:** Circulation, Average Issue Readership (AIR), Total or Claimed Reader, Sole or Solus reader. • **OOH Metrics:** Traffic Audit Bureau (TAB) **b) Benchmarking Metrics:** • Share, Profile, and Selectivity Index **c) Plan Metrics:** • Gross Rating Points (GRP), Gross Impressions (GI), Share of Voice (SOV). **d) Evaluating Media Buys** • **Evaluating Television Media Buying:** Dysfunctional Card Rate, Secondary and Effective Rate, Deal Composition, Cost Per Rating Point(CPRP), Reach Delivered by the Buy, Visibility Spots, Bonus Percentage, Upgrades and Spot Fixing, Sponsorships • **Evaluating Print Media Buying:** Discount on Rate Card, Negotiated Rate, Cost Per Thousand (CPT), Market Share Incentives, Readership v/s Circulation Track, Growth Incentives, Combination Rate Incentives, Full Page Discounts and Size Upgrades, Discount for Colour Ads, Date Flexibility Incentives, Positioning, Innovations. • **Evaluating Other Media Buys:** Radio Buys, Outdoor Buys, Cinema Buys, Internet Buys, and Mobile Buys

Elective Courses (EC)

Group B: Marketing Electives

5. Sports Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Sports Marketing: Introduction, Environment & Research	15
2	The Sports Product, Pricing Strategies & Sponsorship	15
3	Promotion & Distribution Strategies in Sports Marketing	15
4	Legal aspects & Marketing of Major Sport Events	15
Total		**60**

Objectives

SN	Objectives
01	To equip the learner with an understanding of the business of sports marketing
02	To help the learner understand environmental factors influencing sports marketing
03	To help the learner understand components of marketing mix in the context of sports marketing
04	To understand legal aspects in sports marketing & franchising agreements

Sr. No.	Modules / Units
1	**Sports Marketing: Introduction, Environment & Research**
	Introduction to sports marketing: Sports marketing definition & characteristics, marketing myopia in sports, distinctive features of sports marketing, Model of sports Industry, Implementation of sports marketing programme Environment & Research in Sports Marketing: Environmental factors, individual factors, decision making for sports involvement, role of research in sports marketing: types of primary market research, common problems in sports marketing research
2	**The sports Product, Pricing Strategies & Sponsorship**
	The sports products: Core & extensions, key issues in sports products strategy, managing sports brands, brand equity: benefits & development, Sales: Definition, sales approaches used in sports, selling sports to the community Pricing strategies: The basics of pricing, core issues, factors affecting pricing Sponsorship: Definition, growth of sponsorship, evaluating and ensuring sponsorship effectiveness, selling the sponsorship, ethical issues in selling the sponsorships
3	**Promotion & Distribution Strategies in Sports Marketing**
	Promotional strategies: Promotional concepts & practice, components of promotion mix for sports marketing: Sales promotion, sponsorship, public relation, digital marketing & advertising. Media options in sports marketing, Distribution strategies: Placing core products & their extensions, the facility: marketing channels, the product-place matrix
4	**Legal Aspects & Marketing of major Sport Events**
	Cross impact among the 5Ps of sports marketing mix Legal aspects of sports marketing: Endorsement agreement, Player agreement, Franchise agreement & Sponsorship agreement Marketing of major sport events: Olympic Games, Commonwealth Games, ICC Cricket World Cup, Indian Premier League, FIFA Football World Cup, Wimbledon tennis tournament

Elective Courses (EC)

Group B: Marketing Electives

6. Marketing of Non-Profit Organisation

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Non-profit Organization	15
2	Segmenting Targeting Positioning, Product mix & Pricing mix in Non-profit organizations	15
3	Promotion mix, Place mix of non-profit organizations & advocacy of non-profit organizations	15
4	Corporate Social Responsibility, innovations & Ethics in non-profit organizations	15
Total		**60**

Objectives

SN	Objectives
01	This course introduces students to the challenges of marketing in the non-profit sector.
02	To understand the role and application of marketing to promote social change and to achieve social goals for non-profits organizations including social and cause related marketing, fundraising
03	To apply marketing in a diverse range of non-profit environments including charities, social programs and ideas, health, education, arts, as well as goods and services
04	To understand the advocacy v/s lobbying and the concept of CSR and the policy framework of CSR under the Companies Act of 2013

Sr. No.	Modules / Units
1	**Introduction to Non-profit Organization**
	a) **Non-profit organization**: Meaning of Non-Profit Organization, Features of non-profit organization, Characteristics of Non Profit marketing, Stakeholders in non-profit organization, Types of non-profit organization: Charities, newly emerging social enterprise sector, public sector, political parties and campaign organizations, classification of non-profit organizations, Social need: concept, social need as a basis for developing sustainable business model for a non-profit organization. b) **Fundraising**: meaning, common techniques to solicit funds, fund raising loyalty ladder, marketing and communication for fundraising
2	**Segmenting Targeting Positioning, Product mix & Pricing mix in Non-profit organizations**
	a) **Segmentation, Targeting & Positioning of non-profit organizations**: Strategic Marketing for Non-Profit Organization, Steps in Strategic Marketing of non-profit organization, Market Segmentation, Targeting & Positioning in non-profit organization b) **Product mix & Pricing mix in non-profit organization**: Budgeting, cost effective marketing mix, Cost Management, Product or offer in non-profit organization, level of offer in non-profit organization, Pricing Objectives in non-profit organizations, Pricing Strategies in non-profit organizations
3	**Promotion mix, Place mix of non-profit organizations & advocacy of non-profit organizations**
	a) **Promotion Mix**: Promotion of non-profit Organizations: Marketing Communication Strategies, Integrated Marketing Communication in nonprofit organizations, Image & reputation, Marketing Communication process, Marketing communication process, Role of Audience, message and vehicle in non-profit organization communication. Significance of place in non-profit organizations, Challenges for non-profit organizations in rural areas. b) **Advocacy & Fund Raising in non-profit organization**: Meaning, steps in building support for advocacy, advocacy tactics: lobbying, Coalition Building, outreach to media, educating policy makers on issues, educating public on policy issue, building relationship with policy maker. Distinctive characteristics of advocacy groups, Steps in crafting an advocacy plan, steps in engaging policy makers for lobbying, advocacy v/s lobbying, Evaluating advocacy. **Fund Raising**: meaning, Principles of fundraising, Fund raising cycle, The fund raising pyramid and donor life cycle.
4	**Corporate Social Responsibility, innovations & Ethics in non-profit organizations**
	a) **Corporate social responsibility**: CSR, Importance of CSR, history and evolution of CSR, Policy framework for CSR in India, Section 135 of Companies Act 2013, Role of CSR committee on Boards Code of Ethics in non-profit organization, hierarchy of ethical values in non-profit organization, careers in CSR. b) **Trends and Innovations**: Current trends, innovations and opportunities in CSR, Influence of non-profit organizations and their impact on corporate CSR, Challenges faced by non-profit organizations in India. c) **Non-Governmental Organization (NGO)**: Meaning of Non-Government Organization (NGO), Difference between Voluntary Organization & NGO, Steps of Voluntarism, Types of NGO: advocacy of chosen cause, Small or Grassroot NGO, Mother NGO, National NGO, corporate NGO, Global NGO's

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Elective Courses (EC)

Group C: Human Resource Electives

1. HRM in Global Perspective

Modules at a Glance

SN	Modules	No. of Lectures
1	International HRM – An Overview	15
2	Global HRM Functions	15
3	Managing Expatriation and Repatriation	15
4	International HRM Trends and Challenges	15
	Total	**60**

Objectives

SN	Objectives
1	To introduce the students to the study and practice of IHRM
2	To understand the concepts, theoretical framework and issues of HRM in Global Perspective
3	To get insights of the concepts of Expatriates and Repatriates
4	To find out the impact of cross culture on Human Resource Management
5	To provide information about Global Workforce Management
6	To study International HRM Trends and Challenges

SN	Modules/ Units
1	**International HRM – An Overview**
	a) International HRM – An Overview: • International HRM- Meaning and Features, Objectives, Evolution of IHRM, Reasons for Emergency of IHRM, Significance of IHRM in International Business, Scope/Functions • Difference between International HRM and Domestic HRM • Approaches to IHRM- Ethnocentric, Polycentric, Geocentric and Regiocentric • Limitations to IHRM • Qualities of Global Managers • Organizational Dynamics and IHRM • Components of IHRM- Cross Cultural Management and Comparative HRM • Cross Cultural Management- Meaning, Features, Convergence of Cultures, Role of IHRM in Cross Culture Management, Problems of Cross Cultural Issues in Organizations, Importance of Cultural Sensitivity to International Managers • Comparative HRM- Meaning, Importance, Difference between IHRM and Comparative HRM • Managing Diversity in Workforce • Dealing with Cultural Shock
2	**Global HRM Functions**
	a) Global HRM Functions: • International Recruitment and Selection- Meaning- Sources of International Labour Market, Global Staffing, Selection Criteria, Managing Global Diverse Workforce • International Compensation – Meaning, Objectives, Components of International Compensation Program, Approaches to International Compensation • HRM Perspectives in Training and Development - Meaning, Advantages, Cross Cultural Training, Issues in Cross Cultural Training • International Performance Management – Meaning, Factors Influencing Performance, Criterion used for Performance Appraisal of International Employees, Problems Faced in International Performance Management • Motivation and Reward System- Meaning, Benchmarking Global Practices • International Industrial Relations – Meaning, Key Issues in International Industrial Relations, Trade Union and International IR

SN	Modules/ Units
3	**Managing Expatriation and Repatriation**
	a) Managing Expatriation and Repatriation • Concepts of PCNs (Parent-Country Nationals), TCNs(Third-Country Nationals) and HCNs(Host-Country Nationals) • Expatriation- Meaning, Reasons for Expatriation, Factors in Selection of Expatriates, Advantages of Using Expatriates, Limitations of using Expatriates, Role of Family, the Role of Non-expatriates, Reasons for Expatriate Failure, Women and Expatriation, Requirements/Characteristics of Effective Expatriate Managers • Repatriation- Meaning, Repatriation Process, Factors affecting Repatriation Process, Role of Repatriate, Challenges faced by Repatriates
4	**International HRM Trends and Challenges**
	a) International HRM Trends and Challenges: • Emerging Trends in IHRM • Off Shoring – Meaning, Importance, Off Shoring and HRM in India • International Business Ethics and IHRM – Meaning of Business Ethics, Global Values, International Corporate Code of Conduct, Criminalization of Bribery, Operationalizing Corporate Ethics of HR in Overall Corporate Ethics Programme • Managing International Projects and Teams- Meaning, How Projects are Managed across the World and Challenges in Managing International Projects across the World • HR in MNCs – Industrial Relations in MNCs • Role of Technology on IHRM • IHRM and Virtual Organization- Meaning and Features of Virtual Organization, Difference between Virtual Organization and Traditional Organization, Managing HR in Virtual Organization • Growth in Strategic Alliances and Cross Border Mergers and Acquisitions- Impact on IHRM • Knowledge Management and IHRM

Elective Courses (EC)

Group C: Human Resource Electives

2. Organisational Development

Modules at a Glance

SN	Modules	No. of Lectures
1	International HRM – An Overview	15
2	Global HRM Functions	15
3	Managing Expatriation and Repatriation	15
4	International HRM Trends and Challenges	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of Organisational Development and its Relevance in the organisation
2	To Study the Issues and Challenges of OD while undergoing Changes
3	To get an Understanding of Phases of OD Programme
4	To Study the OD Intervention to meet the Challenges faced in the Organisation
5	To get an Insight into Ethical Issues in OD

SN	Modules/ Units
1	**Organisational Development – An Overview**
	a) Organisational Development – An Overview: • Organisational Development – Meaning, Features, Evolution, Components, Objectives, Principles, Process, Importance • Relevance of Organisational Development for Managers, OD- HRD Interface, Participation of Top Management in OD • OD Practitioner – Meaning, Role of OD Practitioner, Competencies of an OD Practitioner • Emerging Trends in OD • OD in Global Setting
2	**Organisational Diagnosis, Renewal and Change**
	a) Organisational Diagnosis, Renewal and Change: • Organisational Diagnosis - Meaning, Need, Phases, Levels of Organisational Diagnosis, Techniques of Organisational Diagnosis, Tools used in Organisational Diagnosis • Organizational Renewal, Re-energising, OD and Business Process Re-Engineering (BPR), OD and Leadership Development • Organisational Change- Meaning, Organisational Life Cycle, Planned Change, Organizational Growth and its Implication for Change • Change Agents- Meaning, Features, Types, Role, Skills required
3	**OD Interventions**
	a) Managing Expatriation and Repatriation • OD Interventions- Meaning, Features, Factors Affecting Success of Interventions, Steps in OD Interventions • Types of Interventions- Human Resource Intervention, Structural Intervention, Strategic Interventions, Third Party Peace Making Intervention • Techniques of OD Intervention : ▪ Traditional: Sensitive Training, Grid Training, Survey Feedback. ▪ Modern : Process Consultation, Third Party, Team Building, Transactional Analysis • Evaluation of OD Interventions : Process, Types, Methods, Importance

SN	Modules/ Units
4	**OD Effectiveness**
	a) OD Effectiveness: • Issues Faced in OD- Issues Related to Client Relationship, Power-Individual skills and Attributes as a Source of Power, Power and Influence Tactics, Politics and OD • Values in OD – Meaning, Professional Values, Value Conflict and Dilemma • Ethics in OD – Meaning, Factors Influencing Ethical Judgement, Ethical Guidelines for OD Professionals • Organisational Effectiveness- Meaning , Effectiveness v/s Efficiency, Approaches of Organisational Effectiveness : Goal Approach, System Resource Approach, Strategic Constituency Approach, Internal Process Approach; Parameters for Judging Organisational Effectiveness, Ways to Enhance Organisational Effectiveness

Elective Courses (EC)

Group C: Human Resource Electives

3. HRM in Service Sector Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Service Sector Management- An Overview	15
2	Managing Human Element in Service Sector	15
3	Issues and Challenges of HR in Service Sector	15
4	HRP Evaluation, Attrition, Retention & Globalization	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept and growing importance of HRM in service sector
2	To understand how to manage human resources in service sector
3	To understand the significance of human element in creating customer satisfaction through service quality
4	To understand the Issues and Challenges of HR in various service sectors

SN	Modules/ Units
1	**Service Sector Management- An Overview**
	a) Service Sector Management- An Overview: • **Services** - Meaning, Features, Classification of Services: End User, Degree of Tangibility, People Based Services, Expertise Required, Orientation Towards Profit, By Location • **Service Sector Management –** Meaning, Significance of Service Sector, Reasons for Growth in Service Sector • **Service Organization** - Importance of Layout and Design of Service Organization, Servicescape • **Service Culture in Organization –** Meaning, Developing Service Culture in Organization • **Relationship Marketing –** Meaning, Need and Importance in Service Sector Organizations, Six Market Model • Role of Service Employee • **Role of Customers in Service Process–** Customers as Productive Resources, Customers as Contributors to Service Quality, Customers as Competitors • **Service Encounter and Moment of Truth –**Meaning, Nature, Elements of Service Encounter
2	**Managing Human Element in Service Sector**
	a) Managing Human Element in Service Sector: • **Human Element in Service Sector –** Introduction, Role and Significance • The Services Triangle • **Front Line Employees /Boundary Spanners–** Meaning, Issues Faced by Front Line Employees: Person/ Role Conflicts, Organization/ Client Conflict, Interclient Conflict • **Emotional Labour –** Meaning, Strategies for Managing Emotional Labour • **Recruitment in Service Sector–** Recruiting Right People, Recruitment Procedures and Criteria, Challenges in Recruitment in Service Sector • **Selection of Employees in Service Sector –** Interviewing Techniques: Abstract Questioning, Situational Vignette, Role Playing • Develop People to Deliver Service Quality • Compensating Employees in Service Sector • Motivating Employees for Services • **Empowerment of Service Workers –** Meaning, Advantages and Limitations

SN	Modules/ Units
3	**Issues and Challenges of HR in Service Sector**
	a) Issues and Challenges of HR in Service Sector: • **Quality Issues in Services**: Meaning and Dimensions of Service Quality, The Service – Gap Model, Reasons and Strategies to fill the Gaps • **Delivering Services through Agents and Brokers** - Meaning, Advantages, Challenges, Strategies for Effective Service Delivery through Agents and Brokers • **HRM in Public Sector Organizations and Non –** Profit Sector in India • **Issues and Challenges of HR in Specific Services:** ▪ Business and Professional Services: Banking and Insurance, Legal, Accountancy ▪ Infrastructure: Roads, Railways, Power ▪ Public Services: Police, Defense, Disaster Management ▪ Trade Services: Wholesale and Retail, Advertising, Maintenance and Repairs ▪ Personnel Services: Education, Health Care, Hotels • Social and Charitable Services
4	**HRP Evaluation, Attrition, Retention & Globalization**
	a) HRP Evaluation, Attrition, Retention & Globalization: • **Human Resource Planning Evaluation in Service Sector –** Meaning, HRP Evaluation Process, Purpose of HRP Evaluation in Service Sector, Issues Influencing HRP Evaluation in Service Sector • **Service Leadership –** Meaning, Integrating Marketing Operation and Human Resources, Creating a Leading Service Organization, The Service – Profit Chain Model • **Attrition in Service Sector –**Meaning, Reasons for Attrition in Service Sector, Cycle of Failure, Cycle of Mediocrity and Cycle of Success • **Retaining the Best People in Service Sector –** Including Employees in Company's Vision, Treat Employees as Customers, Measure and Reward String Service Performers • **Globalization of Services-** Meaning, Reasons for Globalization of Services, Impact of Globalization on Indian Service Sector. Organisational Effectiveness, Ways to Enhance Organisational Effectiveness

Elective Courses (EC)

Group C:Human Resource Electives

4. Workforce Diversity

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Workforce Diversity - An Overview	15
2	Workforce Diversity and HRM Functions	15
3	Strategies to Manage Diversity	15
4	Issues in Managing Diversity and Recent Trends	15
Total		**60**

Objectives

SN	Objectives
01	To understand the nature of workforce diversity
02	To familiarize the learners with the strategies to deal with work force diversity
03	To understand the impact of technology in managing workforce diversity
04	To be able to interlink between workforce diversity and HRM functions

Sr. No.	Modules / Units
1	**Workforce Diversity - An Overview**
	• Meaning of Workforce • Workforce Diversity - Meaning, Features and Significance • Dimensions of Workforce Diversity • Advantages and Limitations of having a diverse workforce • Positive and Negative effects of workforce diversity in workplace
2	**Workforce Diversity and HRM Functions**
	• Steps to Recruiting and Retaining a Diverse Workforce • Workforce Diversity and HRM Functions – Diversity and Recruitment, Diversity and Supervision, Diversity and Training, Diversity and Compensation, Diversity and Performance Management, Diversity and Work life Balance • Role of Recruiter in Hiring Diversified Workforce • Workforce Diversity – Key to Organizational Performance • Workforce Diversity as a Determinant of Sustainable Competitive Advantage
3	**Strategies to Manage Diversity**
	• Organizational Strategies for Managing Workforce Diversity –Workplace Inclusion Strategies through Corporate Leadership, Diversity Training and Mentoring • Diversity Management Programmes - Concept • Corporate Culture and Diversity at workplace • Techniques of Managing Work Force Diversity • Approaches to Diversity Management System
4	**Issues in Managing Diversity and Recent Trends**
	• Best Practices in Achieving Workforce Diversity • Diversity and Multi-culturism • Global workforce diversity management • Recent Trends of Diversity • Role of Technology in Handling Workforce Diversity • Workforce Diversity Management for Creativity and Innovation • Ethical and Legal Issues in Managing Diversity

Elective Courses (EC)

Group C: Human Resource Electives

5. Human Resource Accounting & Auditing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Human Resource Accounting: An Overview	15
2	Methods and Human Resource Accounting Practices in India	15
3	Human Resource Audit: An Overview	15
4	HR Audit for Legal Compliance and Safe Business Practices	15
Total		**60**

Objectives

SN	Objectives
01	To understand the value of human resource in organizations
02	To understand the importance of Human Resource Accounting at National and International level
03	To familiarize with the Human Resource Accounting Practices in India
04	To familiarize the learners with the process and approaches of Human Resources Accounting and Audit
05	To understand the significance of Human Resource Auditing as a Tool of Human Resource Valuation

Sr. No.	Modules / Units
1	**Human Resource Accounting: An Overview**
	• Human Resource Accounting – Meaning, Need and Objectives of HR Accounting • Historical Development of Human Resource Accounting, • Cost of Human Resource - Acquisition Cost, Training and Development Cost and additional Cost • Benefits and Limitations of Human Resource Accounting • Reporting of Human Resource Accounting at National Levels • Disclosures at International Level
2	**Methods and Human Resource Accounting Practices in India**
	• **Methods of Human Resource Accounting**: **1. Cost of Production Approach - Concept** i. Historical Cost Model – Meaning, Advantages and Limitations ii. Replacement Cost Model – Meaning, Advantages and Limitations iii. Opportunity Cost - – Meaning, Advantages and Limitations **2. Capitalized Earnings Approach - Concept** i. Economic Value Model - Meaning, Advantages and Limitations ii. Capitalization of Salary - Meaning, Advantages and Limitations • **Statutory Provisions governing HR accounts** • **Human Resource Accounting Practices in India**
3	**Human Resource Audit: An Overview**
	• Human Resource Audit - Meaning, Features, Objectives of HR Audit • Benefits and limitations of HR Audit • Need and Significance of HR Audit • Process of HR Audit • Approaches of HR Audit • Principles of Effective HR Auditing • Role of HR Auditor • Methods of conducting HR Audit – Interview, Workshop, Observation, Questionnaire. • Components of HR Audit • HR Audit and Workforce Issues : Workforce Communication and Employee Relations, Performance Management, Compensation System, Teambuilding System
4	**HR Audit for Legal Compliance and Safe Business Practices**
	• Areas covered by HR Audit - Pre-employment Requirements, Hiring Process, New-hire Orientation Process, Workplace Policies and Practices • HR Audit as Intervention - Introduction, Effectiveness of Human Resource Development Audit as an Intervention • Human Resource Audit and Business Linkages • Human Resource Auditing as a Tool of Human Resource Valuation: Introduction, Rationale of Human Resource Valuation and Auditing, Valuation of Human Resources, Issues in Human Capital Measurement and Reporting.

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Elective Courses (EC)

Group C: Human Resource Electives

6. Indian Ethos in Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Indian Ethos – An Overview	15
2	Work Ethos and Values	15
3	Stress Management	15
4	Indian Systems of Learning	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of Indian Ethos in Management
2	To link the Traditional Management System to Modern Management System
3	To understand the Techniques of Stress Management
4	To understand the Evolution of Learning Systems in India

SN	Modules/ Units
1	**Indian Ethos – An Overview**
	a) Indian Ethos • Meaning, Features, Need, History, Relevance, Principles Practised by Indian Companies, Requisites, Elements, Role of Indian Ethos in Managerial Practices **b) Management Lessons from Scriptures:** • Management Lessons from Vedas, Management Lessons from Mahabharata, Management Lessons from Bible, Management Lessons from Quran, Management Lessons from Kautilya's Arthashastra Indian Heritage in Business, Management, Production and Consumption. Ethics v/s Ethos Indian Management v/s Western Management
2	**Work Ethos and Values**
	a) Work Ethos: • Meaning, Levels, Dimensions, Steps, Factors Responsible for Poor Work Ethos **b) Values:** • Meaning, Features, Values for Indian Managers, Relevance of Value Based Management in Global Change, Impact of Values on Stakeholders: Employees, Customers, Government, Competitors and Society. • Values for Managers, Trans-Cultural Human Values in Management and Management Education, Secular v/s Spiritual Values in Management, Importance of Value System in Work Culture
3	**Stress Management**
	a) Stress Management: • Meaning, Types of Stress at Work, Causes of Stress, Consequences of Stress b) **Stress Management Techniques:** • Meditation : Meaning, Techniques, Advantages, Mental Health and its Importance in Management, Brain Storming, Brain Stilling, Yoga: Meaning, Significance **c) Leadership:** • Meaning, Contemporary Approaches to Leadership, Joint Hindu Family Business – Leadership Qualities of Karta **d) Motivation:** • Meaning, Indian Approach to Motivation, Techniques

SN	Modules/ Units
4	**Indian Systems of Learning**
	a) Learning: Meaning, Mechanisms • Gurukul System of Learning : Meaning, Features, Advantages, Disadvantages • Modern System of Learning: Meanings, Features, Advantages, Disadvantages • Karma: Meaning, Importance of Karma to Managers, Nishkama Karma • Laws of Karma: The Great Law, Law of Creation, Law of Humility, Law of Growth, Law of Responsibility, Law of Connection • Corporate Karma: Meaning, Methodology, Guidelines for good Corporate Karma • Self-Management: Personal growth and Lessons from Ancient Indian Education System • Personality Development: Meaning, Determinants, Indian Ethos and Personality Development

Core Course (CC)

5. Operations Research

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Operations Research and Linear Programming	15
2	Assignment and Transportation Models	15
3	Network Analysis	15
4	Job Sequencing and Theory of Games	15
	Total	**60**

Objectives

SN	Objectives
1	To help students to understand operations research methodologies
2	To help students to solve various problems practically
3	To make students proficient in case analysis and interpretation

SN	Modules/ Units
1	**Introduction to Operations Research and Linear Programming**
	a) Introduction To Operations Research • Operations Research - Definition, Characteristics of OR, OR Techniques, Areas of Application, Limitations of OR. **b) Linear Programming Problems: Introduction and Formulation** • Introduction to Linear Programming • Applications of LP • Components of LP • Requirements for Formulation of LP Problem • Assumptions Underlying Linear Programming • Steps in Solving LP Problems • LPP Formulation (Decision Variables, Objective Function, Constraints, Non Negativity Constraints) **c) Linear Programming Problems: Graphical Method** • Maximization & Minimization Type Problems. (Max. Z & Min. Z) • Two Decision Variables and Maximum Three Constraints Problem • Constraints can be "less than or equal to", "greater than or equal to" or a combination of both the types i.e. mixed constraints. • Concepts: Feasible Region of Solution, Unbounded Solution, Redundant Constraint, Infeasible Solution, Alternative Optima. **d) Linear Programming Problems: Simplex Method** • Only Maximization Type Problems. (Only Max. Z). No Minimization problems. (No Min. Z) Numericals on Degeneracy in Maximization Simplex Problems. • Two or Three Decision Variables and Maximum Three Constraints Problem. (Up to Maximum Two Iterations) • All Constraints to be "less than or equal to" Constraints. ("Greater than or Equal to" Constraints not included.) • Concepts : Slack Variables, Surplus Variables, Artificial Variables, Duality, Product Mix and Profit, Feasible and Infeasible Solution, Unique or Alternate Optimal Solution, Degeneracy, Non Degenerate, Shadow Prices of Resources, Scarce and Abundant Resources, Utilized and Unutilized Capacity of Resources, Percentage Utilization of Resources, Decision for Introduction of a New Product. **Note:** 1. Surplus Variable, Artificial Variable and Duality to be covered only at Conceptual level for Theory Questions only and not included in Numerical. 2. Sensitivity Analysis including Profit Range and Capacity Range is not included.

SN	Modules/ Units
2	**Assignment and Transportation Models**
	a) Assignment Problem – Hungarian Method • Maximization & Minimization Type Problems. • Balanced and Unbalanced Problems. • Prohibited Assignment Problems, Unique or Multiple Optimal Solutions. • Simple Formulation of Assignment Problems. • Maximum 5 x 5 Matrix. Up to Maximum Two Iterations after Row and Column Minimization. **Note:** 1. Travelling Salesman Assignment Problem is not included. **b) Transportation Problems** • Maximization & Minimization Type Problems. • Balanced and Unbalanced problems. • Prohibited Transportation Problems, Unique or Multiple Optimal Solutions. • Simple Formulation of Transportation Problems. • Initial Feasible Solution (IFS) by: a. North West Corner Rule (NWCR) b. Least Cost Method (LCM) c. Vogel's Approximation Method (VAM) • Maximum 5 x 5 Transportation Matrix. • Finding Optimal Solution by Modified Distribution (MODI) Method. (u, v and Δ) • Maximum Two Iterations (i.e. Maximum Two Loops) after IFS. **Note:** 1. Production Scheduling Problem is not included. 2. Time Minimization Problem is not included. 3. Degeneracy Concept to be covered only at Conceptual Level. Not to be included in Numerical.

SN	Modules/ Units
3	**Network Analysis**
	a) Critical Path Method (CPM) • Concepts: Activity, Event, Network Diagram, Merge Event, Burst Event, Concurrent and Burst Activity, • Construction of a Network Diagram. Node Relationship and Precedence Relationship. • Principles of Constructing Network Diagram. • Use of Dummy Activity • Numerical Consisting of Maximum Ten (10) Activities. • Critical Path, Sub-critical Path, Critical and Non-critical Activities, Project Completion Time. • Forward Pass and Backward Pass Methods. • Calculation of EST, EFT, LST, LFT, Head Event Slack, Tail Event Slack, Total Float, Free Float, Independent Float and Interfering Float **b) Project Crashing** • Meaning of Project Crashing. • Concepts: Normal Time, Normal Cost, Crash Time, Crash Cost of Activities. Cost Slope of an Activity. • Costs involved in Project Crashing: Numericals with Direct, Indirect, Penalty, crash cost and Total Costs. • Time – Cost Trade off in Project Crashing. • Optimal (Minimum) Project Cost and Optimal Project Completion Time. • Process of Project Crashing. • Numerical Consisting of Maximum Ten (10) Activities. • Numerical based on Maximum Four (04) Iterations of Crashing **c) Program Evaluation and Review Technique (PERT)** • Three Time Estimates of PERT: Optimistic Time (a), Most Likely Time (m) and Pessimistic Time (b). • Expected Time (te) of an Activity Using Three Time Estimates. • Difference between CPM and PERT. • Numerical Consisting of Maximum Ten (10) Activities. • Construction of PERT Network using tevalues of all Activities. • Mean (Expected) Project Completion Time. • Standard Deviation and Variance of Activities. • Project Variance and Project Standard Deviation. • 'Prob. Z' Formula. • Standard Normal Probability Table. Calculation of Probability from the Probability Table using 'Z' Value and Simple Questions related to PERT Technique. • Meaning, Objectives, Importance, Scope, RORO/LASH

SN	Modules/ Units
4	**Job Sequencing and Theory of Games**
	a) Job Sequencing Problem • Processing Maximum 9 Jobs through Two Machines only. • Processing Maximum 6 Jobs through Three Machines only. • Calculations of Idle Time, Elapsed Time etc. **b) Theory of Games** • Introduction • Terminology of Game Theory: Players, Strategies, Play, Payoff, Payoff matrix, Maximin, Maximax, Saddle Point. • Types of Games. • Numericals based on: ▪ Two Person Zero Sum Games including strictly determinable and Fair Game - Pure Strategy Games (Saddle Point available). Principles of Dominance method.

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Innovative Financial Services
• *IM Pandey, Financial Management, Vikas Publishing House Ltd.* • *Khan M.Y., Financial Services, Mc Graw Hill Education.* • *Dr.S.Gurusamy, Financial Services, Vijay Nicole Imprints.* • *Financial Market and Services, E, Gordon and K. Natrajan, Himalaya Publishing House*
Project Management
• *Harold Kerzer, Project Management – A System Approach to Planning, Scheduling & Controlling* • *Jack.R.Meredith & Samuel.J.Mantel, Jr.,Project Management – A Managerial Approach* • *Bhavesh.M.Patel, Project Management – Strategic Financial Planning , Evaluation & Control*
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• *C. Paramasivan& T. Subramanian, Financial Management* • *IM Pandey, Financial Management* • *Ravi Kishor, Financial Management* • *Khan & Jain, Financial Management* • *Van Horne &Wachowiz, Fundamentals of Financial Management* • *Prasanna Chandra, Strategic Financial Management*
Financing Rural Development
• *Rural Banking – IIB Macmillan* • *MicroFinance Perspective and Finance - IIB Macmillan* • *MSME in India – Taxman*
Indirect Taxes
• *GST Bare Act 2017* • *GST Law & Practice - V.S Datey (6th Edition)* • *GST Laws – National Academy of Customs, Indirect Tax*
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International Marketing
• *Dr. Shakeel Ahmad Siddiqui, International Marketing, Dreamtech press , Edition 2011* • *Philip R.Cateora, John L. Graham, Prashanth Salwan, International Marketing , Tata Mcgraw hill Education Private limited, New Delhi, Thirteenth Edition .* • *RajGopal, International Marketing, Vikas Publishing House Pvt. Ltd., Edition 2007.* • *Sak Onkvisit, John J.Shaw, International Marketing Analysis and Strategy, Pearson Publication, Third Edition* • *Francis Cherunilam, International Business, PHI Leaning Private Limited New Delhi, Fifth Edition .* • *Justin Paul and Ramneek Kapoor, International Marketing Text and Cases, Tata Mcgraw Hill Education Private Limited New Delhi, Second Edition.* • *Rakesh Mohan Joshi, International Marketing, Oxford University Press, Second Edition* • *Philip R. Cateora, John L. Graham, International Marketing, Tata Mcgraw Hill, Twelfth Edition* • *Rakesh Mohan Joshi, International Marketing Oxford University Press, First Edition* • *Michael R. Czinkota, Iikka A Ronkainen, International Marketing, Cengage Learning Edition 2007* • *Gerald Albaum, Edwin Duerr, Jesper Strandskov, International Marketing and Export Management, Pearson Publication , Fifth Edition*
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• *Arpita Menon , Media Planning and Buying, Tata McGraw Hill Education Private Limited , Second Edition 2010* • *Jack Z Sissors and Roger B. Baron, Advertising Media Planning, McGraw Hill Education India Pvt. Limited, Seventh Edition.* • *Larry Percy and Richard Elliott, Strategic Advertising Management , Oxford University Press, Second Edition* • *Larry d. Kelly and Donald W.Jugeneimer, Advertising Media Planning , PHI learning Private Limited,* • *Dennis .F.Herrick, Media Management in Age of Giants, Surjeet Publications* • *Charles Warner and Joseph Buchman, Media selling ,Surjeet Publication,3rd edition*

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Marketing of Non-Profit Organisation
• *Philip Kotler & Alan R Andersan, Strategic Marketing for nonprofit organization, 07th Edition, 2008, Prentice Hall.* • *Banies, Fill & Rosengren (2016), Marketing, Oxford University Press.* • *TCC Group & The California Endowment Fund, what makes an effective advocacy organization – A framework for determining advocacy capacity, June 2009, TCC Group.* • *Global CSR Summit, A study by Ernst & Young and PHD Chamber, 2013.* • *PWC & CII, Handbook on Corporate Social responsibility, 2013, CII Development Initiative Council.* • *Sahu Pani, Non- Governmental Organisations Development Actors, 2010, Himalaya Publishing, New Delhi* • *O.P.Goel, Strategic Management & Policy issues of NGO's, 2004, Isha Books, Delhi* • *B.R., Nanda, NGO Management, 2010, Surendra Publications, New Delhi* • *Snehlata Chnadra,,Guidelines for NGOs Management in India, 2003, Kanishka Publishers, Distributors, New Delhi* • *Shilaja Nagendra, Voluntary Organisations & Social Work,2007, Oxford Book Company, Jaipur*
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Reference Books
Organisational Development
• *Dr. Mrs. Anjali Ghanekar, Essentials of Organisation Development, Everest Publishing House* • *French,W.L. and Bell, C.H., Organisation Development, Prentice-Hall, New Delhi,1995.* • *Harvey, D.F. and Brown, D.R., An Experimental Approach to Organization Development, Prentice-Hall, Englewood Cliffs,N.J.,1990* • *Cummings, T. G. & Worley, C. G. (2009).Organization Development and Change (9th edition). Canada: South-Western Cengage Learning* • *Thomas G. Cummings and Christopher G. Worley, Organization Development and Change, Thomson South-Western, 8th Edition 2004.* • *Cummings, T. G., Theory of Organization Development and Change, South Western.* • *Ramanarayan, S. and Rao, T.V., Organization Development: Accelerating Learning and Transformation, 2nd Edition, Sage India, 2011.* • *Richard L, Organisation, Theory, Change and Design , India Edition(Cenage Learning)* • *Garath R Jones, Mary Mathew , Organisation Theory, Design and Change: Sixth Edition, Pearson* • *Wendell L French, Cecil H Bell, Jr, Veena Vohra ,Organisation Development , Sixth Edition, Pearson Education*
HRM in Service Sector Management
• *C. Bhattacharjee: Service Sector Management, An Indian Perspective, Jaico Publishing House* • *Christopher Lovelock, Jochen Wirtz, Jayanta Chatterjee: Services Marketing, Pearson* • *Christopher Lovelock: Services Marketing, People, Technology, Strategy, Pearson Education Asia* • *James A. Fitzsimmons, Mona J, Fitzsimmons: Service Management , Operations, Strategy, Information Technology, Tata McGraw – Hill* • *Zeithmal, Bitner, Gremler, Pandit: Services Marketing, Tata McGraw – Hill* • *Lovelock, Wirtz: Services Marketing, Pearson Education, 5th Edition* • *K. Rao: Services Marketing, Pearson Education* • *Ramneek Kapoor, Justin Paul, Biplab Halder: Services Marketing*
Workforce Diversity
• *Dessler Gary, A Framework for Human Resource Management, Pearson Publication, 7th Edition.* • *Handbook of Research on Workforce Diversity in a Global Society, edited by Scott, Chaunda L.* • *Diversity in the Workforce: Current Issues and Emerging Trendsedited by Marilyn Y. Byrd, Chaunda L. Scott* • *Managing Diversity: Human Resource Strategies for Transforming the Workplace Ellen Ernst Kossek, Sharon A. Lobel* • *Workforce Diversity Management: Challenges, Competencies and Strategies - Bahaudin Mujtaba* • *Handbook of Research on Organizational Culture and Diversity in the Modern, edited by Christiansen, Bryan, Chandan, Harish C*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Human Resource Accounting & Auditing
• *HR Audit : Evaluating the human resource functions for business improvement by T.V. Rao, Response Books* • *Eric G. Flamholtz, Human Resource Accounting, Springer* • *Jac Fitzenz, How To Measure Human Resource Management, McGraw Hill* • *Rakesh Chandra Katiyar, Accounting For Human Resources , UK Publishing* • *M. Saeed, D.K. Kulsheshtha , Human Resource Accounting, Anmol Publications.* • *D. Prabakara Rao, Human Resource Accounting, Inter India Publications* • *Human Resource Management by Gary Dessler, Pearson Publications.* • *Rao, T.V. 2008. HRD Scorecard 2500, 1/e; New Delhi: Response Books* • *Udai Pareek and Rao T V (2003). Designing and Managing Human Resource*
Indian Ethos in Management
• *R Nandagopal, Ajith Sankar RN: Indian Ethics and Values in Management, Tata Mc Graw Hill* • *Bhatta, S.K., Business Ethics & Managerial Values.* • *Dave, Nalini V: Vedanta and Mana* • *Chakraborty, S.K.: Foundation of Managerial Work-Contributions from Indian Thought, Himalaya Publication House, Delhi 1998* • *Chakraborty, S.K.: Managerial Effectiveness and Quality of Work life – Indian Insights, Tata McGraw Hill Publishing Company, New Delhi – 1987* • *Chakraborty, S.K.: Management by Values, Oxford University Press 1991.* • *Nandagopal, Ajith Shankar, Indian Ethos and Values in Management, Tata Mc Graw Hill, 2010* • *Khandelwal Indian Ethos and Values for Managers, Himalaya Publishing House, 2009* • *Biswanath Ghosh, Ethics In Management and Indian Ethos, Vikas Publishing House, 2009* • *Joseph Des Jardins, An Introduction to Business Ethics , Tata Mc Graw Hill, 2009* • *S K Chakraborty, Management by Values, Oxford University Press, New Delhi, 2008*
Operation Research
• *Taha H.A., Operations Research - An Introduction, 6th Edition , Hall of India* • *Kapoor V.K., Operations Research Techniques for Management, 7th Edition, Sultan Chand & Sons* • *Kantiswarup, Gupta P.K. & Manmohan, Operations Research 9th Edition, Sultan Chand & Sons* • *Sharma S.D.,Operations Research, 8th Edition, Kedarnath, Ramnath& Company* • *Bronson R, Operations Research, 2nd Edition, Shaum's Outline Series* • *Vora N.D, Quantitative Techniques in Management, 3rd Edition, Tata McGraw Hill co.* • *Shreenath L.S, Principles & Application 3rd Ed,., PERT & CPM, Affiliated East-West Press Pvt. Ltd.* • *Wagener H.M.,Principles of Operations Research 2nd Edition, Prentice - Hall of India* • *Sasieni M, Yaspan A & John Wiley & Sons Friedman L, Operations Research - Methods & Problems 1st Edition* • *NatrajanBalasubramani, Tamilarasi, Operations Research, Pearson Education* • *G. Hadley, Linear Programming, Narosa Book Distributors Private Ltd* • *L.C. Jhamb, Quantitative Techniques (For Managerial Decisions VOL I), Everest Publishing House, Pune.* • *Paul Loomba, Linear Programming, Tata McGraw Hill Publishing Co. Ltd.* • *Aditham B. Rao , Operations Research Edition 2008, Jaico Publishing House, Mumbai*

University of Mumbai

Bachelor of Management Studies Programme
Guidelines for Project Work
at
Third Year
Semester VI

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year 2018-2019)

Board of Studies-in-Business Management

Introduction

Inclusion of project work in the course curriculum of the Bachelor of Management Studies programme is one of the ambitious aspects in the programme structure. The main objective of inclusion of project work is to inculcate the element of research analyse and scientific temperament challenging the potential of learner as regards to his/ her eager to enquire and ability to interpret particular aspect of the study. It is expected that the guiding teacher should undertake the counselling sessions and make the awareness among the learners about the methodology of formulation, preparation and evaluation pattern of the project work.

- There are two modes of preparation of project work
  1. Project work based on research methodology in the study area
  2. Project work based on internship in the study area

Guidelines for preparation of Project Work

1. General guidelines for preparation of project work based on Research Methodology

- The project topic may be undertaken in any area of Elective Courses.
- Each of the learner has to undertake a Project individually under the supervision of a teacher-guide.
- The learner shall decide the topic and title which should be specific, clear and with definite scope in consultation with the teacher-guide concerned.
- University/college shall allot a guiding teacher for guidance to the students based on her / his specialization.
- The project report shall be prepared as per the broad guidelines given below:
  - Font type: Times New Roman
  - Font size: 12-For content, 14-for Title
  - Line Space : 1.5-for content and 1-for in table work
  - Paper Size: A4
  - Margin : in Left-1.5, Up-Down-Right-1
  - The Project Report shall be bounded.
  - The project report should be 80 to 100 pages

Format

1st page (Main Page)

Title of the problem of the Project

A Project Submitted to

University of Mumbai for partial completion of the degree of

Bachelor of Management Studies

Under the Faculty of Commerce

By

Name of the Learner

Under the Guidance of

Name of the Guiding Teacher

Name and address of the College

Month and Year

2nd Page
This page to be repeated on 2nd page (i.e. inside after main page)

On separate page

Index

Structure to be followed to maintain the uniformity in formulation and presentation of Project Work

(Model Structure of the Project Work)

- **Chapter No. 1: Introduction**

  In this chapter Selection and relevance of the problem, historical background of the problem, brief profile of the study area, definition/s of related aspects, characteristics, different concepts pertaining to the problem etc can be incorporated by the learner.

- **Chapter No. 2: Research Methodology**

  This chapter will include Objectives, Hypothesis, Scope of the study, limitations of the study, significance of the study, Selection of the problem, Sample size, Data collection, Tabulation of data, Techniques and tools to be used, etc can be incorporated by the learner.

- **Chapter No. 3: Literature Review**

  This chapter will provide information about studies done on the respective issue. This would specify how the study undertaken is relevant and contribute for value addition in information/ knowledge/ application of study area which ultimately helps the learner to undertake further study on same issue.

- **Chapter No. 4: Data Analysis, Interpretation and Presentation**

  This chapter is the core part of the study. The analysis pertaining to collected data will be done by the learner. The application of selected tools or techniques will be used to arrive at findings. In this, table of information's, presentation of graphs etc. can be provided with interpretation by the learner.

- **Chapter No. 5: Conclusions and Suggestions**

  In this chapter of project work, findings of work will be covered and suggestion will be enlisted to validate the objectives and hypotheses.

Note: If required more chapters of data analysis can be added.

- **Bibliography**
- **Appendix**

On separate page

Name and address of the college

Certificate

This is to certify that Ms/Mr _____has worked and duly completed her/his Project Work for the degree of Bachelor of Management Studies under the Faculty of Commerce in the subject of _____ and her/his project is entitled, "_____*Title of the Project*_____" under my supervision.

I further certify that the entire work has been done by the learner under my guidance and that no part of it has been submitted previously for any Degree or Diploma of any University.

It is her/ his own work and facts reported by her/his personal findings and investigations.

Seal of the College

Name and Signature of Guiding Teacher

Date of submission:

On separate page

Declaration by learner

I the undersigned Miss / Mr. _____*Name of the learner*_____here by, declare that the work embodied in this project work titled "_____ _____*Title of the Project*_____", forms my own contribution to the research work carried out under the guidance of _____*Name of the guiding teacher*_____ is a result of my own research work and has not been previously submitted to any other University for any other Degree/ Diploma to this or any other University.

Wherever reference has been made to previous works of others, it has been clearly indicated as such and included in the bibliography.

I, here by further declare that all information of this document has been obtained and presented in accordance with academic rules and ethical conduct.

Name and Signature of the learner

Certified by

Name and signature of the Guiding Teacher

On separate page

Acknowledgment

(Model structure of the acknowledgement)

To list who all have helped me is difficult because they are so numerous and the depth is so enormous.

I would like to acknowledge the following as being idealistic channels and fresh dimensions in the completion of this project.

I take this opportunity to thank the **University of Mumbai** for giving me chance to do this project.

I would like to thank my **Principal, _____**for providing the necessary facilities required for completion of this project.

I take this opportunity to thank our **Coordinator_____**, for her moral support and guidance.

I would also like to express my sincere gratitude towards my project guide _____ whose guidance and care made the project successful.

I would like to thank my **College Library**, for having provided various reference books and magazines related to my project.

Lastly, I would like to thank each and every person who directly or indirectly helped me in the completion of the project especially **my Parents and Peers** who supported me throughout my project.

2. Guidelines for Internship based project work

- Minimum 20 days/ 100 hours of Internship with an Organisation/ NGO/ Charitable Organisation/ Private firm.
- The theme of the internship should be based on any study area of the elective courses
- Experience Certificate is Mandatory
- A project report has to be brief in content and must include the following aspects:
  - **Executive Summary:**
    A bird's eye view of your entire presentation has to be precisely offered under this category.
  - **Introduction on the Company:**
    A Concise representation of company/ organization defining its scope, products/ services and its SWOT analysis.
  - **Statement and Objectives:**
    The mission and vision of the organization need to be stated enshrining its broad strategies.
  - **Your Role in the Organisation during the internship:**
    The key aspects handled, the department under which you were deployed and brief summary report duly acknowledged by the reporting head.
  - **Challenges:**
    The challenges confronted while churning out theoretical knowledge into practical world.
  - **Conclusion:**
    A brief overview of your experience and suggestions to bridge the gap between theory and practice.
- The project report based on internship shall be prepared as per the broad guidelines given below:
  - Font type: Times New Roman
  - Font size: 12-For content, 14-for Title
  - Line Space : 1.5-for content and 1-for in table work
  - Paper Size: A4
  - Margin : in Left-1.5, Up-Down-Right-1
  - The Project Report shall be bounded.
  - The project report should be of minimum 50 pages

Evaluation pattern of the project work

The Project Report shall be evaluated in two stages viz.	
• **Evaluation of Project Report (Bound Copy)**	**60 Marks**
▪ Introduction and other areas covered	20 Marks
▪ Research Methodology, Presentation, Analysis and interpretation of data	30 Marks
▪ Conclusion & Recommendations	10 Marks
• **Conduct of Viva-voce**	**40 Marks**
▪ In the course of Viva-voce, the questions may be asked such as importance / relevance of the study, objective of the study, methodology of the study/ mode of Enquiry (question responses)	10 Marks
▪ Ability to explain the analysis, findings, concluding observations, recommendation, limitations of the Study	20 Marks
▪ Overall Impression (including Communication Skill)	10 Marks

Note:

- ***The guiding teacher along with the external evaluator appointed by the University/ College for the evaluation of project shall conduct the viva-voce examination as per the evaluation pattern***

Passing Standard

- Minimum of Grade E in the project component
- In case of failing in the project work, the same project can be revised for ATKT examination.
- Absence of student for viva voce: If any student fails to appear for the viva voce on the date and time fixed by the department such student shall appear for the viva voce on the date and time fixed by the Department, such student shall appear for the viva voce only along with students of the next batch.

Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

Question Paper Pattern
(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	**One class test (20 Marks)**	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions ***(½ Mark each)***	05 Marks
	Answer in One or Two Lines (Concept based Questions) ***(01 Mark each)***	05 Marks
	Answer in Brief (Attempt Any Two of the Three) ***(05 Marks each)***	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

i) Duration: The examination shall be of 2 ½ Hours duration

ii) Theory question paper pattern

- There shall be five questions each of 15 marks.
- All questions shall be compulsory with internal choice within the questions.
- Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the topic.

  (Detail question paper pattern has been given separately)

❖ **Passing Standard**

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern
(Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 1/2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A. Sub Questions to be asked 10 and to be answered any 08 B. Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 1/2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

UNIVERSITY OF MUMBAI
No. UG/109 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the Bachelor of Management Studies (B.M.S) degree programme **vide** this office Circular No. UG/144 of 2011 dated 14th June, 2011 the Principals of affiliated Colleges in Commerce are hereby informed that the approved by the Academic Council at its meeting held on 24th June, 2016 **vide** item No. 4.80 and that in accordance therewith, the revised syllabus as per Choice Based Credit System for (B.M.S) Program – Course Structure (Sem. I to VI), which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032
October, 2016

(Dr.M.A. Khan)
REGISTRAR

To,

The Principals of affiliated Colleges in Commerce and the Heads of recognized Institutions concerned.

A.C/4.80 /24/06/2016

****

No. UG/109-A of 2016-17 MUMBAI-400 032 25 October, 2016

Copy forwarded with compliments for information to:-

1) The Dean, Faculty of Commerce,
2) The Director, Board of College and University Development,
3) The Controller of Examinations,
4) The Professor-cum- Director, Institute of Distance and Open Learning (IDOL),
5) The Co-Ordinator, University Computerization Centre.

(Dr.M.A. Khan)
REGISTRAR

PTO..

AC 24-06-2016
Item No. 4.80

University of Mumbai

Bachelor of Management Studies (BMS) Programme
Three Year Integrated Programme- Six Semesters
Course Structure

Under Choice Based Credit *System*

To be implemented from Academic Year- 2016-2017 Progressively

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

FYBMS

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1	Introduction to Financial Accounts	**03**	1	Principles of Marketing	**03**
2	Business Law	**03**	2	Industrial Law	**03**
3	Business Statistics	**03**	3	Business Mathematics	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***		***2A***	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - I	**03**	4	Business Communication -II	**03**
2B	****Skill Enhancement Courses (SEC)***		**2B**	*****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of courses	**02**	5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
6	Foundation of Human Skills	**03**	6	Business Environment	**03**
7	Business Economics-I	**03**	7	Principles of Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***		*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - I	1	Foundation Course - Value Education and Soft Skill - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

SYBMS

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1 & 2	*Any one group of courses from the following list of the courses	**06**	1 & 2	** Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
3	Information Technology in Business Management - I	**02**	3	Information Technology in Business Management-II	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
4	Environmental Management	**03**	4	Business Economics-II	**03**
5	Business Planning & Entrepreneurial Management	**03**	5	Business Research Methods	**03**
6	Accounting for Managerial Decisions	**03**	6	Ethics & Governance	**03**
7	Strategic Management	**03**	7	Production & Total Quality Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of group of ElectiveCourses(EC) for Semester III (Any two)***		***** List of group of Elective Courses(EC) for Semester IV (Any two)***	
Group A: Finance Electives (Any Two Courses)			
1	Basics of Financial Services	1	Financial Institutions & Markets
2	Introduction to Cost Accounting	2	Auditing
3	Equity & Debt Market	3	Strategic Cost Management
4	Corporate Finance	4	Behavioural Finance
Group B:Marketing Electives (Any Two Courses)			
1	Consumer Behaviour	1	Integrated Marketing Communication
2	Product Innovations Management	2	Rural Marketing
3	Advertising	3	Event Marketing
4	Social Marketing	4	Tourism Marketing
Group C: Human Resource Electives(Any Two Courses)			
1	Recruitment & Selection	1	Human Resource Planning & Information System
2	Motivation and Leadership	2	Training & Development in HRM
3	Employees Relations & Welfare	3	Change Management
4	Organisation Behaviour & HRM	4	Conflict & Negotiation
Note: Group selected in Semester III will continue in Semester IV			

TYBMS

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**	1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	***Core Courses (CC)***		***2***	***Core Courses (CC)***	
5	Logistics & Supply Chain Management	**04**	5	Operation Research	**04**
3	✓ ***Project Work***		***3***	✓ ***Project Work***	
6	Project Work I	**04**	6	Project Work II	**04**
	Total Credits	**20**		**Total Credits**	**20**

✓ ***Note:*** *Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 04 credits. A project work may be undertaken in any area of Elective Courses/ study area selected*

List of group of Elective Courses(EC) for Semester V (Any four)		***** List of group of Elective Courses(EC) for Semester VI (Any four)***	
Group A: Finance Electives (Any four Courses)			
1	Investment Analysis & Portfolio Management	1	International Finance
2	Commodity & Derivatives Market	2	Innovative Financial Services
3	Wealth Management	3	Project Management
4	Strategic Financial Management	4	Risk Management in Banking Sector
5	Risk Management	5	Direct Taxes
6	Financing Rural Development	6	Indirect Taxes
Group B:Marketing Electives (Any four Courses)			
1	Services Marketing	1	Brand Management
2	E-Commerce & Digital Marketing	2	Retail Management
3	Sales & Distribution Management	3	International Marketing
4	Customer Relationship Management	4	Media Planning & Management
5	Industrial Marketing	5	Corporate Communication & Public Relations
6	Strategic Marketing Management	6	Marketing of Non Profit Organisation
Group C: Human Resource Electives (Any four Courses)			
1	Finance for HR Professionals & Compensation Management	1	HRM in Global Perspective
2	Strategic Human Resource Management & HR Policies	2	Organisational Development
3	Performance Management & Career Planning	3	HRM in Service Sector Management
4	Industrial Relations	4	Workforce Diversity
5	Talent & Competency Management	5	Human Resource Accounting & Audit
6	Stress Management	6	Indian Ethos in Management
Note: Group selected in Semester III will continue in Semester V &Semester VI			

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses
of
Bachelor of Management Studies(BMS) Programme
First Year
Semester I and II

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year- 2016-2017)

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

FYBMS

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1	Introduction to Financial Accounts	**03**	1	Principles of Marketing	**03**
2	Business Law	**03**	2	Industrial Law	**03**
3	Business Statistics	**03**	3	Business Mathematics	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***		***2A***	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - I	**03**	4	Business Communication -II	**03**
2B	****Skill Enhancement Courses (SEC)***		**2B**	*****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of courses	**02**	5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
6	Foundation of Human Skills	**03**	6	Business Environment	**03**
7	Business Economics-I	**03**	7	Principles of Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***		*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - I	1	Foundation Course- II
2	Foundation Coursein NSS - I	2	Foundation Coursein NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course inPhysical Education - I	4	Foundation Course inPhysical Education - II
Note: Course selected in Semester I will continue in Semester II			

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester I

No. of Courses	Semester I	Credits
1	***Elective Courses (EC)***	
1	Introduction to Financial Accounts	**03**
2	Business Law	**03**
3	Business Statistics	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - I	**03**
2B	****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
6	Foundation of Human Skills	**03**
7	Business Economics-I	**03**
	Total Credits	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***	
1	Foundation Course - I
2	Foundation Course in NSS - I
3	Foundation Course in NCC - I
4	Foundation Course in Physical Education - I

Revised Syllabus of Courses ofBachelor of Management Studies (BMS) Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)

1. Introduction to Financial Accounts

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Accounting Transactions	15
3	Depreciation Accounting & Trial Balance	15
4	Final Accounts	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction**
	• **Meaning and Scope of Accounting:** Need and development, definition: Book-Keeping and accounting, Persons interested in accounting, Branches of accounting, Objectives of accounting • **Accounting principles**: Introductions to Concepts and conventions. • **Introduction to Accounting Standards:** Meaning and Scope) ▪ **AS 1 :** Disclosure to Accounting Policies ▪ **AS 6:** Depreciation Accounting. ▪ **AS 9:** Revenue Recognition. ▪ **AS 10:** Accounting For Fixed Assets. • **International Financial Reporting Standards (IFRS):** Introduction to IFRS ▪ **IAS-1:**Presenttion of Financial Statements (Introductory Knowledge) ▪ **IAS-2:**Inventories (Introductory Knowledge) • **Accounting in Computerized Environment:** Introduction, Features and application in various areas of Accounting
2	**Accounting Transactions**
	• **Accounting transactions**: Accounting cycle, Journal, Journal proper, Opening and closing entries, Relationship between journal & ledger: Rules regarding posting: Trial balance: Subsidiary books (Purchase, Purchase Returns, Sales, Sales Returns & cash book –Triple Column), Bank Reconciliation Statement. • **Expenditure**:Classification of Expenditure- Capital, revenue and Deferred Revenue expenditureUnusual expenses: Effects of error: Criteria test. • **Receipts:** Capital receipt, Revenue receipt, distinction between capital receipts and revenue receipts. • **Profit or Loss:** Revenue profit or loss, capital profit or loss
3	**Depreciation Accounting & Trial Balance**
	• **Depreciation accounting:** Practical problem based on depreciation using SLM and RBM methods. (Where Provision for depreciation Account not maintained). • **Preparation of Trial Balance:**Introduction and Preparation of Trial Balance
4	**Final Accounts**
	• Introduction to Final Accounts of a Sole proprietor. • Rectification of errors. • Manufacturing Account, Trading Account, Profit and Loss Account and Balance Sheet. • Preparation and presentation of Final Accounts in horizontal format • Introduction to Schedule 6 of Companies Act ,1956

Revised Syllabus of Courses ofBachelor of Management Studies (BMS) Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)

2. Business Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Contract Act, 1872 & Sale of Goods Act, 1930	15
2	Negotiable Instrument Act, 1981 & Consumer Protection Act, 1986	15
3	Company Law	15
4	Intellectual Property Rights(IPR)	15
	Total	**60**

Sr. No.	Modules / Units
1	**Contract Act, 1872 & Sale of Goods Act, 1930**
	• **Contract Act,1872:** Essential elements of Contract; Agreement and Contract – Capacity to Contract, free consent, consideration, lawful objects/ consideration, Breach of contract. Remedies for breach of Contract. • **Sale of Goods Act,1930:** Scope of Act, Sale and Agreement to sell, essential of a valid Sale Contract – Conditions and warranties – Implied Condition and warranties, Rights of an unpaid seller.
2	**Negotiable Instrument Act, 1981 & Consumer Protection Act, 1986**
	• **Negotiable Instrument Act,1981:** Introduction of Negotiable Instruments – Characteristics of negotiable instruments, Promissory note, Bills of exchange, Cheque, Dishonour of Cheque. • **Consumer Protection Act, 1986:** Objects of Consumer Protection- Introduction of Consumers, who is consumer? Meaning of the words "Goods and services" – Meaning of thewords "Defects and Deficiencies of goods and services" Consumer disputes and Complaints.
3	**Company Law**
	• **Company Law:** What is company? – Incorporation of company – MOA, AOA, Prospectus, Meetings, Meaning of transfer and transmission of shares.
4	**Intellectual Property Rights(IPR)**
	• **Intellectual Property Rights (IPR)** ▪ IPR definition/ objectives ▪ Patent definition. What is patentable? What is not patentable? Invention And its Attributes, Inventors and Applications ▪ Trademarks, definition, types of trademarks, infringement and passing off. ▪ Copy right definition and subject in which copy right exists, Originality, Meaning and Content, Authors and Owners, Rights and Restrictions. ▪ Geographical indications (only short notes)

Revised Syllabus of Courses ofBachelor of Management Studies (BMS) Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)

3. Business Statistics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Statistics	15
2	Measures of Dispersion, Co-Relation and Linear Regression	15
3	Time Series and Index Number	15
4	Probability andDecision Theory	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Statistics**
	• **Introduction:** Functions/Scope, Importance, Limitations • **Data:** Relevance of Data(Current Scenario), Type of data(Primary & Secondary), Primary(Census vs Samples, Method of Collection (In Brief), Secondary(Merits, Limitations, Sources) (In Brief) • **Presentation Of Data:**Classification – Frequency Distribution – Discrete & Continuous, Tabulation, Graph(Frequency, Bar Diagram, Pie Chart, Histogram, Ogives) • **Measures Of Central Tendency:**Mean(A.M, Weighted, Combined), Median(Calculation and graphical using Ogives), Mode(Calculation and Graphical using Histogram), Comparative analysis of all measures of Central Tendency
2	**Measures of Dispersion, Co-Relation and Linear Regression**
	• **Measures Of Dispersion:** Range with C.R(Co-Efficient Of Range), Quartiles & Quartile deviation with CQ (Co-Efficient Of Quartile), Mean Deviation from mean with CMD (Co-Efficient Of Mean Deviation), Standard deviation with CV(Co-Efficient Of Variance), Skewness& Kurtosis (Only concept) • **Co-Relation:** Karl Pearson, Rank Co-Relation • **Linear Regression:** Least Square Method
3	**Time Series and Index Number**
	• **Time Series:** Least Square Method, Moving Average Method, Determination of Season • **Index Number:** Simple(unweighted) Aggregate Method, Weighted Aggregate Method, Simple Average of Price Relatives, Weighted Average of Price Relatives, Chain Base Index Numbers, Base Shifting, Splicing and Deflating, Cost of Living Index Number
4	**Probability and Decision Theory**
	• **Probability:** Concept of Sample space, Concept of Event, Definition of Probability, Addition & Multiplication laws of Probability, Conditional Probability, Bayes' Theorem(Concept only), Expectation & Variance, Concept of Probability Distribution(Only Concept) • **Decision Theory:** Acts, State of Nature Events, Pay offs, Opportunity loss, Decision Making under Certainty, Decision Making under Uncertainty, • Non-Probability: Maximax, Maximin, Minimax, Regret, Laplace &Hurwicz) • **Probabilitistics (Decision Making under risk):**EMV, EOL, EVPI • Decision Tree

Revised Syllabus of Courses ofBachelor of Management Studies (BMS)Programme at Semester I
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Ability Enhancement Courses (AEC)

4. Business Communication- I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Theory of Communication	15
2	Obstacles to Communication in Business World	15
3	Business Correspondence	15
4	Language and Writing Skills	15
	Total	**60**

Sr. No.	Modules / Units
1	**Theory of Communication**
	Concept of Communication: Meaning, Definition, Process, Need, FeedbackEmergence of Communication as a key concept in the Corporate and Global worldImpact of technological advancements on Communication **Channels and Objectives of Communication**: **Channels-** Formal and Informal- Vertical, Horizontal, Diagonal, Grapevine **Objectives of Communication**: Information, Advice, Order and Instruction, Persuasion, Motivation, Education,Warning, and Boosting the Morale of Employees(A brief introduction to these objectives to be given) **Methods and Modes of Communication:** Methods: Verbal and Nonverbal, Characteristics of Verbal Communication Characteristics of Non-verbal Communication, Business Etiquette Modes: Telephone and SMS Communication 3 (General introduction to Telegram to be given) Facsimile Communication [Fax] Computers and E- communication Video and Satellite Conferencing
2	**Obstacles to Communication in Business World**
	Problems in Communication /Barriers to Communication: Physical/ Semantic/Language / Socio-Cultural / Psychological / Barriers, Ways to Overcome these Barriers **Listening:** Importance of Listening Skills, Cultivating good Listening Skills – 4 **Introduction to Business Ethics:** Concept and Interpretation, Importance of Business Ethics, Personal Integrity at the workplace, Business Ethics and media, Computer Ethics, Corporate Social Responsibility Teachers can adopt a case study approach and address issues such as the following so as to orient and sensitize the student community to actual business practices: Surrogate Advertising, Patents and Intellectual Property Rights, Dumping of Medical/E-waste, Human Rights Violations and Discrimination on the basis of gender, race, caste, religion, appearance and sexual orientation at the workplace Piracy, Insurance, Child Labour
3	**Business Correspondence**
	Theory of Business Letter Writing: Parts, Structure, Layouts—Full Block, Modified Block, Semi - Block Principles of Effective Letter Writing, Principles of effective Email Writing, **Personnel Correspondence:** Statement of Purpose, Job Application Letter and Resume, Letter of Acceptance of Job Offer, Letter of Resignation [Letter of Appointment, Promotion and Termination, Letter of Recommendation (to be taught but not to be tested in the examination)]

Sr. No.	Modules / Units
4	**Language and Writing Skills**
	Commercial Terms used in Business Communication **Paragraph Writing:** Developing an idea, using appropriate linking devices, etc Cohesion and Coherence, self-editing, etc [Interpretation of technical data, Composition on a given situation, a short informal report etc.] **Activities** ▪ Listening Comprehension ▪ Remedial Teaching ▪ Speaking Skills: Presenting a News Item, Dialogue and Speeches ▪ Paragraph Writing: Preparation of the first draft, Revision and Self – Editing, Rules of spelling. ▪ Reading Comprehension: Analysis of texts from the fields of Commerce and Management

Revised Syllabus of Courses ofBachelor of Management Studies (BMS)Programme at Semester I
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Skill Enhancement Courses (SEC)

5. Foundation Course -I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Indian Society	05
2	Concept of Disparity- 1	10
3	Concept of Disparity-2	10
4	The Indian Constitution	10
5	Significant Aspects of Political Processes	10
	Total	**45**

Sr. No.	Modules / Units
1	**Overview of Indian Society**
	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference
2	**Concept of Disparity- 1**
	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media;Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities
3	**Concept of Disparity-2**
	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic differences
4	**The Indian Constitution**
	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution
5	**Significant Aspects of Political Processes**
	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics

Revised Syllabus of Courses ofBachelor of Management Studies (BMS)Programme at Semester I
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Skill Enhancement Courses (SEC)

5.Foundation Course in NSS - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NSS	10
2	Concept of Society and Social Issues in India	15
3	Indian Constitution and Social Justice	10
4	Human Personality and National Integration	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to NSS**
	Introduction to National Service Scheme(NSS) Orientation and structure of National Service Scheme(NSS) National Service Scheme(NSS)- its objectives The historical perspective of National Service Scheme(NSS) National Service Scheme(NSS)- Symbol and its meaning National Service Scheme(NSS)- its hierarchy from national to college level **National Service Scheme(NSS) Regular activities** Distribution of working hours- Association between issues and programs- community project- urban rural activities, Association- modes of activity evaluation
2	**Concept of Society and Social Issues in India**
	History and philosophy of social sciences in India Concept of society- Development of Indian society - Features of Indian Society- Division of labour and cast system in India **Basic social issues in India** Degeneration of value system, Family system, Gender issues, Regional imbalance
3	**Indian Constitution and Social Justice**
	Indian Constitution Features of Indian Constitution - Provisions related to social integrity and development **Social Justice** Social Justice- the concept and its features Inclusive growth- the concept and its features
4	**Human Personality and National Integration**
	Dimensions of human personality Social Dimension of Human personality- Understanding of the socity Physical Dimension of Human personality- Physical Exercise, Yoga, etc. **National integration & Communal Harmony** National Integration- its meaning, importance and practice Communal Harmony- its meaning, importance and practice

Revised Syllabus of Courses ofBachelor of Management Studies (BMS)Programme at Semester I

with Effect from the Academic Year 2016-2017

Skill Enhancement Courses (SEC)

5.Foundation Course in NCC - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NCC, National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training, Environment Awareness and Conservation	10
4	Personality Development and Leadership	10
5	Specialized Subject: Army/ Navy/ Air	05
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to NCC, National Integration & Awareness**
	Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion. • Genesis, Aims, Objectives of NCC & NCC Song • Organisation& Training • Incentives & Benefits • Religions, Culture, Traditions and Customs of India • National Integration: Importance and Necessity • Freedom Struggle
2	**Drill: Foot Drill**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • General and Words of Command • Attention, Stand at Ease and Stand Easy, Turning and Inclining at the Halt • Sizing, Forming Up in Three Ranks and Numbering, Open and Close Order March and Dressing • Saluting at the Halt, Getting On Parade, Dismissing and Falling Out • Marching, Length of Pace and Time of Marching in Quick Time and Halt, Slow March and Halt • Turning on the March and Wheeling. • Saluting on the March. • Formation of squad and Squad Drill.
3	**Adventure Training, Environment Awareness and Conservation**
	Adventure Training **Desired outcome**: The students will overcome fear & inculcate within them the sense of adventure, sportsmanship,espirit-d-corp and develop confidence , courage , determination, diligence and quest for excellence. • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing,Scuba Diving etc **Environment Awareness and Conservation** Desired outcome: The student will be aware of the conservation of natural resources and protection of environment. • Natural Resources – Conservation and Management • Water Conservation and Rainwater Harvesting

Sr. No.	Modules / Units
4	**Personality Development and Leadership**
	Desired outcome: The student will develop an all-round personality with adequate leadership traits to deal / contribute effectively in life. • Introduction to Personality Development • Factors Influencing /Shaping Personality: Physical, Social, Physiological, Philosophical and Psychological • Self Awareness Know yourself/ Insight • Change Your Mind Set • Communication Skills: Group Discussion / Lecturettes (Public Speaking) • Leadership Traits • Types of Leadership
5	**Specialized Subject: Army Or Navy Or Air**
	<u>Army</u> **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Armed Force** • Basic organisation of Armed Forces • Organisation of Army • Badges and Ranks **B. Introduction to Infantry and weapons and equipments** • Characteristics of 7.62mm SLR Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning **C. Military history** • Biographies of renowned Generals (Carriapa / Sam Manekshaw) • Indian Army War Heroes- PVCs **D. Communication** • Types of Communications • Characteristics of Wireless Technologies (Mobile, Wi-Fi etc.) ***OR*** **<u>Navy</u>** **A. Naval orientation and service subjects** • History of the Indian Navy-Pre and Post Independence, Gallantry award winners • Organization of Navy- NHQ, Commands, Fleets, Ships and shore establishments • Types of Warships and their role • Organization of Army and Air Force- Operational and Training commands • Ranks of Officers and Sailors, Equivalent Ranks in the Three Services **B. Ship and Boat Modelling** • Principles of Ship Modelling • Maintenance and Care of tools

Sr. No.	Modules / Units
	C. Search and Rescue • SAR Organization in the Indian ocean **D. Swimming** Floating for three minutes and Free style swimming for 50 meters ***OR*** **<u>AIR</u>** **A. General Service Knowledge** • Development of Aviation • History of IAF **B. Principles of Flight** • Introduction • Laws of Motion • Glossary of Terms. **C. Airmanship** • Introduction • Airfield Layout • Rules of the Air • Circuit Procedure • ATC/RT Procedures • Aviation Medicine **D. Aero- Engines** • Introduction to Aero-engines

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Skill Enhancement Courses (SEC)

5.Foundation Course in Physical Education - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Basic Relevant concepts in Physical Education	10
2	Components of Physical Fitness	15
3	Testing Physical Fitness	10
4	Effect of Exercise on various Body System	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Basic Relevant concepts in Physical Education**
	• Dimensions and determinants of Health, Fitness & Wellness • Concept of Physical Education and its importance • Concept of Physical Fitness and its types • Concept of Physical Activity, exercise and its types & benefits
2	**Components of Physical Fitness**
	• Concept of components of Physical Fitness • Concept and components of HRPF • Concept and components of SRPF • Importance of Physical Education in developing physical fitness components.
3	**Testing Physical Fitness**
	• Tests for measuring Cardiovascular Endurance • Tests for measuring Muscular Strength& Endurance • Tests for measuring Flexibility • Tests for measuring Body Composition
4	**Effect of Exercise on various Body System**
	• Effect of exercises on Musculoskeletal system • Effect of exercises on Circulatory System • Effect of exercises on Respiratory System • Effect of exercises on Glandular System

Revised Syllabus of Courses ofBachelor of Management Studies (BMS) Programme at Semester I
WithEffect from the Academic Year 2016-2017

Core Courses (CC)

6.Foundation of Human Skills

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Understanding of Human Nature	15
2	Introduction to Group Behaviour	15
3	Organizational Culture and Motivation at workplace	15
4	Organisational Change, Creativity and Development and Work Stress	15
	Total	**60**

Sr. No.	Modules / Units
1	**Understanding of Human Nature**
	• **IndividualBehaviour:**Concept of a man, individual differences, factors affecting individual differences, Influence of environment • **Personality and attitude:** Determinants of personality, Personality traits theory, Big five model, Personality traits important for organizational behaviour like authoritarianism, locus of control, Machiavellianism, introversion-extroversion achievement orientation , self – esteem, risk taking, self-monitoring and type A and B personalities, Concept of understanding self through JOHARI WINDOWS, Nature and components of attitude, Functions of attitude, Ways of changing attitude, Reading emotions • **Thinking, learning and perceptions:** Thinking skills, thinking styles and thinking hat, Managerial skills and development, Learning characteristics, theories of learning (classical conditioning, operant conditioning and social learning approaches), Intelligence, type (IQ, EQ, SQ, at work place), Perception features and factor influencing individual perception, Effects of perceptual error in managerial decision making at work place. (Errors such as Halo effect, stereotyping, prejudice attributional).
2	**Introduction to Group Behaviour**
	• **Introduction to Group Behaviour** ▪ **Group Dynamics:** Nature, types, group behaviour model (roles, norms, status, process, structures) ▪ **Team effectiveness:** nature, types of teams, ways of forming an effective team. ▪ Setting goals. • **Organizational processes and system.** ▪ **Power and politics:** nature, bases of power, politics nature, types, causes of organizational politics, political games. ▪ **Organizational conflicts and resolution**: Conflict features, types, causes leading to organizational conflicts, levels of conflicts, ways to resolve conflicts through five conflicts resolution strategies with outcomes.
3	**Organizational Culture and Motivation at workplace**
	• **Organizational Culture:** ▪ Characteristics of organizational culture. ▪ Types, functions and barriers of organizational culture ▪ Ways of creating and maintaining effective organization culture • **Motivation at workplace**: Concept of motivation Theories of motivation in an organisational set up. ▪ A.Maslow Need Heirachy ▪ F.Hertzberg Dual Factor ▪ Mc.Gregor theory X and theory Y. Waysofmotivating through carrot (positive reinforcement) and stick (negative reinforcement) at workplace.

4	Organisational Change, Creativity and Development and Work Stress
	• **Organisational change and creativity:** Concepts of organisational change, Factors leading/influencing organisational change, Kurt Lewins model of organisational change and development, Creativity and qualities of a creative person, Ways of enhancing creativity for effective decision making, Creative problem solving. • **Organisational Development and work stress:** Need for organisational development, OD Techniques, Stress, types of stress, Causes and consequences of job stress, Ways for coping up with job stress

Revised Syllabus of Courses ofBachelorof Management Studies (BMS) Programme at Semester I with Effect from the Academic Year 2016-2017

Core Courses (CC)

7. Business Economics - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	10
2	Demand Analysis	10
3	Supply and Production Decisions and Cost of Production	15
4	Market structure: Perfect competition and Monopoly and Pricing and Output Decisions under Imperfect Competition	15
5	Pricing Practices	10
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction**
	Scope and Importance of Business Economics - basic tools- Opportunity Cost principle- Incremental and Marginal Concepts. Basic economic relations - functional relations: equations- Total, Average and Marginal relations- use of Marginal analysis in decision making, The basics of market demand, market supply and equilibrium price- shifts in the demand and supply curves and equilibrium
2	**Demand Analysis**
	Demand Function - nature of demand curve under different markets Meaning, significance, types and measurement of elasticity of demand (Price, income cross and promotional)- relationship between elasticity of demand and revenue concepts **Demand estimation and forecasting:** Meaning and significance - methods of demand estimation : survey and statistical methods *(numerical illustrations on trend analysis and simple linear regression)*
3	**Supply and Production Decisions and Cost of Production**
	Production function: short run analysis with Law of Variable Proportions- Production function with two variable inputs- isoquants, ridge lines and least cost combination of inputs- Long run production function and Laws of Returns to Scale - expansion path - Economies and diseconomies of Scale. **Cost concepts:** Accounting cost and economic cost, implicit and explicit cost, fixed and variable cost - total, average and marginal cost - Cost Output Relationship in the Short Run and Long Run *(hypothetical numerical problems to be discussed)*, LAC and Learning curve - Break even analysis *(with business applications)*
4	**Market structure: Perfect competition and Monopoly and Pricing and Output Decisions under Imperfect Competition**
	Short run and long run equilibrium of a competitive firm and of industry - monopoly - short run and long- run equilibrium of a firm under Monopoly **Monopolistic competition:**Equilibrium of a firm under monopolistic competition, debate over role of advertising *(topics to be taught using case studies from real life examples)* **Oligopolistic markets:** key attributes of oligopoly - Collusive and non collusive oligopoly market - Price rigidity - Cartels and price leadership models *(with practical examples)*
5	**Pricing Practices**
	Cost oriented pricing methods: cost – plus (full cost) pricing, marginal cost pricing, Mark up pricing, discriminating pricing, multiple – product pricing - transfer pricing *(case studies on how pricing methods are used in business world)*

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester II

No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***	
1	Principles of Marketing	**03**
2	Industrial Law	**03**
3	Business Mathematics	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - II	**03**
2B	*****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
6	Business Environment	**03**
7	Principles of Management	**03**
	Total Credits	**20**

*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - II
2	Foundation Course in NSS - II
3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - II

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Elective Courses(EC)

1. Principles of Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing	15
2	Marketing Environment, Research and Consumer Behaviour	15
3	Marketing Mix	15
4	Segmentation, Targeting and Positioning and Trends In Marketing	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Marketing**
	• **Introduction to Marketing:**Definition, features, advantages and scope of marketing. The 4P's and 4C's of marketing. Marketing v/s Selling. Marketing as an activity and function • **Concepts of Marketing:** Needs, wants and demands, transactions, transfer and exchanges. • **Orientations of a firm:** Production concept; Product concept; selling concept and marketing concept, social relationship, Holistic marketing.
2	**Marketing Environment, Research and Consumer Behaviour**
	• **The micro environment of business:** Management structure; Marketing Channels; Markets in which a firm operates; competitors and stakeholders. • **Macro environment:** Political Factors; Economic Factors; Socio Cultural Factors , Technological Factors (PEST Analysis) • **Marketing research:** Meaning, features, Importance of marketing research. Types of marketing research: Product research; Sales research; consumer/customer research; production research • **MIS:**Meaning, features and Importance • **Consumer Behaviour:** Meaning, feature, importance, factors affecting Consumer Behaviour
3	**Marketing Mix**
	• **Marketing mix:** Meaning –elements of Marketing Mix. • Product-product mix-product line lifecycle-product planning – New product development- failure of new product-levels of product. • Branding –Packing and packaging – role and importance • Pricing – objectives- factors influencing pricing policy and Pricing strategy. • Physical distribution – meaning – factor affecting channel selection-types of marketing channels • Promotion – meaning and significance of promotion. Promotion • tools (brief)
4	**Segmentation, Targeting and Positioning and Trends In Marketing**
	• Segmentation – meaning , importance , basis • Targeting – meaning , types • Positioning – meaning – strategies • New trends in marketing – E-marketing , Internet marketing and marketing using Social network • Social marketing/ Relationship marketing

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester II with Effect from the Academic Year 2016-2017

Elective Courses (EC)

2.Industrial Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Laws Related to Industrial Relations and Industrial Disputes	15
2	Laws Related to Health, Safety and Welfare	15
3	Social Legislation	15
4	Laws Related to Compensation Management	15
	Total	**60**

Sr. No.	Modules / Units
1	**Laws Related to Industrial Relations and Industrial Disputes**
	• Industrial Disputes Act, 1947: Definition, Authorities, Awards, Settlements, Strikes Lockouts, Lay Offs, Retrenchment and Closure • The Trade Union Act, 1926
2	**Laws Related to Health, Safety and Welfare**
	• The Factory Act 1948: (Provisions related to Health, Safety and Welfare) • The Workmen's Compensation Act, 1923 Provisions: ▪ Introduction: The doctrine of assumed risk, The doctrine of Common Employment, The doctrine of Contributory Negligence ▪ Definitions ▪ Employers liability for compensation (S-3 to 13) ▪ Rules as to Compensation (Sec 4 to Sec 9) (14 A & 17)
3	**Social Legislation**
	• Employee State Insurance Act 1948: Definition and Employees Provident Fund • Miscellaneous Provision Act 1948: Schemes, Administration and determination of dues
4	**Laws Related To Compensation Management**
	• The payment of Wages Act 1948: Objectives, Definition, Authorised Deductions • Payment of Bonus Act, 1965 • The Payment Of Gratuity Act, 1972

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester II with Effect from the Academic Year 2016-2017

Elective Courses (EC)

3.Business Mathematics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Elementary Financial Mathematics	15
2	Matrices and Determinants	15
3	Derivatives and Applications of Derivatives	15
4	Numerical Analysis [Interpolation]	15
	Total	**60**

Sr. No.	Modules / Units
1	**Elementary Financial Mathematics**
	• **Simple and Compound Interest**: Interest compounded once a year, more than once a year, continuous, nominal and effective rate of interest • Annuity-Present and future value-sinking funds • **Depreciation of Assets:** Equated Monthly Installments (EMI)- using flat interest rate and reducing balance method. • **Functions:**Algebraic functions and the functions used in business and economics, Break Even and Equilibrium point. • **Permutation and Combination:** (Simple problems to be solved with the calculator only)
2	**Matrices and Determinants**
	• **Matrices:** Some important definitions and some important results. Matrix operation (Addition, scalar multiplication , matrix multiplication, transpose of a matrix) • **Determinants of a matrix of order two or three**: properties and results of Determinants • Solving a system of linear equations using Cramer's rule • Inverse of a Matrix (up to order three) using ad-joint of a matrix and matrix inversion method • **Case study:** Input Output Analysis
3	**Derivatives and Applications of Derivatives**
	• **Introduction and Concept:** Derivatives of constant function, logarithmic functions, polynomial and exponential function • **Rules of derivatives:** addition, multiplication, quotient • Second order derivatives • **Application of Derivatives:** Maxima, Minima, Average Cost and Marginal Cost. Total revenue, Marginal revenue, Average revenue. Average and Marginal profit. Price elasticity of demand
4	**Numerical Analysis [Interpolation]**
	• **Introduction and concept**: Finite differences – forward difference operator – Newton's forward difference formula with simple examples • Backward Difference Operator. Newton's backward interpolation formula with simple examples

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Ability Enhancement Courses (AEC)

4. Business Communication - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Presentation Skills	15
2	Group Communication	15
3	Business Correspondence	15
4	Language and Writing Skills	15
	Total	**60**

Sr. No.	Modules / Units
1	**Presentation Skills**
	Presentations: (to be tested in tutorials only) 4 Principles of Effective Presentation Effective use of OHP Effective use of Transparencies How to make a Power-Point Presentation
2	**Group Communication**
	Interviews: Group Discussion Preparing for an Interview, Types of Interviews – Selection, Appraisal, Grievance, Exit **Meetings:**Need and Importance of Meetings, Conduct of Meeting and Group Dynamics Role of the Chairperson, Role of the Participants, Drafting of Notice, Agenda and Resolutions **Conference:**Meaning and Importance of Conference Organizing a Conference Modern Methods: Video and Tele – Conferencing **Public Relations:** Meaning, Functions of PR Department, External and Internal Measures of PR
3	**Business Correspondence**
	Trade Letters: Order, Credit and Status Enquiry, Collection (just a brief introduction to be given) **Only following to be taught in detail:-** Letters of Inquiry, Letters of Complaints, Claims, Adjustments Sales Letters, promotional leaflets and fliers Consumer Grievance Letters, Letters under Right to Information (RTI) Act [Teachers must provide the students with theoretical constructs wherever necessary in order to create awareness. However students should not be tested on the theory.]
4	**Language and Writing Skills**
	Reports: Parts, Types, Feasibility Reports, Investigative Reports **Summarisation:** Identification of main and supporting/sub points Presenting these in a cohesive manner

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Skill Enhancement Courses (SEC)

5. Foundation Course – II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Globalisation and Indian Society	07
2	Human Rights	10
3	Ecology	10
4	Understanding Stress and Conflict	10
5	Managing Stress and Conflict in Contemporary Society	08
	Total	**45**

Sr. No	Modules /Units
1	**Globalisation and Indian Society**
	Understanding the concepts of liberalization, privatization and globalization;Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides.
2	**Human Rights**
	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights;Human Rights constituents with special reference to Fundamental Rights stated in the Constitution
3	**Ecology**
	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life;Sustainable development- concept and components; poverty and environment
4	**Understanding Stress and Conflict**
	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict
5	**Managing Stress and Conflict in Contemporary Society**
	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation;Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in society

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Skill Enhancement Courses (SEC)

5. Foundation Course in NSS - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Socio-economic Survey and Special Camp	10
2	Orientation of the College Unit and Communication Skills	15
3	Rapport with Community and Programme Planning	10
4	Government Organisations /Non-Government Organisations	10
	Total	**45**

Sr. No.	Modules / Units
1	**Socio-economic Survey and Special Camp**
	Socio economic survey Socio-economic survey- its meaning and need, Process of Socio-economic survey- design of questionnaire; data collection, data analysis and report writing **Special camping activity** Concept of camp- Identification of community problems- Importance of group living- Team building- Adoption of village- Planning for camp- pre camping, during the course of camp and post camping activities
2	**Orientation of the College Unit and Communication Skills**
	Training and orientation of the program unit in the college Leadership training – formation of need based programmmes- Concept of campus to community(C to C) activities **Communication skills and Documentation** Communication skills- the concept, Verbal, Non-Verbal communication The documentation- Activity Report Writing – basics of NSS accounting – Annual Report – Press note and preparation
3	**Rapport with Community and Programme Planning**
	Working with individual group and community Ice breaking- interaction games – conflict resolution **Program planning** Programme planning- the concept and its features, requirements for successful implementation of program- program flow charting- feedback
4	**Government Organisations /Non-Government Organisations**
	Structure of Government Organisations and Non-Government Organisations Government organisations (GO)- its meaning -Legal set up, functioning, Sources of funding Non-Government organisations (NGO)- its meaning -Legal set up, functioning, Sources of funding National Service Scheme(NSS)- Government organisations (GO) and Non-Government organisations (NGO) **Government schemes for community development** Schemes of Government welfare departments for community development- provisions & examples

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Skill Enhancement Courses (SEC)

5.Foundation Course in NCC - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	10
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	05
	Total	**45**

Sr. No.	Modules / Units
1	**Disaster Management, Social Awareness and Community Development**
	Disaster Management: **Desired outcome:** The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters • Civil Defence Organisation and Its Duties/ NDMA • Types of Emergencies/ Natural Disaster • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. • 'Avan' model of NCC **Social Awareness and Community Development:** **Desired outcome:** The student shall have an understanding about social service and its need, about NGOs and shall participate in community action programmes for betterment of the community. • Basics of Social Service, Weaker Sections of Our Society and Their Needs • Social/ Rural Development Project: MNREGA, SGSY, NSAP etc. • Contribution of Youth towards Social Welfare • Civic Responsibilities • Causes & Prevention of HIV/AIDS; Role of Youth
2	**Health and Hygiene**
	Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. • Structure and Functioning of the Human Body • Hygiene and Sanitation (Personal and Food Hygiene) • Infectious & Contagious Diseases & Their Prevention
3	**Drill with Arms**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • Attention, Stand at Ease and Stand Easy • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • Ground / Take Up Arms • Present From the Order and Vice-versa • General Salute, Salami Shastra
4	**Weapon Training**
	Desired outcome: The student shall have basic knowledge of weapons and their use and handling. • Characteristics of a Rifle / Rifle Ammunition and its Fire Power • Stripping, Assembling, Care and Cleaning and Sight Setting of .22 rifle • Stripping, Assembling, Care and Cleaning of 7.62mm SLR • Loading, Cocking and Unloading • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	Army **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Map reading** • Introduction to types of Maps and Conventional signs • Scales and Grid system • Topographical forms and technical terms • Relief, contours and Gradients • Cardinal points and Types of North • Types of bearings and use of Service Protractor • Prismatic compass and its use and GPS **B. Field Craft and Battle Craft** • Introduction • Judging distance • Description of ground • Recognition, Description and Indication of landmarks and targets ***OR*** **Navy** **A. `Naval Communication** • Introduction to Naval Modern Communication, Purpose and Principles ▪ Introduction of Naval communication ▪ Duties of various communication sub-departments • Semaphore ▪ Introduction of position of letters and prosigns ▪ Reading of messages ▪ Transmission of messages **B. Seamanship** • **Anchor work** ▪ Parts of Anchor and Cable, their identification • **Rigging** ▪ Types of ropes and breaking strength- stowing, maintenance and securing of ropes ▪ Practical Bends and Hitches: Reef Knot, Half hitch, Clove Hitch, Rolling Hitch, Timber Hitch, Bow Line, Round Turn and Two half hitch and Bow line on the Bight and its basic elements and uses. ▪ Introduction to Shackles, Hooks, Blocks and Derricks, Coiling Down and Splicing of rope **C. Boat work** • Parts of Boat and Parts of an Oar • Instruction on boat Pulling- Pulling orders • Steering of boat under oars, Practical instruction on Boat Pulling, Precautions while pulling

Sr. No.	Modules / Units
	OR **Air** **A. Air frames** • Aircraft Controls • Landing Gear **B. Instruments** • Basic Flight Instruments **C. Aircraft Particulars** • Aircraft Particulars (Type specific) **D. Aero modelling** • History of Aero modelling • Materials used in Aero modelling • Type of Aero models • Flying/ Building of Aero models

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Skill Enhancement Courses (SEC)

5.Foundation Course in Physical Education - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development of Fitness	10
2	Health, Fitness and Diseases	15
3	Yoga Education	10
4	Daily Schedule of Achieving Quality of Life and Wellness	10
	Total	**45**

Sr. No.	Modules / Units
1	**Development of Fitness**
	• Benefits of physical fitness and exercise and principles of physical fitness • Calculation of fitness index level 1-4 • Waist-hip ratio Target Heart Rate, BMI and types and principles of exercise (FITT) • Methods of training – continues, Interval, circuit, Fartlek and Plyometric
2	**Health, Fitness and Diseases**
	• Definition of obesity and its management • Communicable diseases, their preventive and therapeutic aspects • Factors responsible for communicable diseases • Preventive and therapeutic aspect of Communicable and non- communicable diseases
3	**Yoga Education**
	• Meaning and history of yoga • Ashtang yoga and types of yoga • Types of Suryanamaskar and Technique of Pranayam • Benefits of Yoga
4	**Daily Schedule of Achieving Quality of Life and Wellness**
	• Daily schedule based upon one's attitude, gender, age &occupation. • Basic – module: - Time split for rest, sleep, diet, activity & recreation. • Principles to achieve quality of life:- positive attitude, daily regular exercise, control over food habits & healthy hygienic practices.

Core Courses (CC)

6.Business Environment

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Business Environment	15
2	Political and Legal environment	15
3	Social and Cultural Environment, Technological environment and Competitive Environment	15
4	International Environment	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Business Environment**
	• **Business:** Meaning, Definition, Nature & Scope, Types of Business Organizations • **Business Environment**: Meaning, Characteristics, Scope and Significance, Components of Business Environment • **Micro and Macro Environment:** Definition, Differentiation, Analysis of Business Environment, SWOT Analysis. • **Introduction to Micro-Environment**: ▪ **Internal Environment:** Value system, Mission, Objectives, Organizational Structure, Organizational Resources, Company Image, Brand Equity ▪ **External Environment:** Firm, customers, suppliers, distributors, Competitors, Society • **Introduction to Macro Components**: Demographic, Natural, Political, Social, Cultural, Economic, Technological, International and Legal)
2	**Political and Legal environment**
	• **Political Institutions:** Legislature, Executive, Judiciary, Role of government in Business, Legal framework in India. • **Economic environment:** economic system and economic policies. Concept of Capitalism, Socialism and Mixed Economy • Impact of business on Private sector, Public sector and Joint sector • Sun-rise sectors of India Economy. Challenges of Indian economy.
3	**Social and Cultural Environment, Technological environment and Competitive Environment**
	• **Social and Cultural Environment:** Nature, Impact of foreign culture on Business, Traditional Values and its Impact, Social Audit - Meaning and Importance of Corporate Governance and Social Responsibility of Business • **Technological environment:** Features, impact of technology on Business • **Competitive Environment:** Meaning, Michael Porter's Five Forces Analysis, Competitive Strategies
4	**International Environment**
	• **International Environment –** ▪ **GATT/ WTO:** Objective and Evolution of GATT, Uruguay round, GATT v/s WTO, Functions of WTO, Pros and Cons of WTO. ▪ **Globalization:** Meaning, Nature and stages of Globalization, features of Globalization, Foreign Market entry strategies, LPG model. ▪ **MNCs:** Definition, meaning, merits, demerits, MNCs in India ▪ **FDI:** Meaning, FDI concepts and functions, Need for FDI in developing countries, Factors influencing FDI, FDI operations in India, • **Challenges faced by International Business and Investment Opportunities for Indian Industry.**

Core Courses (CC)

7. Principles of Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Nature of Management	15
2	Planning and Decision Making	15
3	Organising	15
4	Directing, Leadership, Co-ordination and Controlling	15
	Total	**60**

Sr. No.	Modules / Units
1	**Nature of Management**
	• **Management:** Concept, Significance, Role & Skills, Levels of Management, Concepts of PODSCORB, Managerial Grid. • Evolution of Management thoughts, Contribution of F.W Taylor, Henri Fayol and Contingency Approach.
2	**Planning and Decision Making**
	• **Planning:** Meaning, Importance, Elements, Process, Limitations and MBO. • **Decision Making**: Meaning, Importance, Process, Techniques of Decision Making.
3	**Organizing**
	• **Organizing:** Concepts, Structure (Formal & Informal, Line & Staff and Matrix), Meaning, Advantages and Limitations • **Departmentation:** Meaning, Basis and Significance • **Span of Control:** Meaning, Graicunas Theory, Factors affecting span of ControlCentralization vs Decentralization • **Delegation:** Authority & Responsibility relationship
4	**Directing, Leadership, Co-ordination and Controlling**
	• **Directing:** Meaning and Process • **Leadership:** Meaning, Styles and Qualities of Good Leader • **Co-ordination** as an Essence of Management • **Controlling:** Meaning, Process and Techniques • **Recent Trends:** Green Management & CSR

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Reference Books

Reference Books
Introduction to Financial Accounts
• *Financial Accounts (a managerial emphasis): By Ashok Banerjee – Excel books* • *Fundamental of Accounting and Financial Analysis : By Anil Choudhary (Pearson education)* • *Indian Accounting Standards and IFRS for non-financial executives : By T.P. Ghosh– Taxman* • *Financial Accounting for Business Managers: By Ashish K. Bhattacharya.* • *Introduction to Accountancy by T.S. Grewal, S. Chand and Company (P) Ltd., New Delhi* • *Advance Accounts by Shukla and Grewal, S. Chand and Company (P) Ltd., New Delhi* • *Advanced Accountancy by R.L Gupta and M. Radhaswamy, S. Chand and Company (P) Ltd., New Delhi* • *Modern Accountancy by Mukherjee and Hanif, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Financial Accounting by LesileChandwichk, Pentice Hall of India AdinBakley (P) Ltd., New Delhi* • *Financial Accounting for Management by Dr. Dinesh Harsalekar, Multi-Tech. Publishing Co. Ltd., Mumbai* • *Financial Accounting by P.C. Tulsian, Pearson Publications, New Delhi* • *Accounting Principles by R.N. Anthony and J.S. Reece, Richard Irwin, Inc* • *Financial Accounting by Monga, J.R. Ahuja, GirishAhuja and Ashok Shehgal, Mayur Paper Back, Noida* • *Compendium of Statement and Standard of Accounting, ICAI* • *Indian Accounting Standards, Ashish Bhattacharya, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Financial Accounting by Williams, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Company Accounting Standards by ShrinivasanAnand, Taxman, New Delhi* • *Financial Accounting by V. Rajasekaran, Pearson Publications, New Delhi* • *Introduction to Financial Accounting by Horngren, Pearson Publications, New Delhi* • *Financial Accounting by M. Mukherjee and M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi* • *Financial Accounting a Managerial Perspective, Varadraj B. Bapat, MehulRaithatha, Tata McGraw Hill Education Pvt. Ltd., New Delhi*
Business Law
• *Elements of mercantile Law – N.D.Kapoor* • *Business Law – P.C. Tulsian* • *Business Law – SS Gulshan* • *Company Law – Dr.Avtar Singh* • *Indian contract Act – Dr.Avtar Singh* • *Law of Intellectual Property-V.K-Taraporevala*
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• *Statistics of Management , Richard Levin &David S. Rubin,Printice Hall of India , New Delhi.* • *Statistics for Business & Economics, David R Anderson, Dennis J Sweney, Thopmson Publication.* • *Fundamental of Statistics, S C Gupta, Himalya Publication House.* • *Business Statistics , Bharadwaj , Excel Books, Delhi* • *Business Mathematics, S.K Singh & J.K Singh, Brijwasi Book Distributor & Publisher.*

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- *Graves, Harold F. (1965) Report Writing, Prentice Hall, New Jersey.*
- *Gupta, Anand Das (2010) Ethics, Business and Society: Managing Responsibly Response Books 32.Gupta, Dipankar (2006) Ethics Incorporated: Top Priority and Bottom Line Response Books*
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- *Social Problems in India, Ram Ahuja, Rawat Pub (2014)*
- *Faces of Feminine in Ancient , medivial and Modern India, Mandakranta Bose Oxford University Press*
- *National Humana rights commission- disability Manual*
- *Rural, Urban Migration : Trends, challenges & Strategies, S Rajagopalan, ICFAI- 2012*
- *Regional Inequilities in India Bhat L SSSRD- New Delhi*
- *Urbanisation in India: Challenges, Opportunities & the way forward, I J Ahluwalia, Ravi Kanbur, P K Mohanty, SAGE Pub (2014)*
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- *The Problems of Linguistic States in India, Krishna Kodesia Sterling Pub*
- *Politics in India: structure, Process and Policy SubrataMitra, Rouutlege Pub*
- *Politics in India, Rajani Kothari, Orient Blackswan*
- *Problems of Communilism in india, Ravindra Kumar Mittal Pub*

Combating communalism in India: Key to National Integration, KawalKishor Bhardwaj, Mittal Pub

Foundation Course in NSS

- *National Service Scheme Manual (Revised) 2006, Government of India, Ministry of Youth Affairs and Sports, New Delhi.*
- *University of Mumbai National Service Scheme Manual 2009.*
- *Avhan Chancellor's Brigade - NSS Wing, Training camp on Disaster Preparedness Guidelines, March 2012*
- *RashtriyaSevaYojanaSankalpana - Prof.Dr.SankayChakane, Dr.Pramod\Pabrekar, Diamond Publication, Pune*
- *National Service Scheme Manual for NSS District Coordinators, National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya,*
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Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester I and II with effect from the Academic Year 2016-2017

Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

Question Paper Pattern
(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	**One class test (20 Marks)**	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions ***(½ Mark each)***	05 Marks
	Answer in One or Two Lines (Concept based Questions) ***(01 Mark each)***	05 Marks
	Answer in Brief (Attempt Any Two of the Three) ***(05 Marks each)***	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

Question Paper Pattern
(Internal Assessment- Courses with Practical Courses)

Sr. No.	Particular	Marks
1	**Semester End Practical Examination (20 Marks)**	
	Journal	05 Marks
	Viva	05 Marks
	Laboratory Work	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

i) Duration: The examination shall be of 2 ½ Hours duration

ii) Theory question paper pattern

- There shall be five questions each of 15 marks.
- All questions shall be compulsory with internal choice within the questions.
- Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the topic.
  (Detail question paper pattern has been given separately)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern
(Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses
of
Bachelor of Management Studies
(BMS) Programme
Second Year
Semester III and IV

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year- 2017-2018)

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

SYBMS

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1 & 2	*Any one group of courses from the following list of the courses	**06**	1 & 2	** Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Courses (AECC)***		***2A***	***Ability Enhancement Compulsory Courses (AECC)***	
3	Information Technology in Business Management - I	**03**	3	Information Technology in Business Management-II	**03**
2B	***Skill Enhancement Courses (SEC)***		***2B***	***Skill Enhancement Courses (SEC)***	
4	Foundation Course – III	**02**	4	Foundation course-IV	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
5	Business Planning & Entrepreneurial Management	**03**	5	Business Economics-II	**03**
6	Accounting for Managerial Decisions	**03**	6	Business Research Methods	**03**
7	Strategic Management	**03**	7	Production & Total Quality Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

List of Skill Enhancement Courses (SEC) for Semester III (Any One)		****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course (Environmental Management) - III	1	Foundation Course (Ethics & Governance)-IV
2	Foundation Course-Contemporary Issues-III	2	Foundation Course-Contemporary Issues-IV
3	Foundation Course in NSS - III	3	Foundation Course in NSS - IV
4	Foundation Course in NCC - III	4	Foundation Course in NCC - IV
5	Foundation Course in Physical Education- III	5	Foundation Course in Physical Education- IV
Note: Course selected in Semester I will continue in Semester III & IV			

*List of group of Elective Courses(EC) for Semester III (Any two)		** List of group of Elective Courses(EC) for Semester IV (Any two)	
Group A: Finance Electives (Any Two Courses)			
1	Basics of Financial Services	1	Financial Institutions & Markets
2	Introduction to Cost Accounting	2	Auditing
3	Equity & Debt Market	3	Strategic Cost Management
4	Corporate Finance	4	Corporate Restructuring
Group B:Marketing Electives (Any Two Courses)			
1	Consumer Behaviour	1	Integrated Marketing Communication
2	Product Innovations Management	2	Rural Marketing
3	Advertising	3	Event Marketing
4	Social Marketing	4	Tourism Marketing
Group C: Human Resource Electives(Any Two Courses)			
1	Recruitment & Selection	1	Human Resource Planning & Information System
2	Motivation and Leadership	2	Training & Development in HRM
3	Employees Relations & Welfare	3	Change Management
4	Organisation Behaviour & HRM	4	Conflict & Negotiation
Note: Group Selected in Semester III will continue in Semester IV.			

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester III

No. of Courses	Semester III	Credits
1	***Elective Courses (EC)***	
1 & 2	*Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
3	Information Technology in Business Management - I	**03**
2B	****Skill Enhancement Courses (SEC)***	
4	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
5	Business Planning & Entrepreneurial Management	**03**
6	Accounting for Managerial Decisions	**03**
7	Strategic Management	**03**
	Total Credits	**20**

****List of Skill Enhancement Courses (SEC) for Semester III (Any One)***	
1	Foundation Course (Environmental Management) - III
2	Foundation Course-Contemporary Issues-III
3	Foundation Course in NSS - III
4	Foundation Course in NCC - III
5	Foundation Course in Physical Education - III

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

1. Basics of Financial Services

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Financial System	14
2	Commercial Banks, RBI And Development Banks	16
3	Insurance	15
4	Mutual Funds	15
	Total	**60**

Objectives

SN	Objectives
1	The course aims at explaining the core concepts of business finance and its importance in managing a business
2	The objectives of develop a conceptual frame work of finance function and to acquaint the participants with the tools, types, instruments of financial system in the realm of Indian Financial Market.

Sr. No.	Modules / Units
1	**Financial System:**
	• An overview of Financial System, Financial Markets, Structure of Financial Market (Organised and Unorganized Market), Components of Financial System, Major Financial Intermediaries, Financial Products, Function of Financial System, Regulatory Framework of Indian Financial System(Overview of SEBI and RBI-Role and Importance as regulators).
2	**Commercial Banks, RBI And Development Banks**
	• **Concept of Commercial Banks-** Functions, Investment Policy of Commercial Banks, Liquidity in Banks, Asset Structure of Commercial Banks, Non-Performing Assets, Interest Rate reforms, Capital Adequacy Norms. • **Reserve Bank of India-**Organisation &Management, Role And Functions • **Development Banks-**Characteristics of Development Banks, Need And Emergence of Development Financial Institutions In India, Function of Development Banks.
3	**Insurance:**
	• Concept, Basic Characteristics of Insurance, Insurance Company Operations, Principles of Insurance, Reinsurance, Purpose And Need Of Insurance, Different Kinds of Life Insurance Products, Basic Idea About Fire And Marine Insurance and Bancassurance
4	**Mutual Funds:**
	• Concept of Mutual Funds, Growth of Mutual Funds in India, Features and Importance of Mutual Fund. Mutual Fund Schemes, Money Market Mutual Funds, Private Sector Mutual Funds, Evaluation of the Performance Of Mutual Funds, Functioning of Mutual Funds In India.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

2. Introduction to Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Elements of Cost	20
3	Cost Projection	15
4	Emerging Cost Concepts	10
	Total	**60**

Objectives

SN	Objectives
1	This course exposes the students to the basic concepts and the tools used in Cost Accounting
2	To enable the students to understand the principles and procedure of cost accounting and to apply them to different practical situations

Sr. No.	Modules / Units
1	**Introduction**
	• Meaning, Nature and scope-Objective of Cost Accounting-Financial Accounting v/s Cost Accounting- Advantages and disadvantages of Cost Accounting-Elements of Costs-Cost classification (concept only)- - Installation of Cost Accounting System, Process (Simple and Inter process) and Job Costing (Practical Problems)
2	**Elements of Cost**
	• **Material Costing**- Stock valuation (FIFO & weighted average method), EOQ, EOQ with discounts, Calculation of Stock levels (Practical Problems) • **Labour Costing** – (Bonus and Incentive Plans) (Practical Problems) • **Overhead Costing** (Primary and Secondary Distribution)
3	**Cost Projection**
	• Cost Sheet (Current and Estimated)) (Practical Problems) • Reconciliation of financial accounts and cost accounting (Practical Problems)
4	**Emerging Cost Concepts**
	Uniform Costing and Interfirm Comparison, Emerging Concepts – Target Costing, Benchmarking, JIT, The Balanced Scorecard; Strategic Based Control; concept, process, implementation of Balanced Scorecard, Challenges in implementation of Balanced Scorecard

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

3. Equity and Debt Market

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Financial Market	15
2	Dynamics of Equity Market	15
3	Players in Debt Markets	15
4	Valuation of Equity & Bonds	15
	Total	**60**

Objectives

SN	Objectives
1	This paper will enable the students to understand the evolution of various aspects of financial markets which in turn will help them in framing the financial policies, development of financial instruments and processes and evolving the strategies during crisis. The teaching will be done mainly through materials available on internet and published research papers

Sr. No.	Modules / Units
1	**Introduction to Financial Market**
	• **Equity market** – meaning & definitions of equity share; Growth of Corporate sector & simultaneous growth of equity shareholders; divorce between ownership and management in companies; development of Equity culture in India & current position. • **Debt market** – Evolution of Debt markets in India; Money market & Debt markets in India; Regulatory framework in the Indian Debt market.
2	**Dynamics of Equity Market**
	• **Primary:** 1)IPO – methods followed (simple numerical) 2) Book building 3)Role of merchant bankers in fixing the price 4)Red herring prospectus – unique features 5)Numerical on sweat equity, ESOP & Rights issue of shares • **Secondary:** 1)Definition & functions of stock exchanges 2)Evolution & growth of stock exchanges 3)Stock exchanges in India 4)NSE, BSE OTCEI & overseas stock exchanges 5)Recent developments in stock exchanges 6)Stock market Indices
3	**Players in debt markets:**
	• **Players in debt markets:** 1)Govt. securities 2)Public sector bonds & corporate bonds 3)open market operations 4)Security trading corp. of India 5)Primary dealers in Govt. securities • **Bonds:** 1)Features of bonds 2)Types of bonds
4	**Valuation of Equity & Bonds**
	• **Valuation of equity**: 1. Balance sheet valuation 2. Dividend discount model(zero growth, constant growth & multiple growth) 3. Price earning model • **Valuation of bonds** 1. Determinants of the value of bonds 2. Yield to Maturity 3. Interest rate risk 4. Determinants of Interest Rate Risk

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

4. Corporate Finance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Capital Structure and Leverage	15
3	Time Value of Money	15
4	Mobilisation of Funds	15
	Total	**60**

Objectives

SN	Objectives
1	The objectives of develop a conceptual frame work of finance function and to acquaint the participants with the tools techniques and process of financial management in the realm of financial decision making
2	The course aims at explaining the core concepts of corporate finance and its importance in managing a business
3	To providing understanding of nature, importance, structure of corporate finance related areas and to impart knowledge regarding source of finance for a business

Sr. No.	Modules / Units
1	**Introduction**
	• **Introduction To Corporate Finance:** Meaning, Principles of Corporate Finance, Significance of Corporate Finance, Amount of Capitalisation, Over Capitalisation and Under Capitalisation, Fixed capital and Working Capital funds. • **Introduction to ownership securities**– Ordinary Shares, Reference Shares, Creditor Ship Securities, Debtors and Bonds, Convertible Debentures, Concept of Private Placement of Securities.
2	**Capital Structure and Leverage**
	• Introduction to Capital Structure theories, EBIT – EPS analysis for Capital Structure decision. • Cost of Capital – Cost of Debt, Cost of Preference Shares, Cost of Equity Shares and Cost of Retained Earnings, Calculation of Weighted Cost of Capital. • Introduction to concept of Leverage - Operating Leverage, Financial Leverage and Combined Leverage.
3	**Time Value of Money**
	• Introduction to Time Value of Money – compounding and discounting • Introduction to basics of Capital Budgeting (time value of money based methods) – NPV and IRR (Net Present Value and Internal Rate of Return) • Importance of Risk and Return analysis in Corporate Finance
4	**Mobilisation of Funds**
	Public deposits and RBI regulations, Company deposits and SEBI regulations, Protection of depositors, RBI and public deposits with NBFC's. Foreign capital and collaborations, Foreign direct Investment (FDI) Emerging trends in FDI Global Depositary Receipts, Policy development, Capital flows and Equity Debt. Brief introduction & sources of short term Finance Bank Overdraft, Cash Credit, Factoring

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

1. Consumer Behaviour

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction To Consumer Behaviour:	14
2	Individual- Determinants of Consumer Behaviour	16
3	Environmental Determinants of Consumer Behaviour	15
4	Consumer decision making models and New Trends	15
	Total	**60**

Objectives

SN	Objectives
1	The basic objective of this course is to develop an understanding about the consumer decision making process and its applications in marketing function of firms
2	This course is meant to equip undergraduate students with basic knowledge about issues and dimensions of Consumer Behaviour. Students are expected to develop the skill of understanding and analysing consumer information and using it to create consumer- oriented marketing strategies.

Sr. No.	Modules / Units
1	**Introduction To Consumer Behaviour:**
	• Meaning of Consumer Behaviour, Features and Importance • Types of Consumer (Institutional & Retail), Diversity of consumers and their behaviour- Types Of Consumer Behaviour • Profiling the consumer and understanding their needs • Consumer Involvement • Application of Consumer Behaviour knowledge in Marketing • Consumer Decision Making Process and Determinants of Buyer • Behaviour, factors affecting each stage, and Need recognition.
2	**Individual- Determinants of Consumer Behaviour**
	• Consumer Needs &Motivation (Theories - Maslow, Mc Cleland). • Personality – Concept, Nature of personality, Freudian, non - Freudian and Trait theories, Personality Traits and it's Marketing significance, Product personality and brand personification. • Self Concept – Concept • Consumer Perception • Learning - Theory, Nature of Consumer Attitudes, Consumer Attitude • Formation &Change. • Attitude - Concept of attitude
3	**Environmental Determinants of Consumer Behaviour**
	• Family Influences on Buyer Behaviour, • Roles of different members, needs perceived and evaluation rules. • Factors affecting the need of the family, family life cycle stage and size. • Social Class and Influences. • Group Dynamics & Consumer Reference Groups, Social Class & Consumer Behaviour - Reference Groups, Opinion Leaders and Social Influences In-group versus out-group influences, role of opinion leaders in diffusion of innovation and in purchase process. • Cultural Influences on Consumer Behaviour Understanding cultural and sub-cultural influences on individual, norms and their role, customs, traditions and value system.
4	**Consumer decision making models and NewTrends**
	• Consumer Decision making models: Howard Sheth Model, Engel Blackwell, Miniard Model, Nicosia Models of Consumer Decision Making • Diffusion of innovations Process of Diffusion and Adoption, Innovation, Decision process, Innovator profiles • E-Buying behaviour The E-buyer vis-a vis the Brick and Mortar buyer, Influences on E-buying

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

2. Product Innovations Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Innovations Management	15
2	Managerial Aspects of Innovations functions	15
3	Product innovations, Process Innovations and Innovations Diffusion	15
4	New Product Development Strategy	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of innovations and relevance of innovations in the present day scenario.
2	To understand the importance of protecting innovations and legal aspects related to innovations
3	To study product innovations, process innovations and innovations diffusion
4	To acquaint the students with stages in new product development

Sr. No.	Modules / Units
1	**Innovations Management**
	• **Introduction -Innovations Management** Innovations: Concept; Features; Types of Innovations; Innovations management; Features of Innovations Management; Significance of innovations; Principles of innovations. • **Thinking Tools for Innovations** Left and right brain thinking; Creative thinking; Traditional V/S Creative thinking; Intuition; Introduction to creativity; Process of creativity; Creativity methods • **Legal Aspects of innovations** Safeguarding innovations; Concept of Intellectual Property Rights; Patents; Patenting trends; trademarks; Industrial designs; Copyrights ;Trade secrets
2	**Managerial Aspects of Innovations functions**
	• **Organizing for Innovations** Introduction; Concepts; Organizational theories and structures; Traits of innovative organization; Factors influencing organizational design and Size decision. • **Strategizing Innovations** Introduction; Innovations as a strategy component; Developing innovation strategy; Innovation strategies; Market standing based strategies. • **Managing Innovations Functions** Introduction; Style at the top; Planning; Organizing; Staffing; Controlling; Characteristics of good management • **Climate and culture for innovations** Introduction; Need for creative organizations; Characteristics of creative organizations; Creating creative organizations – 7s framework; Fostering innovations climate and culture.
3	**Product innovations, Process Innovations and Innovations Diffusion**
	• **Introduction to product innovations** Types of new products; Technology strategy for product innovation; New product development process; Packaging innovations; Positioning innovations; New product failures; Cases of Innovating companies. • **Process Innovations** Introduction; Concept of Process; Features of process; Types of process innovations; Process Management; Process improvement methods; Business process reengineering; Benchmarking. • **Innovations Diffusion** Introduction; Concept of diffusion and adoption; Impact of innovations; Diffusion as an integral part of innovation strategy; Innovations diffusion theories; Factors influencing diffusion strategy; Internalization of innovations.
4	**New Product Development Strategy**
	• **New Product Development and Product specifications** Concept of new product development, specifications: Establishment of specifications, Establishing Target specifications; Setting the final specifications. • **Concept Generation, Selection and Testing** 5 step methods of concept generation, Methods for selecting a concept; Benefits of choosing a structured method; Concept screening; Concept scoring, 7- Test method of concept testing. • **Product testing** Introduction, Purpose of product testing; Overriding concerns of product testing; Major decision in constructing a product test.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

3. Advertising

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Advertising	15
2	Strategy and Planning Process in Advertising	15
3	Creativity in Advertising	15
4	Budget, Evaluation, Current trends and careers in Advertising	15
	Total	**60**

Objectives

SN	Objectives
1	To understand and examine the growing importance of advertising
2	To understand the construction of an effective advertisement
3	To understand the role of advertising in contemporary scenario
4	To understand the future and career in advertising

Sr. No.	Modules / Units
1	**Introduction to Advertising**
	• Definition, Evolution of Advertising, Importance, Scope, Features, Benefits, Five M's of Advertising • Types of Advertising –consumer advertising, industrial advertising, institutional advertising, classified advertising, national advertising, generic advertising • Theories of Advertising : Stimulus Theory, AIDA, Hierarchy Effects Model, Means – End Theory, Visual Verbal Imaging, Cognitive Dissonance • Ethics and Laws in Advertising : Puffery, Shock Ads, Subliminal Advertising, Weasel Claim, Surrogate Advertising, Comparative Advertising Code of Ethics, Regulatory Bodies, Laws and Regulation – CSR, Public Service Advertising, Corporate Advertising, Advocacy Advertising • Social, cultural and Economic Impact of Advertising, the impact of ads on Kids, Women and Advertising
2	**Strategy and Planning Process in Advertising**
	• Advertising Planning process & Strategy : Introduction to Marketing Plan, Advertising Plan- Background, situational analysis related to Advertising issues, Marketing Objectives, Advertising Objectives, Target Audience, Brand Positioning (equity, image personality), creative Strategy, message strategy, media strategy, Integration of advertising with other communication tools • Role of Advertising in Marketing Mix : Product planning, product brand policy, price, packaging, distribution, Elements of Promotion, Role of Advertising in PLC • Advertising Agencies – Functions – structure – types - Selection criteria for Advertising agency – Maintaining Agency–client relationship, Agency Compensation.
3	**Creativity in Advertising**
	• Introduction to Creativity – definition, importance, creative process , Creative strategy development – Advertising Campaign – determining the message theme/major selling ideas – introduction to USP – positioning strategies – persuasion and types of advertising appeals – role of source in ads and celebrities as source in Indian ads – execution styles of presenting ads. • Role of different elements of ads – logo, company signature, slogan, tagline, jingle, illustrations, etc – • Creating the TV commercial – Visual Techniques, Writing script, developing storyboard, other elements (Optical, Soundtrack, Music) • Creating Radio Commercial – words, sound, music – scriptwriting the commercial – clarity, coherence, pleasantness, believability, interest, distinctiveness • Copywriting: Elements of Advertisement copy – Headline, sub-headline, Layout, Body copy, slogans. Signature, closing idea, Principles of Copywriting for print, OOH, essentials of good copy, Types of Copy, Copy Research

Sr. No.	Modules / Units
4	**Budget, Evaluation, Current trends and careers in Advertising**
	• Advertising Budget – Definition of Advertising Budget, Features, Methods of Budgeting • Evaluation of Advertising Effectiveness – Pre-testing and Post testing Objectives, Testing process for Advertising effectiveness, Methods of Pre-testing and Post-testing, Concept testing v/s Copy testing • Current Trends in Advertising : Rural and Urban Advertising, Digital Advertising, Content Marketing (Advertorials), retail advertising, lifestyle advertising, Ambush Advertising, Global Advertising – scope and challenges – current global trends • Careers in Advertising : careers in Media and supporting firms, freelancing options for career in advertising, role of Advertising Account Executives, campaign Agency family tree – topmost advertising agencies and the famous advertisements designed by them

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

4. Social Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Social Marketing & Its Environment	15
2	Social Marketing Plan, STP and Marketing Mix	15
3	Managing Behaviour for Social Change & NPO & CSR	15
4	Social marketing – A Sectoral Overview & Careers	15
	Total	**60**

Objectives

SN	Objectives
1	Understand the concept of social marketing, compare and contrast marketing in a profit-oriented corporate and a nonprofit social environment.
2	Analyze the impact of environment on social marketing & study the various behavior models/frameworks/theories for social change.
3	To study the basis of Segmentation, Targeting and Positioning and identify marketing mix of social marketing.
4	To provide an overview of the Not for Profit Sector (NPO) and comment on the CSR provision in the companies act of 2013.
5	To study overview of social marketing in various key sectors and Identify basic ethical issues in Social marketing and appreciate the careers in Social Marketing

Sr. No.	Modules / Units
1	**Introduction to Social Marketing & Its Environment**
	Definition of Social Marketing, Features, Need for Social Marketing, Evolution of Social Marketing, Social Marketing v/s Commercial Marketing, Challenges of Social Marketing. Social Marketing Unique Value Preposition, Relevance of Social marketing. Environment in Social Marketing, Components, Impact of Environment on Social Marketing.
2	**Social Marketing Plan, STP and Marketing Mix**
	• **Social Marketing Plan, Segmentation, Targeting & Positioning** Social Marketing Plan, Steps in developing social marketing plan, importance of planning. Segmentation, Basis of Segmentation, Criteria for evaluating segments, Targeting, Selecting Target Audience for Social Marketing, Positioning and Types of positioning. • **Social Marketing Mix** 1. Product: Social Product, Level of Product, Social Product Branding Decision. 2. Price: Monetary and non-monetary incentives for desired behavior, Pricing Objectives, Pricing Strategies. 3. Place: 5 A's of Distribution of Product in social marketing, Types of distribution channel 4. Promotion: Developing a Promotion Mix for social product, Message Strategy, Messenger Strategy, Creativity Strategy, selecting communication channel.
3	**Managing Behaviour for Social Change & NPO & CSR**
	• **Managing Behaviour for Social Change** Types of Behaviour Objectives, Knowledge objectives and belief objectives, Behaviour Change Models, Theories and Frameworks: Social Norm Theory, The diffusion of innovation model, The health belief model, The ecological model, Theory of reasoned action and theory of planned behaviour. Social Cognitive theory/social learning, The behavioural economics framework and the nudge factor, the science of habit framing, • **Not for Profit Organization (NPO) & CSR** Meaning, NGO, Voluntary Organization, Third Sector, NPO Sector. Status of Voluntary sector in India. Starting a Voluntary Organization in India: Trust, Society, Section 8 Company under the Companies Act of 2013. CSR, Meaning, Overview of CSR in India, Overview of CSR rules for corporation under Companies Act of 2013, CSR Impact Evaluation. Need for Governance in Not for Profit Sector, Ethics in Social Marketing
4	**Social Marketing – A Sectoral Overview & Careers**
	• Marketing Health • Marketing Education • Marketing Medicare • Marketing Sanitation • Marketing Financial Literacy & Savings • Marketing Digital Literacy • Marketing of Social Issues of Youth. • Social Work as a profession and Social Entrepreneurship,Careers in Social Marketing.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group C. Human Resource Electives

1. Recruitment & Selection

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Recruitment	18
2	Selection	15
3	Induction	15
4	Soft Skills	12
	Total	**60**

Objectives

SN	Objectives
1	The objective is to familiarize the students with concepts and principles, procedure of Recruitment and Selection in an organization.
2	To give an in depth insight into various aspects of Human Resource management and make them acquainted with practical aspect of the subject.

Sr. No.	Modules / Units
1	**Recruitment**
	• **Concepts of Recruitment**- -Meaning, Objectives, Scope & Definition, Importance and relevance of Recruitment. • **Job Analysis**--Concept, Specifications, Description, Process And Methods, Uses of Job Analysis • **Job Design**--Introduction, Definition, Modern Techniques, Factors affecting Job Design, Contemporary Issues in Job Designing. • **Source or Type of Recruitment**– a) Direct/Indirect, b)Internal/ External. Internal-Notification, Promotion– Types, Transfer –Types, Reference External-Campus Recruitment, Advertisement, Job Boards Website/Portals, Internship, Placement Consultancies-Traditional (In-House, Internal Recruitment, On Campus, Employment And Traditional Agency). Modern (Recruitment Books, Niche Recruitments, Internet Recruitment, Service Recruitment, Website and Job, Search Engine, Social Recruiting and Candidate Paid Recruiters). • **Technique of Recruitment**-Traditional Vs Modern Recruitment • **Evaluation of Recruitment**-Outsourcing Programme
2	**Selection**
	• **Selection**-Concept of Selection, Criteria for Selection, Process, Advertisement and Application (Blank Format). • **Screening**-Pre and Post Criteria for Selection, Steps of Selection • **Interviewing**-Types and Guidelines for Interviewer & Interviewee, Types of Selection Tests, Effective Interviewing Techniques. • **Selection Hurdles** and Ways to Overcome Them
3	**Induction**
	• **Induction-**Concept, Types-Formal /Informal, Advantages of Induction ,How to make Induction Effective • **Orientation & On boarding**-Programme and Types, Process. • **Socialisation**-Types-Anticipatory, Encounter, Setting in, Socialisation Tactics • **Current trends** in Recruitment and Selection Strategies– with respect to Service, Finance, I.T., Law And Media Industry
4	**Soft Skills**
	• Preparing Bio-data and C.V. • Social and Soft Skills – Group Discussion &Personal Interview, Video and Tele Conferencing Skills, • Presentation and Negotiation Skills, Aesthetic Skills, • Etiquettes-Different Types and Quitting Techniques. • Exit Interview-Meaning, importance.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group C. Human Resource Electives

2. Motivation & Leadership

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Motivation -I	12
2	Motivation-II	15
3	Leadership-I	17
4	Leadership-II	16
	Total	**60**

Objectives

SN	Objectives
1	To gain knowledge of the leadership strategies for motivating people and changing organizations
2	To study how leaders facilitate group development and problem solving and work through problems and issues as well as transcend differences
3	To acquaint the students about practical approaches to Motivation and Leadership & its application in the Indian context

Sr. No.	Modules / Units
1	**Motivation-I**
	• Concept of motivation, Importance, Tools of Motivation. • Theory Z, Equity theory. • Process Theories-Vroom's Expectancy Theory, Valency-Four drive model.
2	**Motivation-II**
	• East v/s West, motivating workers (in context to Indian workers) • The Indian scene – basic differences. • Work –Life balance – concept, differences, generation and tips on work life balance.
3	**Leadership-I**
	• Leadership– Meaning, Traits and Motives of an Effective Leader, Styles of Leadership. • Theories –Trait Theory, Behavioural Theory, Path Goal Theory. • Transactional v/s Transformational leaders. • Strategic leaders– meaning, qualities. • Charismatic Leaders– meaning of charisma, Qualities, characteristics, types of charismatic leaders (socialized, personalized, office-holder, personal, divine)
4	**Leadership-II**
	• Great leaders, their style, activities and skills (Ratan Tata, Narayan Murthy, Dhirubhai Ambani, Bill Gates, Mark Zuckerberg, Donald Trump) • Characteristics of creative leaders and organization methods to enhance creativity (Andrew Dubrein). • Contemporary issues in leadership–Leadership roles, team leadership, mentoring, self leadership, online leadership, finding and creating effective leader.

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Elective Courses (EC)

Group C. Human Resource Electives

3. Employees Relations & Welfare

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Employee Relations and Collective Bargaining	15
2	Overview of Employee Welfare	15
3	Welfare and Work Environment Management	15
4	Workers Participation and Employee Grievance	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the nature and importance of employee relations in an organization
2	To understand the importance of collective bargaining and Workers participation
3	To understand the causes and effects of employee grievances as well as the procedure to solve the same

Sr. No.	Modules / Units
1	**Overview of Employee Relations and Collective Bargaining**
	• **Employee Relations** - Meaning, Scope, Elements of Employee Relations, Role of HR in Employee Relations • **Employee Relation Policies** – Meaning and Scope. • **Ways to Improve Employee Relations** • **Collective Bargaining** – Meaning, Characteristics, Need and Importance, Classification of collective bargaining - Distributive bargaining, Integrative bargaining, Attitudinal structuring and Intra-organizational bargaining; Principles of Collective Bargaining, Process, Causes for Failure of Collective Bargaining, Conditions for Successful Collective Bargaining • **Collective Bargaining Strategies** - Parallel or Pattern Bargaining, Multi-employer or Coalition Bargaining, Multi-unit or Coordinated Bargaining, and Single-unit Bargaining • **Current Trends** in Collective Bargaining
2	**Overview of Employee Welfare**
	• Meaning, Need for Employee Welfare, Principles of Employee/ Labour Welfare, Scope for Employee/ Labour Welfare in India, Types of Welfare Services – Individual and Group. • **Historical Development of Employee/ Labour Welfare in India** – Pre and Post-Independence, Employee/ Labour Welfare Practices in India • **Approaches to Employee/ Labour Welfare** – Paternalistic, Atomistic, Mechanistic, Humanistic approach • **Theories of Employee Welfare**–Policing Theory, Religion Theory, Philanthropic Theory, Trusteeship Theory, Public Relations Theory, Functional Theory • **Administration of Welfare Facilities** – Welfare Policy, Organisation of Welfare, Assessment of Effectiveness.
3	**Welfare and Work Environment Management**
	• **Agencies for Labour Welfare** – Central Government, State Government, Employers, Trade Union • **Women Welfare** - Meaning, Need for women welfare, Provision of Factories Act as applicable for women welfare • **Responsibility of Employers towards labour welfare** • **Work Environment Management** – Meaning, Need for healthy work environment, measures for providing healthy work, Fatigue at work – Meaning, Causes and Symptoms of Fatigue, Boredom at Workplace – Meaning, Hazards at Workplace – Meaning, Types of Hazards – Physical and Social, Hazard Management – Meaning and Process, Hazard Audit - Concept • **Accidents and Safety Issues at Workplace** – Safety, Safety Culture
4	**Workers Participation and Employee Grievance**
	• **Workers Participation in Management** – Concept, Pre-requisites, forms & levels of participation, Benefit of Workers Participation in Management, Importance of employee stock option plans as a method of participation. • **Employee Grievance** – Meaning, Features, Causes and Effects of Employee Grievances, Employee Grievance Handling Procedure, Effective Ways of Handling Grievance • Role of Industrial Relations Manager in Promoting & Establishing Peaceful Employee Relations

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Elective Courses (EC)

Group C. Human Resource Electives

4. Organisation Behaviour & HRM

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Organisational Behaviour I	12
2	Organisational Behaviour II	13
3	Human Resource Management-I	17
4	Human Resource Management-II	18
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to familiarize the student with the fundamental aspects of Various issues associated with Human Resource Management as a whole.
2	The course aims to give a comprehensive overview of Organization Behaviour as a separate area of management.
3	To introduce the basic concepts, functions and processes & create an awareness of the role, functions and functioning of Human Resource Management & OB.

Sr. No.	Modules / Units
1	**Organisational Behaviour-I**
	• Introduction to Organizational Behaviour-Concept, definitions, Evolution of OB • Importance of Organizational Behaviour-Cross Cultural Dynamics, Creating Ethical Organizational Culture& Climate • Individual and Group Behaviour-OB models–Autocratic, Custodial, Supportive, Collegial & SOBC in context with Indian OB • Human Relations and Organizational Behaviour
2	**Organisational Behaviour-II**
	• Managing Communication: Conflict management techniques. • Time management strategies. • Learning Organization and Organizational Design • Rewards and Punishments-Termination, layoffs, Attrition, Retrenchment, Separations, Downsizing
3	**Human Resource Management-I**
	• HRM-Meaning, objectives, scope and functions • HRP-Definition, objectives, importance, factors affecting HRP, Process of HRP, Strategies of HRM , Global HR Strategies • HRD-Concept ,meaning, objectives, HRD functions
4	**Human Resource Management-II**
	• Performance Appraisal: concept, process, methods and problems, KRA'S • Compensation-concept, components of Pay Structure, Wage and salary administration, Incentives and Employee benefits. • Career planning-concept of career Planning, Career stages and carrier planning

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2. Ability Enhancement Courses (AEC)
2A.Ability Enhancement Compulsory Course

3. Information Technology in Business Management-I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to IT Support in Management	15
2	Office Automation using MS-Office	15
3	Email, Internet and its Applications	15
4	E-Security	15
	Total	**60**

Objectives

SN	Objectives
1	To learn basic concepts of Information Technology, its support and role in Management, for managers
2	Module II comprises of practical hands on training required for office automation. It is expected to have practical sessions of latest MS-Office software
3	To understand basic concepts of Email, Internet and websites, domains and security therein
4	To recognize security aspects of IT in business, highlighting electronic transactions, advanced security features

Sr. No.	Modules / Units
1	**Introduction to IT Support in Management**
	• **Information Technology concepts** Concept of Data, Information and Knowledge Concept of Database • **Introduction to Information Systems and its major components**. Types and Levels of Information systems. Main types of IT Support systems Computer based Information Systems (CBIS) ▪ Types of CBIS - brief descriptions and their interrelationships/hierarchies ▪ Office Automation System(OAS) ▪ Transaction Processing System(TPS) ▪ Management Information System(MIS) ▪ Decision Support Systems (DSS) ▪ Executive Information System(EIS) ▪ Knowledge based system, Expert system • **Success and Failure of Information Technology.** Failures of Nike and AT&T • **IT Development Trends**. Major areas of IT Applications in Management • **Concept of Digital Economy and Digital Organization**. • **IT Resources** Open Source Software - Concept and Applications. Study of Different Operating Systems. (Windows / Linux/ DOS)
2	**Office Automation using MS Office**
	• **Learn Word:** Creating/Saving of Document Editing and Formatting Features Designing a title page, Preparing Index, Use of SmartArt Cross Reference, Bookmark and Hyperlink. Mail Merge Feature. • **Spreadsheet application (e.g. MS-Excel/openoffice.org)** Creating/Saving and editing spreadsheets Drawing charts. Using Basic Functions: text, math & trig, statistical, date & time, database, financial, logical Using Advanced Functions : Use of VLookup/HLookup Data analysis – sorting data, filtering data (AutoFilter , Advanced Filter), data validation, what-if analysis (using data tables/scenarios), creating sub-totals and grand totals, pivot table/chart, goal seek/solver, • **Presentation Software** Creating a presentation with minimum 20 slides with a script. Presenting in different views, Inserting Pictures, Videos, Creating animation effects on them Slide Transitions, Timed Presentations Rehearsal of presentation

Sr. No.	Modules / Units
3	**Email, Internet and its Applications**
	• **Introduction to Email** Writing professional emails Creating digitally signed documents. • **Use of Outlook** : Configuring Outlook, Creating and Managing profile in outlook, Sending and Receiving Emails through outlook Emailing the merged documents. Introduction to Bulk Email software • **Internet** Understanding Internet Technology Concepts of Internet, Intranet, Extranet Networking Basics, Different types of networks. Concepts (Hubs, Bridges, Routers, IP addresses) Study of LAN, MAN, WAN • **DNS Basics**. Domain Name Registration, Hosting Basics. • **Emergence of E-commerce and M-Commerce** Concept of E-commerce and M-Commerce Definition of E-commerce and M-Commerce Business models of e-commerce: models based on transaction party (B2B, B2C,B2G, C2B, C2C, E-Governance) Models based on revenue models, Electronics Funds Transfer, Electronic Data Interchange.
4	**E-Security Systems**
	• **Threats to Computer systems and control measures**. Types of threats- Virus, hacking, phishing, spyware, spam, physical threats (fire, flood, earthquake, vandalism) Threat Management • **IT Risk** Definition, Measuring IT Risk, Risk Mitigation and Management • **Information Systems Security** • **Security on the internet** Network and website security risks Website Hacking and Issues therein. Security and Email • **E-Business Risk Management Issues** Firewall concept and component, Benefits of Firewall • **Understanding and defining Enterprise wide security framework** • **Information Security Environment in India with respect to real Time Application in Business** Types of Real Time Systems, Distinction between Real Time, On – line and Batch Processing System. Real Time Applications viz. Railway / Airway / Hotel Reservation System, ATMs, EDI Transactions - definition, advantages, examples;E-Cash, Security requirements for Safe E-Payments Security measures in International and Cross Border financial transactions • **Threat Hunting Software**

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2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course –III
Environmental Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Environmental Concepts	12
2	Environment degradation	11
3	Sustainability and role of business	11
4	Innovations in business- an environmental Perspective	11
	Total	**45**

Sr. No.	Modules / Units
1	**Environmental Concepts:**
	• **Environment:** Definition and composition, Lithosphere, Atmosphere, Hydrosphere, Biosphere • **Biogeochemical cycles** - Concept and water cycle • Ecosystem & Ecology; Food chain, food web & Energy flow pyramid • **Resources:** Meaning, classification(Renewable & non-renewable), types & Exploitation of Natural resources in sustainable manner
2	**Environment degradation**
	• **Degradation**-Meaning and causes, degradation of land, forest and agricultural land and its remedies • **Pollution** – meaning, types, causes and remedies (land, air, water and others) • **Global warming**: meaning, causes and effects. • **Disaster Management**: meaning, disaster management cycle. • **Waste Management**: Definition and types -solid waste management anthropogenic waste, e-waste & biomedical waste (consumerism as a cause of waste)
3	**Sustainability and role of business**
	• Sustainability: Definition, importance and Environment Conservation. • Environmental clearance for establishing and operating Industries in India. • EIA, Environmental auditing, ISO 14001 • Salient features of Water Act, Air Act and Wildlife Protection Act. • Carbon bank & Kyoto protocol
4	**Innovations in business- an environmental perspective**
	Non-Conventional energy sources- Wind, Bio-fuel, Solar, Tidal and Nuclear Energy. Innovative Business Models: Eco-tourism, Green marketing, Organic farming, Eco-friendly packaging, Waste management projects for profits ,other business projects for greener future

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2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

Foundation Course- Contemporary Issues- III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Human Rights Provisions, Violations and Redressal	12
2	Dealing With Environmental Concerns	11
3	Science and Technology I	11
4	Soft Skills for Effective Interpersonal Communication	11
	Total	**45**

Sr. No.	Modules / Units
1	**Human Rights Violations and Redressal**
	A. Scheduled Castes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **B.** Scheduled tribes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **C.** Women- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **D.** Children- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **E.** People with Disabilities, Minorities, and the Elderly population- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(4 Lectures)**
2	**Dealing With Environmental Concerns**
	A. Concept of Disaster and general effects of Disasters on human life- physical, psychological, economic and social effects. **(3 Lectures)** **B.** Some locally relevant case studies of environmental disasters. **(2 Lectures)** **C.** Dealing with Disasters - Factors to be considered in Prevention, Mitigation (Relief and Rehabilitation) and disaster Preparedness. **(3 Lectures)** **D.** Human Rights issues in addressing disasters- issues related to compensation, equitable and fair distribution of relief and humanitarian approach to resettlement and rehabilitation. **(3 Lectures)**
3	**Science and Technology – I**
	A. **Development of Science**- the ancient cultures, the Classical era, the Middle Ages, the Renaissance, the Age of Reason and Enlightenment. **(3 Lectures)** **B.** **Nature of science**- its principles and characteristics; Science as empirical, practical, theoretical, validated knowledge. **(2 Lectures)** **C.** **Science and Superstition**- the role of science in exploding myths, blind beliefs and prejudices; Science and scientific temper- scientific temper as a fundamental duty of the Indian citizen. **(3 Lectures)** **D.** **Science in everyday life**- technology, its meaning and role in development; Interrelation and distinction between science and technology. **(3 Lectures)**
4	**Soft Skills for Effective Interpersonal Communication**
	Part A **(4 Lectures)** I) Effective Listening - Importance and Features. II) Verbal and Non-Verbal Communication; Public-Speaking and Presentation Skills. III) Barriers to Effective Communication; Importance of Self-Awareness and Body Language. **Part B** **(4 Lectures)** I) Formal and Informal Communication - Purpose and Types. II) Writing Formal Applications, Statement of Purpose (SOP) and Resume. III) Preparing for Group Discussions, Interviews and Presentations. **Part C** **(3 Lectures)** I) Leadership Skills and Self-Improvement - Characteristics of Effective Leadership. II) Styles of Leadership and Team-Building.

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12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
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Projects / Assignments (for Internal Assessment)

i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.

ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.

iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.

iv. Students can work in groups of not more than 8 per topic.

v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75 **DURATION: 150 MINUTES**

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	**i.** Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. **ii.** Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester **iii.** In all 8 Questions will be asked out of which 5 have to be attempted.	**a)** Total marks: 15 **b)** For 1 A, there will be 3 marks for each sub-question. **c)** For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

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2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NSS - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Value System & Gender sensitivity	12
2	Disaster preparedness & Disaster management	10
3	Health, hygiene & Diseases	13
4	Environment & Energy conservation	10
	Total	**45**

Sr. No.	Modules / Units
1	**Value System & Gender sensitivity**
	UNIT - I – Value System Meaning of value, Types of values- human values and social responsibilities- Indian value system- the concepts and its features **UNIT - II - Gender sensitivity and woman empowerment** Concept of gender- causes behind gender related problems- measures Meaning of woman empowerment- schemes for woman empowerment in India
2	**Disaster preparedness & Disaster management**
	UNIT - I - Basics of Disaster preparedness Disaster- its meaning and types Disaster preparedness- its meaning and methods **UNIT - II - Disaster management** Disaster management- concept- disaster cycle - role of technology in disaster response- role of as first responder – the study of 'Avhan' Model
3	**Health, hygiene & Diseases**
	UNIT - I - Health and hygiene Concept of complete health and maintenance of hygiene **UNIT - II - Diseases and disorders- preventive campaigning** Diseases and disorders- preventive campaigning in Malaria, Tuberculosis, Dengue, Cancer, HIV/AIDS, Diabetes
4	**Environment & Energy conservation**
	UNIT - I Environment and Environment enrichment program Environment- meaning, features , issues, conservation of natural resources and sustainability in environment **UNIT - II Energy and Energy conservation program** Energy- the concept, features- conventional and non- conventional energy Energy conservation- the meaning and importance

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2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NCC - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training and Environment Awareness and Conservation	05
4	Personality Development and Leadership	10
5	Specialized subject (ARMY)	10
	Total	**45**

Sr. No.	Modules / Units
1	**National Integration & Awareness**
	Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion. The students shall enrich themselves about the history of our beloved country and will look forward for the solutions based on strengths to the challenges to the country for its development. • Freedom Struggle and nationalist movement in India. • National interests, Objectives, Threats and Opportunities. • Problems/ Challenges of National Integration. • Unity in Diversity
2	**Drill: Foot Drill**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • Side pace, pace forward and to the rear • Turning on the march and whiling • Saluting on the march • Marking time, forward march and halt in quick time • Changing step • Formation of squad and squad drill
3	**Adventure Training, Environment Awareness and Conservation**
3A	**Adventure Training**
	Desired outcome: The students will overcome fear & inculcate within them the sense of adventure, sportsmanship, espirit-d-corp and develop confidence, courage, determination, diligence and quest for excellence. • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing, Scuba Diving etc.
3B	**Environment Awareness and Conservation**
	Desired outcome: The student will be made aware of the modern techniques of waste management and pollution control. • Waste management • Pollution control, water, Air, Noise and Soil
4	**Personality Development and Leadership**
	Desired outcome: The student will inculcate officer like qualities with desired ability to take right decisions. • Time management • Effect of Leadership with historical examples • Interview Skills • Conflict Motives- Resolution

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	<u>Army</u> **Desired outcome:** It will acquaint, expose & provide knowledge about Army/ Navy/ Air force and to acquire information about expanse of Armed Forces ,service subjects and important battles **A. Armed Force** • Task and Role of Fighting Arms • Modes of Entry to Army • Honors and Awards **B. Introduction to Infantry and weapons and equipments** • Characteristics of 5.56mm INSAS Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning • Organization of Infantry Battalion. **C. Military history** • Study of battles of Indo-Pak War 1965,1971 and Kargil • War Movies **D. Communication** • Characteristics of Walkie-Talkies • Basic RT Procedure • Latest trends and Development (Multi Media, Video Conferencing, IT) ***OR*** **<u>Navy</u>** **A. Naval orientation and service subjects** • Organization of Ship- Introduction on Onboard Organization • Naval Customs and Traditions • Mode of Entry into Indian Navy • Branches of the Navy and their functions • Naval Campaign (Battle of Atlantic, Pearl Harbour, Falkland War/Fleet Review/ PFR/ IFR)s **B. Ship and Boat Modelling** • Types of Models • Introduction of Ship Model- Competition Types of Model Prepare in NSC and RDC • Care and handling of power-tools used- maintenance and purpose of tools

Sr. No.	Modules / Units
	C. Search and Rescue • Role of Indian Coast Guard related to SAR **D. Swimming** • Floating and Breathing Techniques- Precautions while Swimming ***OR*** **<u>AIR</u>** **A. General Service Knowledge** • Organization Of Air Force • Branches of the IAF. **B. Principles of Flight** • Venturi Effect • Aerofoil • Forces on an Aircraft • Lift and Drag **C. Airmanship** • ATC/RT Procedures • Aviation Medicine **D. Aero- Engines** • Types of Engines • Piston Engines • Jet Engines • Turboprop Engines

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2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in Physical Education - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Nutrition	10
2	Evaluation of Health, Fitness and Wellness	10
3	Prevention and Care of Exercise Injuries	10
4	Sports Training	15
	Total	**45**

Sr. No.	Modules / Units
1	**Overview of Nutrition**
	• Introduction to nutrition & its principles • Role of Nutrition in promotion of health • Dietary Guidelines for Good Health • Regulation of water in body and factors influencing body temperature.
2	**Evaluation of Health, Fitness and Wellness**
	• Meaning & Concept of holistic health • Evaluating Personal health-basic parameters • Evaluating Fitness Activities – Walking & Jogging • Myths &mis-conceptions of Personal fitness
3	**Prevention and Care of Exercise Injuries**
	• Types of Exercise Injuries • First Aid- Importance & application in Exercise Injuries • Management of Soft tissues injuries • Management of bone injuries
4	**Sports Training**
	• Definition, aims & objectives of Sports training • Importance of Sports training • Principles of Sports training • Drug abuse & its effects

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3. Core Courses (CC)

5.Business Planning & Entrepreneurial Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Foundations of Entrepreneurship Development	15
2	Types & Classification Of Entrepreneurs	15
3	Entrepreneur Project Development & Business Plan	15
4	Venture Development	15
	Total	**60**

Objectives

SN	Objectives
1	Entrepreneurship is one of the major focus areas of the discipline of Management. This course introduces Entrepreneurship to budding managers.
2	To develop entrepreneurs &to prepare students to take the responsibility of full line of management function of a company with special reference to SME sector.

Sr. No.	Modules / Units
1	**Foundations of Entrepreneurship Development:**
	• **Foundations of Entrepreneurship Development:** Concept and Need of Entrepreneurship Development Definition of Entrepreneur, Entrepreneurship, Importance and significance of growth of entrepreneurial activities Characteristics and qualities of entrepreneur • **Theories of Entrepreneurship**: Innovation Theory by Schumpeter &Imitating Theory of High Achievement by McClelland X-Efficiency Theory by Leibenstein Theory of Profit by Knight Theory of Social change by Everett Hagen • **External Influences on Entrepreneurship Development**: Socio-Cultural, Political, Economical, Personal. Role of Entrepreneurial culture in Entrepreneurship Development.
2	**Types & Classification Of Entrepreneurs**
	• Intrapreneur –Concept and Development of Intrapreneurship • Women Entrepreneur – concept, development and problems faced by Women Entrepreneurs, Development of Women Entrepreneurs with reference to Self Help Group • Social entrepreneurship–concept, development of Social entrepreneurship in India. Importance and Social responsibility of NGO's. • Entrepreneurial development Program (EDP)– concept, factor influencing EDP. Option available to Entrepreneur. (Ancillarisation, BPO, Franchise, M&A)
3	**Entrepreneur Project Development &Business Plan**
	• Innovation, Invention, Creativity, Business Idea, Opportunities through change. • Idea generation– Sources-Development of product /idea, • Environmental scanning and SWOT analysis • Creating Entrepreneurial Venture-Entrepreneurship Development Cycle • Business Planning Process-The business plan as an Entrepreneurial tool, scope and value of Business plan. • Elements of Business Plan, Objectives, Market and Feasibility Analysis, Marketing, Finance, Organization &Management, Ownership, • Critical Risk Contingencies of the proposal, Scheduling and milestones.
4	**Venture Development**
	• Steps involved in starting of Venture • Institutional support to an Entrepreneur • Venture funding, requirements of Capital (Fixed and working) Sources of finance, problem of Venture set-up and prospects • Marketing: Methods, Channel of Marketing, Marketing Institutions and Assistance. • New trends in entrepreneurship

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3. Core Courses (CC)

6. Accounting for Managerial Decisions

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Analysis and Interpretation of Financial statements	15
2	Ratio analysis and Interpretation	15
3	Cash flow statement	15
4	Working capital	15
	Total	**60**

Objectives

SN	Objectives
1	To acquaint management learners with basic accounting fundamentals.
2	To develop financial analysis skills among learners.
3	The course aims at explaining the core concepts of business finance and its importance in managing a business

Sr. No.	Modules / Units
1	**Analysis and Interpretation of Financial statements**
	• Study of balance sheet of limited companies. Study of Manufacturing, Trading, Profit and Loss A/c of Limited Companies • Vertical Form of Balance Sheet and Profit & Loss A/c-Trend Analysis, Comparative Statement &Common Size.
2	**Ratio analysis and Interpretation**
	• **Ratio analysis and Interpretation**(based on vertical form of financial statements)including conventional and functional classification restricted to: • **Balance sheet ratios**: Current ratio, Liquid Ratio, Stock Working capital ratio, Proprietory ratio, Debt Equity Ratio, Capital Gearing Ratio. • **Revenue statement ratios:** Gross profit ratio**,** Expenses ratio, Operating ratio, Net profit ratio, Net Operating Profit Ratio, Stock turnover Ratio, Debtors Turnover , Creditors Turnover Ratio • **Combined ratios:** Return on capital Employed (including Long term borrowings), Return on Proprietors fund (Shareholder fund and Preference Capital), Return on Equity Capital, Dividend Payout Ratio, Debt Service Ratio, • **Different modes of expressing ratios**:-Rate, Ratio, Percentage, Number. Limitations of the use of Ratios.
3	**Cash flow statement**
	Preparation of cash flow statement(AccountingStandard-3(revised)
4	**Working capital**
	• **Working capital-**Concept, Estimation of requirements in case of Trading & Manufacturing Organizations. • **Receivables management-**Meaning &Importance, Credit Policy Variables, methods of Credit Evaluation(Traditional and Numerical- Credit Scoring); Monitoring the Debtors Techniques [DSO, Ageing Schedule]

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
with Effect from the Academic Year 2017-2018

3. Core Courses (CC)

7. Strategic Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	12
2	Strategy Formulation	16
3	Strategic Implementation	18
4	Strategic Evaluation & Control	14
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to learn the management policies and strategies at every Level to develop conceptual skills in this area as well as their application in the corporate world.
2	The focus is to critically examine the management of the entire enterprise from the Top Management view points.
3	This course deals with corporate level Policy & Strategy formulation areas. This course aims to developing conceptual skills in this area as well as their application in the corporate world.

Sr. No.	Modules / Units
1	**Introduction**
	• **Business Policy**-Meaning, Nature, Importance • **Strategy**-Meaning, Definition • **Strategic Management**-Meaning, Definition, Importance, Strategic management • Process & Levels of Strategy and Concept and importance of Strategic Business Units (SBU's) • **Strategic Intent**-Mission, Vision, Goals, Objective, Plans
2	**Strategy Formulation**
	• Environment Analysis and Scanning(SWOT) • Corporate Level Strategy (Stability, Growth, Retrenchment, Integration and Internationalization) • Business Level Strategy(Cost Leadership, Differentiation, Focus) • Functional Level Strategy(R&D, HR, Finance, Marketing, Production)
3	**Strategic Implementation**
	• Models of Strategy making. • Strategic Analysis& Choices &Implementation: BCG Matrix, GE 9Cell, Porter5 Forces, 7S Frame Work • Implementation: Meaning, Steps and implementation at Project, Process, Structural ,Behavioural ,Functional level.
4	**Strategic Evaluation & Control**
	Strategic Evaluation & Control– Meaning, Steps of Evaluation & Techniques of Control Synergy: Concept , Types , evaluation of Synergy. Synergy as a Component of Strategy & its Relevance. Change Management– Elementary Concept

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester IV

No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***	
1& 2	*Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
3	Information Technology in Business Management-II	**03**
2B	*****Skill Enhancement Courses (SEC)***	
4	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
5	Business Economics-II	**03**
6	Business Research Methods	**03**
7	Production & Total Quality Management	**03**
	Total Credits	**20**

*****List of Skill Enhancement Courses (SEC) for Semester IV (Any One)***	
1	Foundation Course (Ethics & Governance)- IV
2	Foundation Course- Contemporary Issues- IV
3	Foundation Course in NSS - IV
4	Foundation Course in NCC - IV
5	Foundation Course in Physical Education - IV

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
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Elective Courses (EC)

Group A. Finance Electives

1. Financial Institutions & Markets

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Financial System in India	16
2	Financial Regulators & Institutions in India (detail discussion on their role and functions)	16
3	Financial Markets (In Details)	16
4	Managing Financial Systems Design	12
	Total	**60**

Objectives

SN	Objectives
1	The Course aims at providing the students basic knowledge about the structure, role and functioning of financial institutions and markets in the financial system in India.
2	To inculcate understanding relating to managing of financial system

Sr. No.	Modules / Units
1	**Financial System in India**
	• **Financial System Theoretical Settings** – Meaning, Importance, Functions of financial system, Indian financial system from financial neutrality to financial activism and from financial volatility to financial stability. Role of government in Financial development , Phases of Indian financial system since independence (State Domination – 1947-1990, Financial sector reforms 1991 till Financial sector Legislative Reforms Commission 2013) (Only an Overview) Monitoring Framework for financial Conglomerates, • **Structure of Indian financial system** – Financial Institutions (Banking & Non-Banking), Financial Markets (Organized and Unorganized) Financial Assets/Instruments, Financial Services(Fund based & Free Based) – (In details) • **Microfinance** - Conceptual Framework – Origin, Definitions, Advantages, Barriers, Microfinance Models in India
2	**Financial Regulators & Institutions in India (detail discussion on their role and functions)**
	• **Financial Regulators** – Ministry of Finance (Dept of DEA, Expenditure ,Revenue, financial services and disinvestment) RBI- Changing role of RBI in the financial sector, global crisis and RBI, Ministry of Corporate Affairs, SEBI, Pension Fund Regulatory and Development Authority, IRDA. • **Financial Institutions**- Role, Classification, Role of Commercial banks, IFCI, IDBI, Industrial Credit and Investment Corporation of India, SFC, Investment institutions in India (LIC, GIC) NBFC services provided by NBFC. • **Specialized Financial Institutions** – EXIM, NABARD, SIDBI, NHB, SIDC, SME Rating agency of India Ltd, IIFCL, IWRFC (Their role, functions and area of concerns)
3	**Financial Markets (In Details)**
	• **Indian Money Market** – Meaning, Features, Functions, Importance, Defects, Participants, Components (Organized and Unorganized) (in details) and Reforms • **Indian Capital Market** - Meaning, Features, Functions, Importance, Participants, Instruments, Reforms in Primary and Secondary Market, Stock Indices, NSE, BSE, ADR and GDR • **Introduction of Commodity and Derivative Markets** • **Insurance and Mutual funds** – An introduction
4	**Managing Financial Systems Design**
	• **Financial System Design** – Meaning, Stakeholder Lender Conflict, Manager Stock holder conflict, Conflict Resolution and Financial System Design, Bank oriented systems and Market oriented systems its advantages and drawbacks, Dimensions of well-functioning financial systems • **At global level** – Financial system designs of Developed countries (Japan, Germany , UK and USA) (Brief Summary) • **Case studies** relating to disinvestments polices of PSU in India, Global crises and failures in market systems around world

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

2. Auditing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Auditing	15
2	Audit Planning, Procedures and Documentation	15
3	Auditing Techniques and Internal Audit Introduction	15
4	Auditing Techniques: Vouching &Verification	15
	Total	**60**

Objectives

SN	Objectives
1	To enable students get acquaint with the various concepts of auditing.
2	To ensure students understand and practice the various techniques of auditing while managing their finances

Sr. No.	Modules / Units
1	**Introduction to Auditing**
	• **Basics** – Financial Statements, Users of Information, Definition of Auditing, Objectives of Auditing – Primary and Secondary, Expression of opinion, Detection of Frauds and Errors, Inherent limitations of Audit. Difference between Accounting and Auditing, Investigation and Auditing. • **Errors & Frauds** – Definitions, Reasons and Circumstances, Types of Error – Commission, Omission, Compensating error. Types of frauds, Risk of fraud and Error in Audit, Auditors Duties and Responsibilities in case of fraud • **Principles of Audit** – Integrity, Objectivity, Independence, Skills, Competence, Work performed by others, Documentation, Planning, Audi Evidence, Accounting System and Internal Control, Audit Conclusions and Reporting • **Types of Audit** – Meaning, Advantages, Disadvantages of Balance sheet Audit, Interim Audit, Continuous Audit, Concurrent Audit and Annual Audit
2	**Audit Planning, Procedures and Documentation**
	• **Audit Planning** – Meaning, Objectives, Factors to be considered, Sources of obtaining information, Discussion with Client, Overall Audit Approach. • **Audit Program** – Meaning, Factors, Advantages and Disadvantages, Overcoming Disadvantages, Methods of Work , Instruction before commencing Work, Overall Audit Approach • **Audit Working Papers** - Meaning, importance, Factors determining Form and Contents, Main Functions / Importance, Features, Contents of Permanent Audit File, Temporary Audit File, Ownership, Custody, Access of Other Parties to Audit Working Papers, Auditors Lien on Working Papers, Auditors Lien on Client's Books • **Audit Notebook** – Meaning, structure, Contents, General Information, Current Information, Importance
3	**Auditing Techniques and Internal Audit Introduction**
	• **Test Check** - Test Checking Vs Routing Checking, test Check meaning, features, factors to be considered, when Test Checks can be used, advantages disadvantages precautions. • **Audit Sampling** - Audit Sampling, meaning, purpose, factors in determining sample size -Sampling Risk, Tolerable Error and expected error, methods of selecting Sample Items Evaluation of Sample Results auditors Liability in conducting audit based on Sample • **Internal Control** - Meaning and purpose, review of internal control, advantages, auditors duties, review of internal control, Inherent Limitations of Internal control, internal control samples for sales and debtors, purchases and creditors, wages and salaries. Internal Checks Vs Internal Control, Internal Checks Vs Test Checks • **Internal Audit** - Meaning, basic principles of establishing Internal audit, objectives, evaluation of internal Audit by statutory auditor, usefulness of Internal Audit, Internal Audit Vs External Audit,, Internal Checks Vs Internal Audit

Sr. No.	Modules / Units
4	**Auditing Techniques: Vouching &Verification**
	• **Audit of Income** - Cash Sales, Sales on Approval, Consignment Sales, Sales Returns Recovery of Bad Debts written off, Rental Receipts, Interest and Dividends Received Royalties Received • **Audit of Expenditure** - Purchases, Purchase Returns, Salaries and Wages, Rent, Insurance Premium, Telephone expense Postage and Courier, Petty Cash Expenses, Travelling Commission Advertisement, Interest Expense • **Audit of Assets Book Debts / Debtors, Stocks** -Auditors General Duties; Patterns, Dies and Loose Tools, Spare Parts, Empties and Containers Quoted Investments and Unquoted Investment Trade Marks / Copyrights Patents Know-How Plant and Machinery Land and Buildings Furniture and Fixtures • **Audit of Liabilities** - Outstanding Expenses, Bills Payable Secured loans Unsecured Loans, Contingent Liabilities

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

3. Strategic Cost Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Strategic Cost Management(Only Theory)	20
2	Activity Based Costing	20
3	Strategic Cost Management performance assessment (Only theory)	08
4	Variance Analysis & Responsibility Accounting (Practical Problems)	12
	Total	**60**

Objectives

SN	Objectives
1	Learners should develop skills of analysis, evaluation and synthesis in cost and management accounting
2	The subject covers the complex modern industrial organizations within which the various facets of decision-making and controlling operations take place.

Sr. No.	Modules / Units
1	**Introduction to Strategic Cost Management(Only Theory)**
	• **Strategic Cost Management (SCM):** Concept and Philosophy-Objectives of SCM-Environmental influences on cost management practices, Key elements in SCM-Different aspects of Strategic Cost Management: Value Analysis & Value Engineering, Wastage Control, Disposal Management, Business Process Re-engineering, Total Quality Management, Total Productive Maintenance, Energy Audit, Control of Total Distribution Cost & Supply Cost, Cost Reduction & Product Life Cycle Costing(An Overview)
2	**Activity Based Costing**
	• **Activity Based Management and Activity Based Budgeting**: Concept, rationale, issues, limitations. Design and Implementation of Activity Based Costing (**Practical Problems on ABC**), Life Cycle Costing, Kaizen Costing, Back Flush Costing. Evaluation criterion; Return on Cash Systems; Transfer Pricing and Divisional Performance. Transfer Pricing in International Business, Marginal Costing and Managerial Decision Mix (Practical Problems)
3	**Strategic Cost Management performance assessment (Only theory)**
	• Cost Audit & Management Audit under companies Act, with reference to strategic assessment of cost & managerial performance- Strategic Cost-Benefit Analysis of different business restructuring propositions-Entrepreneurial approach to cost Management, with reference to core competencies, strategic advantages & long-term perspective of cost Management. Six Sigma, Learning Curve, Praise Analysis and Simulation
4	**Variance Analysis & Responsibility Accounting (Practical Problems)**
	• **Standard Costing** (Material, Labour, Overhead, Sales & Profit) • **Responsibility Accounting** –Introduction, Types & Evaluation of Profit Centre and Investment Centre

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

4. Corporate Restructuring

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Corporate Restructuring – Introduction and Concepts (Only Theory)	15
2	Accounting of Internal Reconstruction (Practical and theory)	15
3	Accounting of External Reconstruction (Amalgamation/ Mergers/ Takeovers and Absorption)(Practical and theory)	15
4	Impact of Reorganization on the Company - An Introduction (Only Theory)	15
	Total	**60**

Objectives

SN	Objectives
1	To impart knowledge relating to legal, accounting and practical implementation of corporate restructuring.
2	The subject covers the complex facets of corporate restructuring process

Sr. No.	Modules / Units
1	**Corporate Restructuring – Introduction and Concepts (Only Theory)**
	• Corporate Restructuring - Historical Background, Meaning of Corporate Restructuring, Corporate Restructuring as a Business Strategy, Need and Scope of Corporate Restructuring. • Planning, Formulation and Execution of Various Restructuring Strategies, Important Aspects to be considered while Planning or Implementing Corporate Restructuring Strategies. • Forms of Restructuring - Merger, Demerger, Reverse merger , Disinvestment , Takeover/acquisition, Joint Venture (JV), Strategic Alliance, Franchising and Slump sale
2	**Accounting of Internal Reconstruction (Practical and theory)**
	• Need for reconstruction and Company Law provisions, Distinction between internal and external reconstructions • Methods including alteration of share capital, variation of share-holder rights, sub division, consolidation, surrender and reissue/cancellation, reduction of share capital, with relevant legal provisions and accounting treatments for same.
3	**Accounting of External Reconstruction (Amalgamation/ Mergers/ Takeovers and Absorption)(Practical and theory)**
	• In the nature of merger and purchase with corresponding accounting treatments of pooling of interests and purchase methods respectively • Computation and meaning of purchase consideration and Problems based on purchase method of accounting only.
4	**Impact of Reorganization on the Company - An Introduction (Only Theory)**
	• Change in the Internal Aspects on Reorganization – Change of Name and Logo, Revised Organization Chart, Communication, Employee Compensation, Benefits and Welfare Activities, Aligning Company Policies, Aligning Accounting and Internal Database Management Systems, Re-Visiting Internal Processes and Re-Allocation of People • Change in External Aspects on Reorganization - Engagement with Statutory Authorities, Revised ISO Certification and Similar Other Certifications, Revisiting past Government approvals, decisions and other contracts. • Impact of Reorganization - Gain or Loss to Stakeholders, Implementation of Objectives, Integration of Businesses and Operations, Post Merger Success and Valuation and Impact on Human and Cultural Aspects.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
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Elective Courses (EC)

Group B. Marketing Electives

1. Integrated Marketing Communication

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Integrated Marketing Communication	15
2	Elements of IMC – I	15
3	Elements of IMC – II	15
4	Evaluation & Ethics in Marketing Communication	15
	Total	**60**

Objectives

SN	Objectives
1	To equip the students with knowledge about the nature, purpose and complex construction in the planning and execution of an effective Integrated Marketing Communication (IMC) program.
2	To understand the various tools of IMC and the importance of co-ordinating them for an effective marketing communication program.

Sr. No.	Modules / Units
1	**Introduction to Integrated Marketing Communication**
	• Meaning, Features of IMC, Evolution of IMC, Reasons for Growth of IMC. • Promotional Tools for IMC, IMC planning process, Role of IMC in Marketing • Communication process, Traditional and alternative Response Hierarchy Models • Establishing objectives and Budgeting: Determining Promotional Objectives, Sales vs Communication Objectives, DAGMAR, Problems in setting objectives, setting objectives for the IMC Program.
2	**Elements of IMC – I**
	• **Advertising** – Features, Role of Advertising in IMC, Advantages and Disadvantages, Types of Advertising, Types of Media used for advertising. • **Sales promotion** – Scope, role of Sales Promotion as IMC tool, Reasons for the growth, Advantages and Disadvantages, Types of Sales Promotion, objectives of consumer and trade promotion, strategies of consumer promotion and trade promotion, sales promotion campaign, evaluation of Sales Promotion campaign.
3	**Elements of IMC – II**
	• **Direct Marketing** - Role of direct marketing in IMC, Objectives of Direct Marketing, Components for Direct Marketing, Tools of Direct Marketing – direct mail, catalogues, direct response media, internet, telemarketing, alternative media evaluation of effectiveness of direct marketing • **Public Relations and Publicity** – Introduction, Role of PR in IMC, Advantages and Disadvantages, Types of PR, Tools of PR ,Managing PR – Planning, implementation, evaluation and Research, Publicity, Sponsorship – definition, Essentials of good sponsorship, event sponsorship, cause sponsorship • **Personal Selling** – Features, Role of Personal Selling in IMC, advantages and disadvantages of Personal Selling, Selling process, Importance of Personal Selling
4	**Evaluation & Ethics in Marketing Communication**
	• **Evaluating an Integrated Marketing program** – Evaluation process of IMC – Message Evaluations, Advertising tracking research – copy testing – emotional reaction test, cognitive Neuro science – online evaluation, Behavioural Evaluation – sales and response rate, POPAI, Toll free numbers, QR codes and facebook likes, response cards, Internet responses, redemption rate Test Markets – competitive responses, scanner data, Purchase simulationtests • **Ethics and Marketing communication** – stereotyping, targeting vulnerable customers, offensive brand messages – legal issues – Commercial free speech, misleading claims, puffery, fraud, questionable B2B practices • **Current Trends in IMC** – Internet & IMC, Advertising on internet, PR through Internet Banner, Sales promotion on Internet, direct marketing on internet.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

2. Rural Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Rural Market	15
3	Rural Marketing Mix	15
4	Rural Marketing Strategies	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to explore the students to the Agriculture and Rural Marketing environment so that they can understand consumer's and marketing characteristics of the same for understanding and contributing to the emerging challenges in the upcoming global economic scenario.

Sr. No.	Modules / Units
1	**Introduction**
	• Introduction to Rural Market, Definition &Scope of Rural Marketing. • Rural Market in India-Size & Scope, Rural development as a core area, Efforts put for Rural development by government (A brief Overview). • Emerging Profile of Rural Markets in India, • Problems of rural market. • Constraints in Rural Marketing and Strategies to overcome constraints
2	**Rural Market**
	• **Rural Consumer Vs Urban Consumers**– a comparison. • Characteristics of Rural Consumers. • **Rural Market Environment:** a)Demographics– Population, Occupation Pattern, Literacy Level; b)Economic Factors-Income Generation, Expenditure Pattern, Rural Demand and Consumption Pattern, Rural Market Index; Land Use Pattern, c)Rural Infrastructure -Rural Housing, Electrification, Roads • **Rural Consumer Behaviour:** meaning, Factors affecting Rural Consumer Behaviour-Social factors, Cultural factors, Technological factors, Lifestyle, Personality.
3	**Rural Marketing Mix**
	• Relevance of Marketing mix for Rural market/Consumers. • Product Strategies, Rural Product Categories-FMCGs, Consumer Durables, Agriculture Goods &Services; Importance of Branding, Packaging and Labelling. • Nature of Competition in Rural Markets, the problem of Fake Brands • Pricing Strategies & objectives • Promotional Strategies. Segmentation, Targeting & Positioning for rural market.
4	**Rural Marketing Strategies**
	• **Distribution Strategies for Rural consumers.** Channels of Distribution- HAATS, Mandis, Public Distribution System, Co-operative society, Distribution Models of FMCG, Companies HUL, ITC etc. Distribution networks, Ideal distribution model for rural markets (Case study based) • **Communication Strategy.** Challenges in Rural Communication, Developing Effective Communication, Determining Communication Objectives, Designing the Message, Selecting the Communication Channels. Creating Advertisements for Rural Audiences. Rural Media- Mass media, Non-Conventional Media, Personalized media;

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with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

3. Event Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Events	15
2	Segmenting, Targeting and Positioning of Events and Concept of Product in Events	15
3	Concept of Pricing and Promotion in Events	15
4	Trends and Challenges in Event Marketing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand basic concepts of Event Marketing.
2	To impart knowledge to learners about categories of Events.
3	To understand segmenting, targeting and positioning in the context of Event Marketing.
4	To familiarize learners with trends and challenges in Event Marketing.

Sr. No.	Modules / Units
1	**Introduction to Events**
	• Definition and Meaning of Event Marketing ; The Evolution of Event Marketing, Advantages of Event Marketing, 5 C's of Events- Conceptualization, costing, canvassing, customization, carrying-out; Event Designing; Reach; **Interaction**- Interaction Points, Direct Interaction, Indirect Interaction, Interaction Catalysts or Enablers. • Importance of Events as a Marketing Communication Tool; Events as a Marketing Tool: The Varied Marketing Needs Addressed by Events: Brand Building, Focus on Target Market, Implementation of Marketing Plan, Marketing Research, Relationship Building, Creating opportunities for better deals with different media, Events and their Economic implications. • Concept of Event Creativity, Key Elements of Events: Event Infrastructure; Customer Groups; Clients; Event Organizers; Venue; Media
2	**Segmenting, Targeting and Positioning of Events and Concept of Product in Events**
	• Concept of Market in Events; Segmentation and targeting of the Market for events; Positioning of events-Event Property. • Concept of Product in Events: Benefit Levels-Core, generic, expected, augmented; Categories of Events: Competitive Events, Artistic Expression, Cultural Celebrations, Exhibition Events, Charitable Events ,Special Business Events, Retail Events. • Event Variations- Time Frame Based, Concept Based, Artist Based, Client Industry Based
3	**Concept of Pricing and Promotion in Events**
	• Risk Rating, Setting Pricing Objectives, Understanding local legislations and tax laws, Feedback about events from the market, skills required for negotiating the best price, validation against pricing objectives, pricing decisions, Event Charges: Percentage of the total Event Cost, Flat Fee, Package Price, Hourly Rate. • Networking Components: Print Media, Radio, Television, Internet, Outdoor Media, Direct Marketing, Sales Promotion, Public Relations, Merchandising, In-venue Publicity. • Event Sponsorship: Concept of Sponsorship, Sponsorship in a communication context, Synergy between sponsor and Event, Identifying Potential sponsors, Impact Measurement, Practical Sponsor Incentivization, In-Kind Sponsorship.
4	**Trends and Challenges in Event Marketing**
	• e-event marketing, Virtual Events, Societal Event Marketing, Green Event, Cause-Related Event Marketing, Sports Event Marketing. • Safety and Security of Event • Event Crisis Management • Growth of Event Industry in India • Career in Event Marketing

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Elective Courses (EC)

Group B. Marketing Electives

4. Tourism Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Tourism Marketing	15
2	Tourism Market Segmentation & Product Mix of Tourism Marketing	15
3	Concept of Pricing, Place, Promotion and Expanded marketing mix for tourism marketing	15
4	Global tourism, tourism organizations and Challenges for Indian Tourism Industry	15
	Total	**60**

Objectives

SN	Objectives
1	To understand basic concepts and strategies of Tourism Marketing.
2	To impart knowledge to learners about types of tourism.
3	To understand segmentation and Marketing mix in the context of Tourism Marketing.
4	To familiarize learners with trends and challenges in Tourism Marketing.

Sr. No.	Modules / Units
1	**Introduction to Tourism Marketing**
	• Meaning of Tourism & Tourist, Features of Tourism, Purpose of Tourism, Adverse Effects of Tourism, Factors Influencing growth of Tourism, Classification of Tourism; Types of Tourism: Health, adventure, rural, cultural, religious, eco-Tourism, wedding Tourism, cruise Tourism. • **Tourism Marketing** Meaning, Objectives of Tourism Marketing, Importance of Tourism Marketing, Problems of Tourism Marketing. • **Phases of Tourism**: Economic Approach, Environmental Approach, Cost Benefit Approach. • **Tourism Planning**: Process, Study of market, Levels of tourism planning, Organization of a tour. Tour Operators and Travel Agents: functions, types, distribution network, Travel agency operations, Travel Organization-Individual and group, travel itinerary. Travel Formalities and Documentation.
2	**Tourism Market Segmentation & Product Mix of Tourism Marketing**
	• **Tourism Market Segmentation:** Meaning, Need for Market Segmentation in Tourism Importance of Market Segmentation in Tourism Bases for Segmentation in Tourism Tourist Typology: Cohens Typology, Plog's Typology • **4 'A's of Tourism** Attraction: Meaning, Typology of Attraction, Natural, Artificial, Cultural, Social, Managed Attraction for Tourist, Peter's Inventory of Tourist Accommodation: Meaning, Typology of Accommodation Accessibility: Meaning, Transportation System for Tourism, Surface Transport, Railways and its contribution to tourism, Sea & Waterways, Airways Amenities: Meaning, Amenities & Facilities at the destination. • **Marketing Strategy**: Hard v/s Soft Tourism Strategy. • **Product Mix of Tourism Marketing**: Meaning, Tourism Destination Life Cycle, Factors for tourism destination selection, launching a new tourism product, Tourism Product and Package Tour, Itinerary meaning, Types of Itinerary, Drawing a Itinerary for Tourist, Reservation meaning, Sources of reservation, Modes of Reservation, Ticketing Procedure
3	**Concept of Pricing, Place, Promotion and Expanded marketing mix for tourism marketing**
	• **Price:** Meaning, Factors Influencing Tourism Pricing, Tourism Pricing Objectives, Tourism Pricing Policies • **Place:** Meaning, Factors Influencing Tourism Distribution, Tourism Distribution System, Middlemen in Tourism Industry, Functions of Middlemen, Travel Guide Meaning, Essential of an ideal travel guide. • **Promotion:** Tourism Advertising, Tourism Publicity, Tourism Public Relation, Tourism Sales promotion Technique, Personal Selling in Tourism, Skills required for Selling Tourism Product, Electronics Channel of Tourism • **People:** Moment of Truth in Tourism, Employee as an element of people mix, Internal Marketing, Objectives of Internal Marketing, Internal marketing Process. • **Process:** Meaning, Factors to be considered while designing the service process, Tourism Service Blueprinting: Meaning, Steps, Benefits of Blueprinting • **Physical Evidence** for Tourism

Sr. No.	Modules / Units
4	**Global Tourism, Tourism Organizations and Challenges for Indian Tourism Industry**
	• **Global Tourism Market**: Overview of Tourism Market of America, Mauritius, Asia Pacific, Thailand, Vietnam, China, Singapore, Middle East and Gulf, UK and other European Countries. • **Status of tourism in developing countries**. • **India as a Tourist Destination**: A conceptual framework, Destination Image, Building Brand India; Incredible India Campaign • **Challenges** for Indian Tourism Industry • **Tourism Organizations**: World Trade Organization (WTO), International Civil Aviation Organization (ICAO), International Air Transport Association (IATA), Pacific Asia Travel Association (PATA), Universal Federation of Travel Agents Association (UFTAA), Travel Agents Association of India (TAAI), Indian Association of Tour Operators (IATO), Ministry of Tourism, Government of India, India Tourism Development Corporation.

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Elective Courses (EC)

Group C. Human Resource Electives

1. Human Resource Planning and Information System

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Human Resource Planning (HRP)	15
2	Job Analysis, Recruitment and Selection	15
3	HRP Practitioner, Aspects of HRP and Evaluation	15
4	Human Resource Information Systems	15
	Total	**60**

Objectives

SN	Objectives
1	To Understand the Concept and Process of HRP
2	To Understand Ways of matching Job Requirements and Human Resource Availability
3	To Explore the concept of Strategic HRP
4	To Understand the applications of HRIS

Sr. No.	Modules / Units
1	**Overview of Human Resource Planning (HRP)**
	a) Overview of Human Resource Planning (HRP): **Human Resource Planning–**Meaning, Features, Scope, Approaches, Levels of HRP, Types, Tools, Activities for HRP, Requirements for Effective HR Planning. **Process of HRP-** Steps in HRP, HR Demand Forecasting–Factors, Techniques – (Concepts Only) Managerial Judgement, Ratio Trend Analysis, Regression Analysis, Work Study Technique, Delphi Technique. HR Supply Forecasting– Factors, Techniques – (Concepts Only) Skills Inventories, Succession Plans, Replacement Charts, Staffing Tables. • Barriers in Effective Implementation of HRP and Ways to Overcome Them. • **Strategic Human Resource Planning –**Meaning and Objectives. • Link between Strategic Planning and HRP through Technology. • **HR Policy –**Meaning, Importance. • **HR Programme-**Meaning and Contents.
2	**Job Analysis, Recruitment and Selection**
	a) Job Analysis, Recruitment and Selection: • **Job Analysis-**Meaning, Features, Advantages. • **Job Design:** Concept, Issues. • **Job Redesign –**Meaning, Process, Benefits. **Matching Human Resource Requirement and Availability through:** Retention- Meaning, Strategies, Resourcing- Meaning, Types. Flexibility – Flexible work practices, Downsizing- Meaning, Reasons, Layoff – Meaning, Reasons. • **Recruitment -** Meaning and Factors affecting Recruitment, Ethical Issues in Recruitment and Selection. • **Employee Selection Tests:** Meaning, Advantages and Limitations. • **Human Resource Audit:** Meaning, Need, Objectives, Process, Areas.
3	**HRP Practitioner, Aspects of HRP and Evaluation**
	a) HRP Practitioner, Aspects of HRP and Evaluation: • **HRP Practitioner:** Meaning, Role. • **HRP Management Process:** ▪ Establish HRP Department Goals and Objectives ▪ Creating HRP Department Structure ▪ Staffing the HRP Department ▪ Issuing Orders ▪ Resolving Conflicts ▪ Communicating ▪ Planning for Needed Resources ▪ Dealing with Power and Politics -Meaning and Types of Power • HRP as Tool to Enhance Organisational Productivity • Impact of Globalisation on HRP.

	• **Aspects of HRP :** Performance Management, Career Management, Management Training and Development, Multi Skill Development • **Return on Investment in HRP-** Meaning and Importance. • **HRP Evaluation**- Meaning, Need, Process, Issues to be considered during HRP Evaluation. • **Selected Strategic Options and HRP Implications:** Restructuring and its Impact on HRP, Mergers and Acquisitions and its Impact on HRP, Outsourcing and its Impact on HRP.
4	**Human Resource Information Systems**
	• Human Resource Information Systems: • **Data Information Needs for HR Manager** – Contents and Usage of Data. • **HRIS-**Meaning, Features, Evolution, Objectives, Essentials, Components, Functions, Steps in designing of HRIS, HRIS Subsystems, Mechanisms of HRIS, Benefits, Limitations, Barriers in Effective Implementation of HRIS. • Security Issues in Human Resource Information Systems. • HRIS for HRP • Trends in HRIS

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group C. Human Resource Electives

2. Training & Development in HRM

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Training	15
2	Overview of development	15
3	Concept of Management development	15
4	Performance measurement, Talent management & Knowledge management	15
	Total	**60**

Objectives

SN	Objectives
1	This paper is not pure academic oriented but practice based. It has been designed, keeping in view the needs of the organizations. Successful managerial performance depends on the individual's ability to observe, interpret the issues and modify his approach and behaviour. All organizations need to pay adequate attention to equip their employees. Rapid progress in technology has changed not only in the physical facilities but also in the abstract qualities required of the men who are using them. This paper will attempt to orient the students to tailor themselves to meet the specific needs of the organizations in training and development activities.

Sr. No.	Modules / Units
1	**Overview of Training**
	• Overview of training– concept, scope, importance, objectives, features, need and assessment of training. • Process of Training–Steps in Training, identification of Job Competencies, criteria for identifying Training Needs (Person Analysis, Task Analysis, Organisation Analysis), Types–On the Job &Off the Job Method. • Assessment of Training Needs, Methods & Process of Needs Assessment. • Criteria &designing-Implementation– an effective training program.
2	**Overview of Development**
	• Overview of development– concept, scope, importance & need and features, Human Performance Improvement • Counselling techniques with reference to development employees, society and organization. • Career development– Career development cycle, model for planned self development, succession planning.
3	**Concept of Management Development**
	• Concept of Management Development. • Process of MDP. • Programs &methods, importance, evaluating a MDP.
4	**Performance measurement, Talent management & Knowledge management**
	• Performance measurements– Appraisals, pitfalls &ethics of appraisal. • Talent management –Introduction ,Measuring Talent Management, Integration & future of TM, Global TM &knowledge management— OVERVIEW -Introduction: History, Concepts, • Knowledge Management: Definitions and the Antecedents of KM Information Management to Knowledge Management , Knowledge Management: What Is and What Is Not?, Three stages of KM, KM Life Cycle

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group C. Human Resource Electives

3. Change Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Impact of Change	15
3	Resistance to Change	15
4	Effective Implementation of Change	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this paper is to prepare students as organizational change facilitators using the knowledge and techniques of behavioural science.

Sr. No.	Modules / Units
1	**Introduction**
	• Introduction &levels of change. Importance, imperatives of change, Forces of change. Causes-social, economic, technological and organizational. • Organizational culture& change. • Types & Models of change –Kurt Lewin's change model, Action research, Expanded Process Model., A.J. Leavitts model.
2	**Impact of Change**
	• Change & its implementation.– individual change: concept, need, importance & risk of not having individual perspective. Team Change –concept, need, importance & limitation • Change & its impact– Resistance to change & sources-sources of individual resistance, sources of organizational resistance
3	**Resistance to Change**
	• Overcoming Resistance to change – Manifestations of resistance, Six box model • Minimizing RTC. • OD Interventions to overcome change-meaning and importance, Team intervention, Role analysis Technique, Coaching &mentoring, T-group, Job expectations technique, Behaviour modification, Managing role stress.
4	**Effective implementation of change**
	• Effective implementation of change–change agents and effective change programs. • Systematic approach to change, client & consultant relationship • Classic skills for leaders • Case study on smart change leaders, caselets on Action research.

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Elective Courses (EC)

Group C. Human Resource Electives

4. Conflict & Negotiation

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Conflict	15
2	Conflict Management	15
3	Overview of Negotiation	15
4	Managing Negotiations, Ethics in Negotiation and 3D Negotiation	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the nature of conflicts, their causes and outcomes
2	To study the aspects of conflict management and how to handle them effectively
3	To get insight into negotiations and negotiation process
4	To understand the role of third party negotiation and skills for effective negotiation

Sr. No.	Modules / Units
1	**Overview of Conflict**
	• Meaning of Conflict, Nature, Transitions in Conflict Thought – Traditional View, Human Relations View, Interactionist View. Functional and Dysfunctional Conflict, Levels of Conflicts, Process of Conflicts. • Meaning of Industrial/ Organizational Conflict, Causes, Benefits and Limitations of Conflicts to the Organization. • **Conflict Outcomes** - win-lose, lose-lose, compromise, win-win. • **Five belief domains of Conflicts** – Superiority, Injustice, Vulnerability, Distrust, Helplessness
2	**Conflict Management**
	• Meaning of Conflict management, Need and Importance of Conflict management, Conflict Resolution Strategies - Competing, Accommodating, Avoiding, Compromising, Collaborative. Strategies for resolving conflicts at – Intra-personal, Inter-personal, Intra-group and Inter group levels. • **Prevention of Industrial Conflicts** – Labour welfare officer, Tripartite and Bipartite Bodies, Standing Orders, Grievance Procedure, Collective Bargaining. • **Settlement of Conflicts** – Investigation, Mediator, Conciliation, Voluntary arbitration, compulsory arbitration, labour courts, industrial tribunals, national tribunals
3	**Overview of Negotiation**
	• **Negotiation** - Meaning, Importance of Negotiation, Process, Factors/ Elements affecting negotiation, Challenges for an Effective Negotiation • Role of Communication, Personality and Emotions in Negotiation. • Distributive and Integrative Negotiation (concepts) • **Cross-Cultural Negotiation** – Meaning, Factors influencing cross-cultural negotiations, Ways to resolve Cross Cultural negotiation. • **Types of Negotiations** in Corporates/ Work Place – Day to Day, Employer – Employee, Negotiation between Colleagues, Commercial Negotiation, Legal Negotiations • **International Negotiations** - Meaning, Factors affecting negotiation
4	**Managing Negotiations, Ethics in Negotiation and 3D Negotiation**
	• **Third Party Negotiation** 1. Mediation - Meaning, Role of Mediator 2. Arbitration – Meaning, Role of Arbitrator 3. Conciliation – Meaning, Role of Conciliator 4. Consultation – Meaning, Role of Consultant • **Skills for Effective Negotiation** • **Negotiation as an Approach to Manage Conflicts**. • **Ethics in Negotiation** – Meaning, Need, Ethically Ambiguous Negotiation Tactics. • **Culture and Negotiation** – Meaning, Influence of culture on negotiations • **3D Negotiation** – Meaning, The 3 Dimensions for successful negotiations

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)
2A.Ability Enhancement Compulsory Course

3. Information Technology in Business Management-II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Management Information system	15
2	ERP/E-SCM/E-CRM	15
3	Introduction to databases and data warehouse	15
4	Outsourcing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand managerial decision-making and to develop perceptive of major functional area of MIS
2	To provide conceptual study of Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, Key issues in implementation. This module provides understanding about emerging MIS technologies like ERP, CRM, SCM and trends in enterprise applications.
3	To learn and understand relationship between database management and data warehouse approaches , the requirements and applications of data warehouse
4	To learn outsourcing concepts. BPO/KPO industries, their structures , Cloud computing

Sr. No.	Modules / Units
1	**Management Information System**
	• **Overview of MIS** Definition, Characteristics • **Subsystems of MIS** (Activity and Functional subsystems) • **Structure of MIS** • **Reasons for failure of MIS**. • **Understanding Major Functional Systems** Marketing & Sales Systems Finance & Accounting Systems Manufacturing & Production Systems Human Resource Systems Inventory Systems • **Sub systems, description and organizational levels** • **Decision support system** Definition Relationship with MIS • **Evolution of DSS, Characteristics, classification, objectives, components, applications of DSS**
2	**ERP/E-SCM/E-CRM**
	• **Concepts of ERP** • **Architecture of ERP** Generic modules of ERP • **Applications of ERP** • **ERP Implementation concepts** ERP lifecycle • **Concept of XRP** (extended ERP) • **Features of commercial ERP software** Study of SAP, Oracle Apps, MS Dynamics NAV, Peoplesoft • **Concept of e-CRM** E-CRM Solutions and its advantages, How technology helps? • **CRM Capabilities and customer Life cycle** Privacy Issues and CRM • **Data Mining and CRM** CRM and workflow Automation • **Concept of E-SCM** Strategic advantages, benefits E-SCM Components and Chain Architecture • **Major Trends in e-SCM** • **Case studies ERP/SCM/CRM**

Sr. No.	Modules / Units
3	**Introduction to Data base and Data warehouse**
	• **Introduction to DBMS** Meaning of DBMS, Need for using DBMS. Concepts of tables, records, attributes, keys, integrity constraints, schema architecture, data independence. • **Data Warehousing and Data Mining** Concepts of Data warehousing, Importance of data warehouse for an organization Characteristics of Data warehouse Functions of Data warehouse Data warehouse architecture Business use of data warehouse Standard Reports and queries • **Data Mining** The scope and the techniques used • **Business Applications of Data warehousing and Data mining**
4	**Outsourcing**
	• **Introduction to Outsourcing** Meaning of Outsourcing, Need for outsourcing Scope of Outsourcing. Outsourcing : IT and Business Processes • **Business Process Outsourcing (BPO)** Introduction • **BPO Vendors** How does BPO Work? BPO Service scope Benefits of BPO BPO and IT Services Project Management approach in BPO BPO and IT-enabled services • **BPO Business Model** Strategy for Business Process Outsourcing Process of BPO ITO Vs BPO • **BPO to KPO** Meaning of KPO KPO vs BPO KPO : Opportunity and Scope KPO challenges KPO Indian Scenario • **Outsourcing in Cloud Environment** Cloud computing offerings • **Traditional Outsourcing Vs. Cloud Computing**

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)

4. Foundation Course –IV
Ethics & Governance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Ethics and Business Ethics	12
2	Ethics in Marketing, Finance and HRM	11
3	Corporate Governance	11
4	Corporate Social Responsibility (CSR)	11
	Total	**45**

Objectives

SN	Objectives
1	To understand significance of ethics and ethical practices in businesses which are indispensible for progress of a country
2	To learn the applicability of ethics in functional areas like marketing, finance and human resource management
3	To understand the emerging need and growing importance of good governance and CSR by organisations
4	To study the ethical business practices, CSR and Corporate Governance practiced by various organisations

Sr. No.	Modules / Units
1	**Introduction to Ethics and Business Ethics**
	• **Ethics:** Concept of Ethics, Evolution of Ethics, Nature of Ethics- Personal, Professional, Managerial Importance of Ethics, Objectives, Scope, Types – Transactional, Participatory and Recognition • **Business Ethics**: Meaning, Objectives, Purpose and Scope of Business Ethics Towards Society and Stakeholders, Role of Government in Ensuring Business Ethics Principles of Business Ethics, 3 Cs of Business Ethics – Compliance, Contribution and Consequences Myths about Business Ethics Ethical Performance in Businesses in India
2	**Ethics in Marketing, Finance and HRM**
	• **Ethics in Marketing**: Ethical issues in Marketing Mix, Unethical Marketing Practices in India, Ethical Dilemmas in Marketing, Ethics in Advertising and Types of Unethical Advertisements • **Ethics In Finance**: Scope of Ethics in Financial Services, Ethics of a Financial Manager – Legal Issues, Balancing Act and Whistle Blower, Ethics in Taxation, Corporate Crime - White Collar Crime and Organised Crime, Major Corporate Scams in India, Role of SEBI in Ensuring Corporate Governance, Cadbury Committee Report, 1992 • **Ethics in Human Resource Management:** Importance of Workplace Ethics, Guidelines to Promote Workplace Ethics, Importance of Employee Code of Conduct, Ethical Leadership
3	**Corporate Governance**
	• Concept, History of Corporate Governance in India, Need for Corporate Governance • Significance of Ethics in Corporate Governance, Principles of Corporate Governance, Benefits of Good Governance, Issues in Corporate Governance • Theories- Agency Theory, Shareholder Theory, Stakeholder Theory and Stewardship Theory • Corporate Governance in India, Emerging Trends in Corporate Governance, Models of Corporate Governance, Insider Trading
4	**Corporate Social Responsibility (CSR)**
	• Meaning of CSR, Evolution of CSR, Types of Social Responsibility • Aspects of CSR- Responsibility, Accountability, Sustainability and Social Contract • Need for CSR • CSR Principles and Strategies • Issues in CSR • Social Accounting • Tata Group's CSR Rating Framework • Sachar Committee Report on CSR • Ethical Issues in International Business Practices • Recent Guidelines in CSR • Society's Changing Expectations of Business With Respect to Globalisation • Future of CSR

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

Foundation Course- Contemporary Issues- IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Significant, Contemporary Rights of Citizens	12
2	Approaches to understanding Ecology	11
3	Science and Technology –II	11
4	Introduction to Competitive Exams	11
	Total	**45**

Sr. No.	Modules / Units
1	**Significant, Contemporary Rights of Citizens**
	A. Rights of Consumers-Violations of consumer rights and important provisions of the Consumer Protection Act, 2016; Other important laws to protect consumers; Consumer courts and consumer movements. **(3 Lectures)** **B. Right to Information**- Genesis and relation with transparency and accountability; important provisions of the Right to Information Act, 2005; some success stories. **(3 Lectures)** **C. Protection of Citizens'/Public Interest**-Public Interest Litigation, need and procedure to file a PIL; some landmark cases. **(3 Lectures)** **D. Citizens' Charters, Public Service Guarantee Acts.** **(3 Lectures)**
2	**Approaches to understanding Ecology**
	A. Understanding approaches to ecology- Anthropocentrism, Biocentrism and Eco centrism, Ecofeminism and Deep Ecology. **(3 Lectures)** **B. Environmental Principles-1**: the sustainability principle; the polluter pays principle; the precautionary principle. **(4 Lectures)** **C. Environmental Principles-2**: the equity principle; human rights principles; the participation principle. **(4 Lectures)**
3	**Science and Technology –II**
	Part A:Some Significant Modern Technologies, Features and Applications (7 Lectures) i. **Laser Technology**- Light Amplification by Stimulated Emission of Radiation; use of laser in remote sensing, GIS/GPS mapping, medical use. ii. **Satellite Technology**- various uses in satellite navigation systems, GPS, and imprecise climate and weather analyses. iii. **Information and Communication Technology**- convergence of various technologies like satellite, computer and digital in the information revolution of today's society. iv. **Biotechnology and Genetic engineering**- applied biology and uses in medicine, pharmaceuticals and agriculture; genetically modified plant, animal and human life. v. **Nanotechnology**- definition: the study, control and application of phenomena and materials at length scales below 100 nm; uses in medicine, military intelligence and consumer products. **Part B:Issues of Control, Access and Misuse of Technology.** **(4 Lectures)**

Sr. No.	Modules / Units
4	**Introduction to Competitive Exams**
	Part A. Basic information on Competitive Examinations- the pattern, eligibility criteria and local centres: **i.** Examinations conducted for entry into professional courses - Graduate Record Examinations (GRE), Graduate Management Admission Test GMAT), Common Admission Test (CAT) and Scholastic Aptitude Test (SAT). **ii.** Examinations conducted for entry into jobs by Union Public Service Commission, Staff Selection Commission (SSC), State Public Service Commissions, Banking and Insurance sectors, and the National and State Eligibility Tests (NET / SET) for entry into teaching profession. **Part B. Soft skills required for competitive examinations- (7 Lectures)** **i.** Information on areas tested: Quantitative Ability, Data Interpretation, Verbal Ability and Logical Reasoning, Creativity and Lateral Thinking **ii.** Motivation: Concept, Theories and Types of Motivation **iii.** Goal-Setting: Types of Goals, SMART Goals, Stephen Covey's concept of human endowment **iv.** Time Management: Effective Strategies for Time Management **v.** Writing Skills: Paragraph Writing, Report Writing, Filing an application under the RTI Act, Consumer Grievance Letter.

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11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.

ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.

iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.

iv. Students can work in groups of not more than 8 per topic.

v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75 **DURATION: 150 MINUTES**

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	**i.** Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. **ii.** Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester **iii.** In all 8 Questions will be asked out of which 5 have to be attempted.	**a)** Total marks: 15 **b)** For 1 A, there will be 3 marks for each sub-question. **c)** For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

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2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NSS - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Entrepreneurship Development	10
2	Rural Resource Mobilization	10
3	Ideal village & stake of GOS and NGO	13
4	Institutional Social Responsibility and modes of Awareness	12
	Total	**45**

Sr. No.	Modules / Units
1	**Entrepreneurship Development**
	UNIT - I Entrepreneurship development Entrepreneurship development- its meaning and schemes Government and self-employment schemes for Entrepreneurship development **UNIT - II - Cottage Industry** Cottage Industry- its meaning, its role in development process Marketing of cottage products and outlets
2	**Rural Resource Mobilization**
	UNIT - I - Rural resource mobilization- A case study of eco-village, eco-tourism, agro-tourism **UNIT - II - Micro financing with special reference to self-help groups**
3	**Ideal village & stake of GOS and NGO**
	UNIT - I - Ideal village Ideal village- the concept Gandhian Concept of Ideal village Case studies on Ideal village **UNIT - II - Government Organisations(GOs) and Non-Government Organisations (NGOs)** The concept and functioning
4	**Institutional Social Responsibility and modes of Awareness**
	UNIT - I - Institutional Social Responsibilities Concept and functioning- case study of adapted village **UNIT - II - Modes of awareness through fine Arts Skills** Basics of performing Arts as tool for social awareness, street play, creative dance, patriotic song, folk songs and folk dance. Rangoli, posters, flip charts, placards, etc.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NCC - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	05
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	10
	Total	**45**

Sr. No.	Modules / Units
1	**Disaster Management, Social Awareness and Community Development**
	Disaster Management: **Desired outcome:** The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters • Fire Services & Fire fighting • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. **Social Awareness and Community Development:** **Desired outcome:** The student shall have an understanding about social evils and shall inculcate sense of whistle blowing against such evils and ways to eradicate such evils. • NGOs: Role & Contribution • Drug Abuse & Trafficking • Corruption • Social Evil viz. Dowry/ Female Foeticide/Child Abuse & trafficking etc. • Traffic Control Org. &Anti drunken Driving
2	**Health and Hygiene**
	Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. • Hygiene and Sanitation (Personal and Food Hygiene) • Basics of Home Nursing & First-Aid in common medical emergencies • Wound & Fractures
3	**Drill with Arms**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, and turnout, and develop the quality of immediate and implicit obedience of orders, with good reflexes. • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • General Salute, Salami Shastra • Squad Drill • Short/Long tail from the order and vice-versa • Examine Arms
4	**Weapon Training**
	Desired outcome: The student shall have basic knowledge of weapons and their use and handling. • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Theory of Group and Snap Shooting • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	Army **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Map reading** • Setting a Map, finding North and own position • Map to ground, Ground to Map • Point to Point March **B. Field Craft and Battle Craft** • Observation, Camouflage and Concealment • Field Signals • Types of Knots and Lashing **C. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)** ***OR*** **Navy** **A. Naval Communication** • Semaphore ▪ Phonetic Alphabets ▪ Radio Telephony Procedure ▪ Wearing of National Flag, Ensign and Admiral's Flag. **B. Seamanship** • **Anchor work** ▪ Types of Anchor, Purpose and Holding ground • **Boat work** ▪ Demonstrate Rigging a whaler and enterprise boat- Parts of Sail and Sailing Terms ▪ Instructions in Enterprise Class Board including theory of Sailing, Elementary Sailing Tools ▪ Types of Power Boats Used in the Navy and their uses, Knowledge of Anchoring, Securing and Towing a Boat C. **Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)**

Sr. No.	Modules / Units
	OR **Air** **A. Air frames** • Fuselage • Main and Tail Plain **B. Instruments** • Introduction to RADAR **C. Aero modelling** • Flying/ Building of Aero models **D. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)**

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in Physical Education - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Stress Management	10
2	Awards, Scholarship & Government Schemes	10
3	Yoga Education	10
4	Exercise Scheduling/Prescription	15
	Total	**45**

Sr. No.	Modules / Units
1	**Stress Management**
	• Meaning & concept of Stress • Causes of Stress • Managing Stress • Coping Strategies
2	**Awards, Scholarship & Government Schemes**
	• State & National level Sports Awards • State Sports Policy & Scholarship Schemes • National Sports Policy & Scholarship Schemes • Prominent Sports Personalities
3	**Yoga Education**
	• Differences between Yogic Exercises & non- Yogic exercises • Contribution of Yoga to Sports • Principles of Asanas & Bandha • Misconceptions about Yoga
4	**Exercise Scheduling/Prescription**
	• Daily Routine Prescription. • Understanding Activity level & Calorie requirement. • Adherence & Motivation for exercise. • Impact of Lifestyle on Health

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
With Effect from the Academic Year 2017-2018

3. Core Courses (CC)

5.Business Economics- II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Macroeconomic Data and Theory	15
2	Money, Inflation and Monetary Policy	15
3	Constituents of Fiscal Policy	15
4	Open Economy : Theory and Issues of International Trade	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Macroeconomic Data and Theory**
	• **Macroeconomics:** Meaning, Scope and Importance. • **Circular flow of aggregate income and expenditure**: closed and open economy models • **The Measurement of national product:** Meaning and Importance - conventional and Green GNP and NNP concepts - Relationship between National Income and Economic Welfare. • **Short run economic fluctuations :** Features and Phases of Trade Cycles • **The Keynesian Principle of Effective Demand:** Aggregate Demand and Aggregate Supply - Consumption Function - Investment function - effects of Investment Multiplier on Changes in Income and Output
2	**Money, Inflation and Monetary Policy**
	• **Money Supply:** Determinants of Money Supply - Factors influencing Velocity of Circulation of Money • **Demand for Money :** Classical and Keynesian approaches and Keynes' liquidity preference theory of interest • **Money and prices** : Quantity theory of money - Fisher's equation of exchange - Cambridge cash balance approach • **Inflation:** Demand Pull Inflation and Cost Push Inflation - Effects of Inflation- Nature of inflation in a developing economy. • **Monetary policy :**Meaning, objectives and instruments, inflation targeting
3	**Constituents of Fiscal Policy**
	• **Role of a Government** to provide Public goods- Principles of Sound and Functional Finance • **Fiscal Policy:** Meaning, Objectives - Contra cyclical Fiscal Policy and Discretionary Fiscal Policy • **Instruments of Fiscal policy :** Canons of taxation - Factors influencing incidence of taxation - Effects of taxation Significance of Public Expenditure **-** Social security contributions- Low Income Support and Social Insurance Programmes - Public Debt - Types, Public Debt and Fiscal Solvency, Burden of debt finance • **Union budget** -Structure- Deficit concepts-Fiscal Responsibility and Budget Management Act.
4	**Open Economy : Theory and Issues of International Trade**
	• **The basis of international trade :**Ricardo's Theory of comparative cost advantage - The Heckscher – Ohlin theory of factor endowments- terms of trade - meaning and types Factors determining terms of trade - Gains from trade - Free trade versus protection • **Foreign Investment :** Foreign Portfolio investment- Benefits of Portfolio capital flows- Foreign Direct Investment - Merits of Foreign Direct Investment - Role of Multinational corporations • **Balance of Payments:** Structure -Types of Disequilibrium - Measures to correct disequilibrium in BOP. • **Foreign Exchange and foreign exchange market** : Spot and Forward rate of Exchange - Hedging, Speculation and Arbitrage -Fixed and Flexible exchange rates- Managed flexibility

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
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3. Core Courses (CC)

6. Business Research Methods

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to business research methods	18
2	Data collection and Processing	14
3	Data analysis and Interpretation	16
4	Advanced techniques in Report Writing	12
	Total	**60**

Objectives

SN	Objectives
1	The course is designed to inculcate the analytical abilities and research skills among the students.
2	The course intends to give hands on experience and learning in Business Research.

Sr. No.	Modules / Units
1	**Introduction to business research methods**
	• Meaning and objectives of research • Types of research– a)Pure, Basic and Fundamental b) Applied, c)Empirical d) Scientific & Social e)Historical f) Exploratory g) Descriptive h)Causal • Concepts in Research: Variables, Qualitative and Quantitative Research • Stages in research process. • Characteristics of Good Research • Hypothesis-Meaning, Nature, Significance, Types of Hypothesis, Sources. • Research design– Meaning, Definition, Need and Importance, Steps in research design, Essentials of a good research design, Areas / Scope of research design and Types-Descriptive, Exploratory and causal. • Sampling– a) meaning of sample and sampling, b) methods of sampling-i)Non Probability Sampling– Convenient, Judgment, Quota, Snow ball ii) Probability– Simple Random, Stratified, Cluster, Multi Stage.
2	**Data collection and Processing**
	• Types of data and sources-Primary and Secondary data sources • Methods of collection of primary data a) Observation- i)structured and unstructured, ii) disguised and undisguised, iii)mechanical observations (use of gadgets) b) Experimental i)Field ii) Laboratory c) Interview – i) Personal Interview ii)focused group, iii) in- depth interviews - Method, d) Survey– Telephonic survey, Mail, E-mail, Internet survey, Social media, and Media listening. e) Survey instrument– i) Questionnaire designing. f) Types of questions– i) structured/ close ended and ii) unstructured/ open ended, iii) Dicotomous, iv) Multiple Choice Questions. f) Scaling techniques-i) Likert scale, ii) Semantic Differential scale
3	**Data analysis and Interpretation**
	• Processing of data– i) Editing- field and office editing, ii)coding– meaning and essentials, iii) tabulation – note • Analysis of data-Meaning, Purpose, types. • Interpretation of data-Essentials, importance and Significance of processing data • Multivariate analysis– concept only • Testing of hypothesis– concept and problems– i)chi square test, ii) Zandt-test (for large and small sample)
4	**Advanced techniques in Report Writing**
	• Report writing – i) Meaning , importance, functions of reports, essential of a good report, content of report , steps in writing a report, types of reports, Footnotes and Bibliography • Ethics and research • Objectivity, Confidentiality and anonymity in Research • Plagiarism

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
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3. Core Courses (CC)

7. Production & Total Quality Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Production Management	14
2	Materials Management	16
3	Basics Of Productivity & TQM	16
4	Quality Improvement Strategies & Certifications	14
	Total	**60**

Objectives

SN	Objectives
1	To acquaint learners with the basic management decisions with respect to production and quality management
2	To make the learners understand the designing aspect of production systems
3	To enable the learners apply what they have learnt theoretically.

Sr. No.	Modules / Units
1	**Production Management**
	Production Management • Objectives, Components–Manufacturing systems: Intermittent and Continuous Production Systems. • Product Development, Classification and Product Design. • Plant location &Plant layout– Objectives, Principles of good product layout, types of layout. • Importance of purchase management.
2	**Materials Management**
	• **Materials Management**: Concept, Objectives and importance of materials management Various types of Material Handling Systems. • **Inventory Management:** Importance–Inventory Control Techniques ABC, VED, FSN, GOLF, XYZ, SOS, HML. EOQ: Assumptions limitations &advantages of Economic Order Quantity, Simple numerical on EOQ , Lead Time, Reorder Level, Safety Stock.
3	**Basics Of Productivity &TQM**
	• **Basics Of Productivity &TQM:** Concepts of Productivity, modes of calculating productivity. Importance Of Quality Management, factors affecting quality; TQM– concept and importance, Cost of Quality, Philosophies and Approaches To Quality: Edward Deming, J. Juran , Kaizen , P. Crosby's philosophy. • **Product & Service Quality Dimensions, SERVQUAL** Characteristics of Quality, Quality Assurance, Quality Circle : Objectives Of Quality Circles, Ishikawa Fish Bone, Applications in Organizations. Simple numerical on productivity
4	**Quality Improvement Strategies &Certifications**
	• **Quality Improvement Strategies &Certifications:** Lean Thinking, Kepner Tregor Methodology of problem solving, Sigma features, Enablers, Goals, DMAIC/DMADV. TAGUCHI'S QUALITYENGINEERING,ISO 9000,ISO 1400, QS9000. Malcolm Baldrige National Quality Award(MBNQA), Deming's Application Prize.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with effect from the Academic Year 2017-2018

Reference Books

Reference Books
Basics of Financial Services

1. Khan M.Y., Indian Financial System, Tata McGrew Hill Publishing Company
2. Varshney P.N. & Mittal MN, Financial System, Sultan Chand & Co
3. A. Avadhani , Marketing of Financial Services-
4. Bhole L. M: Financial Markets and Institutions; Tata McGraw-Hill Publishing Company, New Delhi.
5. Chandra Prasanna: Financial Management: Theory and Practice; Tata McGraw Hill, New Delhi.
6. Gupta Suraj B: Monetary Economics; S. Chand and Co., New Delhi.

Introduction to Cost Accounting

1. Cost Accounting-Principles and Practice; Arora M.N: Vikas, New Delhi.
2. Cost Accounting; Jain S.P. and Narang K.L: Kalyani New Delhi.
3. Principles of Management Accounting; Anthony Robert, Reece, et at: Richard D. Irwin Inc. Illinois.
4. Cost Accounting - A Managerial Emphasis; Prentice-Hall of India, Horngren, Charles, Foster and Datar: New Delhi

Equity and Debt Market

1. Allen, Larry (1750-2000). The Global Financial System.
2. Ian H. Giddy (1994). Global Financial Markets. Houghton Mifflin.
3. Saunders, Anthony & Cornett, Marica Millon. Financial markets & institutions: A modern perspective: TMIT
4. LM Bhole. Financial institutions & markets: Structure, growth & innovations. TMH (5th ed.)
5. Chandra, P. (2011).Corporate Valuation and Value Creation, (1st ed). TMH

Corporate Finance

1. Foster, George Financial Statement Analysis, 2nd ed., Pearson Education Pvt Ltd
2. Damodaran, A. (2008). Damodaran on Valuation, Security Analysis for Investment and Corporate Finance (2nd ed.). Wiley India Pvt. Ltd.
3. Chandra, P. (2011).Corporate Valuation and Value Creation, (1st ed). TMH
4. Weston, Chung, Hoag, Mergers, Restructuring and Corporate Control, Prentice Hall Of India.
5. M.Y. Khan and P.K. Jain - Financial Management - Tata - McGraw Hill Publishing co. Ltd., New Delhi.
6. Prasanna Chandra - Financial Management - Tata - McGraw Hill

Consumer Behaviour

1. Schiffman, L.G., Kanuk, L.L., & Kumar, S.R. (2011). Consumer Behaviour. (10th ed.). Pearson.
2. Solomon, M.R. (2009). Consumer Behaviour – Buying, Having, and Being. (8th ed.) New Delhi: Pearson .
3. Blackwell, R.D., Miniard, P.W., & Engel, J. F. (2009). Consumer Behaviour. New Delhi: Cengage Learning.
4. Hawkins, D.I., Best, R. J., Coney, K.A., & Mookerjee, A. (2007). Consumer Behaviour – Building Marketing Strategy. (9th ed.). Tata McGraw Hill.
5. Loudan, David L and Bitta, A.J. Della Consumer Behaviour
6. Kotler, P. & Keller, K. L. (2012). Marketing Management (Global Edition) (14th ed.). Pearson
7. Nair, Suja R- Consumer Behaviour in Indian Perspective

Product Innovations Management

1. Dr. C.S.G. Krishnamacharyulu and Dr. R. Lalitha, Innovation Management, Himalaya Publishing House, First Edition 2007
2. Karl Ulrich, Product design and Development, McGraw hill, 4 Edition.
3. Michael Baker and Susan Hart, Product strategy and Management, Pearson Education, 2nd Edition
4. Jacob Goldenberg and David Mazursky, Creativity in product innovation, Cambridge University Press, 2002
5. Robert G. Cooper and Scott J. Edgett, Product innovation and technology strategy, Product Development Institute Inc., 2009
6. Allan Afuah, Innovation Management: Strategies Implementation & Profits, Oxford University Press, 2009

Advertising

1. Belch, Michael, “Advertising and Promotion: An integrated marketing communications perspective” Tata Mcgraw Hill 2010
2. Mohan,Manendra“Advertising Management Concept and Cases”,Tata Mcgraw Hill 2008
3. Kleppner,Rassell J;Thomac,Lane W , “Advertising Procedure”,Prentice Hall 1999
4. Shimp,Terence, “Advertising and promotion :An IMC Approach”,Cengage Learning 2007
5. Sharma, Sangeeta and Singh, Raghuvir “Advertising planning and Implementation”,Prentice Hall of India 2006
6. Clow ,Kenneth E and Baack, Donald E “Inetegrated Advertising Promotion and Marketing Communication”,Pearson Edu 2014
7. Duncan,Tom,“Principles of Advertising and IMC”,Tata Mcgraw Hill Pub 2006

Social Marketing

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2. Andreasen, A.R. (2006). Social Marketing in the 21st century. London, UK: Sage.
3. Social Marketing in India, Nancy Lee and Sameer Deshpande, SAGE Publications, 2013
4. Social Marketing, S M Jha, Himalaya Publishing House, 2012, (2nd Edition)
5. Social Marketing: Influencing Behaviors for Good, Nancy R. Lee, Philip Kotler, SAGE Publications, 2011 (4th Edition)
6. French, J., Blairs-Stevens, C., McVey, D., and Merritt, R., (2010), Social Marketing and Public Health, Theory and Practice, Oxford Press, UK.
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Recruitment & Selection

1. Dipak Kumar Bhattacharya - Human Resource Management
2. Arun Monappa- Managing Human Resource .
3. C.B. Memoria -Personnel Management-
4. Armstrong, Michael & Baron Angela. (2005). *Handbook of Strategic HRM* (1st ed.). New Delhi: Jaico Publishing House.
5. Mello, Jeffrey A. (2007). *Strategic Human Resource Management* (2nd ed.). India: Thomson South Western.

Motivation & Leadership

1. Stephen P. Robbins, Timothy A. Judge (Author) - Organizational behaviour (15th Edition), Prentice Hall Publication.
2. Niraj Kumar- Organisational Behaviour: A New Looks (Concept, Theory & Cases), Himalaya Publishing House
3. Strategic Leadership – Sahu & Bharati – Excel Books
4. Peter I. Dowling & Denice E. (2006). International HRM (1st ed.). New Delhi. Excel Books.
5. French Wendell, Bell Cecil and Vohra Veena. (2004). Organization Development, Behavioral Science Interventions for Organization Improvement. (6th ed.)

Employees Relations & Welfare

1. Personnel Management and Industrial relations – P. C. Shejwalkar and S. B. Malegaonkar
2. Labour Management relations in India – K.M. Subramanian
3. Trade Unionism Myth and Reality, New Delhi, Oxford University Press, 1982
4. Dynamic Personnel Administration – Prof. M.N. Rudrabasavraj.

Organization Behaviour & HRM

1. Griffin, Ricky W: Organizational Behaviour, Houghton Mifflin Co., Boston.
2. Prasad L M, Organizational *Behaviour*, Sultan Chand
3. Khanka S. S., *Organizational Behaviour*, S. Chand
4. P.L. Rao-International Human Resource
5. Ivancevich; John and Micheol T. Matheson: Organizational Behaviour and Management, Business Publication Inc., Texas.
6. Koontz, Harold, Cyril O'Donnell, and Heinz Weihrich: Essentials of management, Tata McGraw-Hill, New Delhi.
7. Luthans, Fred: Organizational Behaviour, McGraw-Hill, New York.

Information Technology in Business Management-I

1. Information Technology for Management, 6TH ED (With CD)
   By Efraim Turban, Dorothy Leidner, Ephraim Mclean, James Wetherbe (Ch1, Ch2)
2. Microsoft Office Professional 2013 Step by Step
   By Beth Melton, Mark Dodge, Echo Swinford, Andrew Couch
3. Tata McGraw Hill Joseph, P.T. : E-commerce An Indian Perspective (Ch-13,Ch-14)
4. Computer Viruses and Related Threats: A Management Guide (Ch-2, Ch-3) By John P. Wack, Lisa J. Carnahan
   (E-Book :
   https://play.google.com/books/reader?id=tsP15h9gr8MC&printsec=frontcover&output=reader&hl=en&pg=GBS.PR7.w.2.1.0)
5. Electronic Commerce - Technologies & Applications.
   Bharat, Bhaskar
   https://play.google.com/books/reader?id=F1zbUaBtk7IC&printsec=frontcover&output=reader&hl=en&pg=GBS.PP1

Foundation Course –III- Environmental Management

1. Environment Management , N.K. Uberoi , Excel Books, Delhi
2. Environmental Management - Text & Cases, Bala Krishnamoorthy, Prentice Hall of India
3. Environmental Management- National and global Perspectives, Swapan C. Deb , JAICO
4. Environmental Management , Dr.Anand S. Bal , Himalaya Publishing House
5. Environmental Priorities in India , Khoshoo , Environmental Society (N.Delhi)

Business Planning & Entrepreneurial Management

1. Dynamics of Entrepreneurial Development Management - Vasant Desai, Himalaya Publishing House.
2. Entrepreneurial Development - S.S. Khanna
3. Entrepreneurship & Small Business Management - CL Bansal, Haranand Publication
4. Entrepreneurial Development in India - Sami Uddin, Mittal Publication
5. Entrepreneur Vs Entrepreneurship- Human Diagno

Accounting for Managerial Decisions

1. Srivastava R M, *Essentials of Business Finance*, Himalaya Publications
2. Anthony R N and Reece JS. Accounting Principles , Hoomwood Illinos , Richard D. Irvin
3. Bhattacharya SK and Dearden J. - Accounting for Management. Text and Cases , New Delhi.
4. Hingorani NL and ramanthan AR - Management Accounting , New Delhi
5. Ravi M. Kishore , Advanced management Accounting , Taxmann , NewDelhi
6. Maheshwari SN - Management and Cost Accounting , Sultan Chand , New Delhi
7. Gupta , SP - Management Accounting , Sahitya Bhawan , Agra .

Strategic Management

1. Kazmi Azhar, Business Policy & Strategic Management, Tata McGraw Hill.
2. P.K. Ghosh : Business Policy , Strategy , Planning and Management
3. Christensen , Andrews Dower: Business Policy- Text and Cases
4. William F. Gkycj : Business Policy – Strategy Formation and Management Action
5. Bongee and Colonan : Concept of Corporate Strategy.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV with effect from the Academic Year 2017-2018

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2. V. A. Avadhani, Marketing of Financial Services, Himalaya Publishers, Mumbai
3. Vasant Desai, Indian Financial Systems, Himalaya Publishers
4. Gordon and Natarajan, Financial Services, Himalaya Publishers
5. Meir Khan, Financial Institutions and Markets, Oxford Press
6. Financial Markets and Institutions-Dr. S. Gurusamy,Tata McGraw Hill.
7. The Indian Financial System-Dr. Bharti Pathak, Pearson.
8. Indian Financial System-M.Y.Khan, Mc.Graw Hill
9. Machiraju, H.R., Indian Financial System, Vikas Publications

Auditing

1. CA Surbhi Bansal – Audit and Assurance
2. Taxmann – Auditing
3. Dr.SMeenakumari – Fundamentals of Auditing
4. Baldev Sachdeva&Jagwant Singh Pardeep Kumar – Auditing theory & Practice.

Strategic Cost Management

1. Dr. Girish Jakhotiya-Strategic Financial Management
2. Lall, B.M. and Jain, I.C. – Cost Accounting: Principles and Practice, Prentice Hall, Delhi
3. Welsch, Glenn A., Ronald W. Hilton and Paul N. Gordan – Budgeting, Profit and Control, Prentice Hall, Del
4. John K Shank & Vijay Govindaraja, Strategic Cost Management - The new tool for Competitive Advantage, Free Press

Corporate Restructuring

1. Ramanujam : Mergers et al, LexisNexis Butterworths Wadhwa Nagpur
2. Ray : Mergers and Acquisitions Strategy, Valuation and Integration, PH
3. Advanced Accounts Shukla and Grewal S. Chand and Co. (P) Ltd., New Delhi
4. Advanced accountancy R.L. Gupta and M. Radhaswamy S. Chand and Co. (P) Ltd., New Delhi

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2. Clow ,Kenneth E ;Baack, Donald E “Integrated Advertising Promotion and Marketing Communication”,Pearson Edu 2014
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4. Shah, Kruti ;D’Souza, Allan, “Advertising and IMC”,Tata Mcgraw Hill 2014
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Rural Marketing

1. Badi & Badi : Rural Marketing
2. Mamoria, C.B. & Badri Vishal : Agriculture problems in India
3. Arora, R.C. : Integrated Rural Development
4. Rajgopal : Managing Rural Business
5. Gopalaswamy, T.P. : Rural Marketing

Event Marketing

1. Preston C.A., “Event Marketing: How to successfully promote Events, Festivals, Conventions, and Expositions’, Wiley, Second Edition, 2015
2. Gaur Sanjaya Singh and Sanjay V Saggere, “Event Marketing and Management’, Vikas Publishing House Pvt. Ltd. , 2003
3. Sharma Diwakar, “Event Planning & Management’, Deep and Deep Publications Pvt. Ltd., 2005
4. Hoyle Leonard H., Ëvent Marketing-How to successfully Promote Events, Festivals, Conventions and Expositions”, Wiley, 2009
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6. Harichandan C.P., “Event Management”, Global Vision Publishing House, 2010
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2. Prasanna Kumar, Marketing of Hospitality and Tourism Services, Tata McGraw Hill, 2010
3. Kshitiz Sharma, Introduction to Tourism Management, McGraw Hill Education (India) Pvt. Ltd, 2014
4. Sunil Kabia, , Tourism and the developing countries, Mohit Publications, First edition, 2005
5. M.V.Kulkarni, Tourism marketing, Everest Publishing House, First edition, 2005
6. Alan A. Lew, A companion to tourism, Blackwell Publishing
7. Krishnan K Kamra, Tourism: An Overview

Human Resource Planning and Information System

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2. John Bramham, Human Resource Planning, University Press.
3. Michael Armstrong, A Handbook Of Human Resource Management Practice, Kogan Page.
4. William J.Rothwell & H.C. Kazanaas, Planning & Managing Human Resources, Jaico Publishing House .
5. Arun Sekhri, Human Resource Planning And Audit, Himalaya Publishing House.
6. Michael J. Kavanag, Human Resource Information Systems Basics, Applications and Future Directions, Sage Publication.

Training & Development in HRM

1. Brinkerhoff, Robert, .Achieving Results from Training How to evaluate HRD to Strengthen programs and Increase impact. 1987, Jossey bass, San Francisco.
2. Craig, Robert L. Training and Development Handbook. , 3rd ed. 1987. McGraw Hill, New York
3. Employee Training And Development - Raymond Noe
4. Every Trainers Handbook- Devendra Agochia
5. 360 Degree Feedback, Competency Mapping And Assessment Centre- Radha Sharma
6. Training And Development- S.K. Bhatia.

Change Management

1. Organisational Development by French and Bell
2. An experiential approach to O.D. by Harvey and Brown
3. Consultants and Consulting Styles by Dharani Sinha P.
4. Kavita Singh- Organization change
5. S.K. Bhatia- Organisational Change-
6. K.Ashwathapa- Management & OB, HRM.
7. Radha Sharma- Training & Development.

Conflict & Negotiation

1. Lewicki, Saunders & Barry - Negotiation (Tata Mc Graw Hill, 5th Ed.)
2. B. D. Singh - Negotiation Made Simple (Excel Books, 1st Ed.)

Information Technology in Business Management-II

1. Information Technology for Management, 6TH ED (With CD)
   By Efraim Turban, Dorothy Leidner, Ephraim Mclean, James Wetherbe (Ch1, Ch2)
2. Microsoft Office Professional 2013 Step by Step
   By Beth Melton, Mark Dodge, Echo Swinford, Andrew Couch
3. Tata McGraw Hill Joseph, P.T. : E-commerce An Indian Perspective (Ch-13,Ch-14)
4. Computer Viruses and Related Threats: A Management Guide (Ch-2, Ch-3) By John P. Wack, Lisa J. Carnahan
5. (E-Book :
   https://play.google.com/books/reader?id=tsP15h9gr8MC&printsec=frontcover&output=reader&hl=en&pg=GBS.PR7.w.2.1.0)
6. Electronic Commerce - Technologies & Applications.
   Bharat, Bhaskar
7. https://play.google.com/books/reader?id=F1zbUaBtk7IC&printsec=frontcover&output=reader&hl=en&pg=GBS.PP1

Foundation Course –IV- Ethics & Governance

1. Laura P. Hartman, Joe DesJardins, Business Ethics, Mcgraw Hill, 2nd Edition
2. C. Fernando, Business Ethics – An Indian Perspective, Pearson, 2010
3. Joseph DesJardins, An Introduction to Business Ethics, Tata McGraw Hill, 2nd Edition
4. Richard T DeGeorge, Business Ethics, Pearson, 7th Edition
5. Dr.A.K. Gavai, Business Ethics, Himalaya Publishing House, 2008
6. S.K. Mandal, Ethics is Business and Corporate Governance, McGraw Hill, 2010
7. Laura Pincus Hartman, Perspectives in Business Ethics, McGraw Hill International Editions, 1998

Business Research Methods

1. Research for Marketing Decisions Paul E. Green, Donald S. Tull
2. Marketing Research- Text and Cases Harper W. Boyd Jr. , Ralph Westfall.
3. Research methodology in Social sciences, O.R.Krishnaswamy, Himalaya Publication
4. Business Research Methods, Donald R Cooper, Pamela Schindler, Tata McGraw Hill
5. Marketing research and applied orientation, Naresh K Malhotra, Pearson
6. Statistics for management, Levin and Reuben, Prentice Hall.
7. Research Methods for Management: S Shajahan, Jaico Publishing

Production & Total Quality Management

1. Production and Operations Management: R. Paneerselvam
2. Production (Operations) Management: L.C. Jhamb
3. K. Ashwathappa and K .Shridhar Bhatt ; Production and Operations management
4. Productivity Management: Concepts and Techniques, Sawhney S.C., Tata McGraw Hill
5. Srinivas Gondhalekar and Uday Salunkhe, “Productivity Techniques”, Himalaya Publishing House
6. Gerard Leone and Richard D. Rahn, “Productivity Techniques”, Jaico Book House
7. John S. Oakland, “TQM: Text with Cases”, Butterworth-Heinemann
8. David J. Sumanth, “Total Productivity Management (TPmgt): A systematic and quantitative approach to compete in quality, price and time”, St. Lucie Press

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Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

Question Paper Pattern
(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	**One class test (20 Marks)**	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions ***(½ Mark each)***	05 Marks
	Answer in One or Two Lines (Concept based Questions) ***(01 Mark each)***	05 Marks
	Answer in Brief (Attempt Any Two of the Three) ***(05 Marks each)***	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

Question Paper Pattern
(Internal Assessment- Courses with Practical Courses)

Sr. No.	Particular	Marks
1	**Semester End Practical Examination (20 Marks)**	
	Journal	05 Marks
	Viva	05 Marks
	Laboratory Work	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

i) Duration: The examination shall be of 2 ½ Hours duration

ii) Theory question paper pattern

- There shall be five questions each of 15 marks.
- All questions shall be compulsory with internal choice within the questions.
- Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the topic.
  (Detail question paper pattern has been given separately)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern
(Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.