

भारतीय संघीय लोकसेवा आयोग द्वारा आयोजित भर्ती परीक्षा

भारतीय संघीय लोकसेवा आयोग द्वारा आयोजित भर्ती परीक्षा 2014

भारतीय संघीय लोकसेवा आयोग द्वारा आयोजित भर्ती परीक्षा के लिये उम्मीदवारों को निम्नलिखित विषयों में से एक चुनना होगा।
 उम्मीदवारों को निम्नलिखित विषयों में से एक चुनना होगा।
 उम्मीदवारों को निम्नलिखित विषयों में से एक चुनना होगा।
 उम्मीदवारों को निम्नलिखित विषयों में से एक चुनना होगा।

✓[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,

[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४,
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

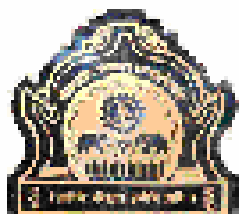
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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करून देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
 - ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

**Dr. Babasaheb Ambedkar Marathawada University
Aurangabad**



Revised Syllabus of Physics

Optional

B.Sc. II Year

Semester III & IV

Effective for Academic Year 2014-15

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
B.Sc. IInd year Physics Syllabus
(Semester-III and IV)
Revised Syllabus from June 2014

Semester	Course Code	Paper	Title of Paper	Periods	Marks
III	Physics 201	VII	Mathematical , Statistical Physics and Relativity	45	50
III	Physics 202	VIII	Modern and Nuclear Physics	45	50
III	Physics 203	IX	Practical	45	50
III	Physics 204	X	Practical	45	50
IV	Physics 205	XI	General Electronics	45	50
IV	Physics 206	XII	Solid State Physics	45	50
IV	Physics 207	XIII	Practical	45	50
IV	Physics 208	XIV	Practical	45	50

Scheme of Practical Examination and marks

Practical Examination will be conducted annually

Practical Paper IX + X based on theory Paper VII & VIII (50 + 50 = 100 Marks)

Practical Paper XIII + XIV based on theory paper XI & XII (50 + 50 = 100 Marks)

Experiment– 75 marks + Viva-Voce 15 marks + Record Book/ Journals 10 marks= 100 marks

B.Sc. IInd year Physics (Semester-III)
(Mathematical, Statistical Physics and Relativity)
Course code PHY-201
Paper-VII

Period-45

Marks-50

1. Differentiation and ordinary differential equation:

Limit of function, partial differentiation, successive differentiation, total differentiation, exact differentiation, chain rule.

Ordinary differential equation, order and degree of differential equation, solution of first order differential equation, and solution of second order linear differential equation with constant coefficient

a) Homogeneous equations, b) Inhomogeneous equation, Special case of exponential right hand to find P.I.

2. Statistical basis and classical statistics:

Introduction, probability, principle of equal a priori probability, probability and frequency, some basis rules of probability theory, permutation and combination, macrostates and microstates, phase space, thermodynamic probability, division of compartments into cells, Maxwell-Boltzmann energy distribution law, evaluation of g_i , α and β , M.B. distribution function for ideal gas, M.B. Speed distribution law.

3. Quantum statistics:

Need of quantum statistics, Bose-Einstein distribution law, Planck's radiation law, Fermi-Dirac distribution law, electron gas, Fermi level and Fermi energy, E_{FO} for electrons in a metal, comparison of three static, difference between classical and quantum statistics.

4. Theory of relativity:

Introduction, frame of reference, Galilean transformation equations, Michelson Morley experiment, special theory of relativity, Lorentz transformation equation, length contraction, time dilation, addition of velocities, variation of mass-energy equivalence.

Reference Books:

1. Mathematical Physics- Gupta, Kumar
2. Mathematical Physics- B.S. Rajput (PragatiPrakashan)
3. Heat, thermodynamics & statistical Physics- Brijlal, N. Subrahmanyam, P.S. Hemne. S. Chand Publication
4. Text book of heat and thermodynamics- J.B. Rajam& C. L. Arora.
5. Modern physics – R. Murgeshan, KiruthigaShivprasath, S. Chand Publication.

B.Sc. IInd year Physics (Semester-III)
(Modern and Nuclear Physics)
Course code PHY-202
Paper-VIII

Period-45

Marks-50

1. Photoelectric Effect :

Introduction, Lenard's method to determine e/m for photoelectrons, Richardson and Compton experiment, Relation between photoelectric current and retarding potential, Relation between velocity of photoelectrons and frequency of light, photoelectric cells- (1) Photo- emissive cell (2) Photo- voltaic cell (3) Photoconductive cell, Applications of photoelectric cells.

2. X-rays :

Introduction, The absorption of X-ray's, Laue's experiment, Bragg's Law, The Bragg's X-ray spectrometer, powder crystal method, The Laue method, X-ray spectra, Main features of continuous X-ray spectrum, Characteristics x-ray spectrum.

3. Nuclear forces and models :

Introduction, Binding energy, Nuclear stability, Nuclear forces , Meson theory of nuclear forces, liquid drop model, shell model, Energy released in Fission , Chain reaction, Atom bomb, Nuclear Reactors, Nuclear fusion, Source of stellar energy.

4. Particle Accelerators and Detectors :

Linear accelerator, Cyclotron, Synchrocyclotron, Betatron, Ionisation chamber, proportional counter, Geiger – Muller counter.

Reference Books:

1. Modern Physics-J. B. Rajan
2. Modern Physics- R. Murugesan, Er.Kirutyhiga, Sivaprasath. S. Chand Publication
3. Nuclear Physics- Kaplan
4. Nuclear Physics- B.N. Srivastava
5. Atomic and nuclear physics-N. Subramanyan and Brijlal.

B.Sc. IInd year (Semester-III)
Physics Practical
Course code PHY-203
Paper-IX

Marks-50

1. 'h' by Photo cell
2. e/m by Thomson's tube method.
3. Determination of absolute value of B_H and B_V using Earth Inductor
4. Stefan's constant by using thermo couple
5. Measurement of low resistance using potentiometer.
6. Frequency of A.C. mains using sonometer.
7. Specific rotation by Laurent's half shade polarimeter.
8. Cauchy's constant by spectrometer

Note: At least six experiments should be performed.

B.Sc. IInd year (Semester-III)
Physics Practical
Course code PHY-204
Paper-X

Marks-50

- 1 Thermal conductivity of rubber tube.
2. Study of temperature dependence of total radiation.
3. To draw the histogram of theoretical Gaussian curve.
4. Comparison of capacities by Desauty's method.
- 5 Velocity of sound using Helmholtz resonator.
- 6 Surface tension by Ferguson's method.
- 7 R. P. of Telescope/microscope.
8. Determination of Wavelength of light by Newton's ring

Note: At least six experiments should be performed.

B.Sc. IInd year Physics (Semester-IV)
(General Electronics)
Course code PHY-205
Paper-XI

Period-45

Marks-50

1. Semiconductor :

Introduction, Construction, Working and Characteristics of semiconductor diode, Zener diode, Zener diode characteristics, Transistor (PNP and NPN), Transistors characteristics (CE, CB and CC), Construction, Working and Characteristics of FET & MOSFET.

2. Transistor Biasing and Amplifiers :

Transistor biasing, Selection of operating point, bias stability, transistor biasing circuits - fixed bias or base bias, collector feedback bias, emitter feedback bias or self-bias.

Single stage transistor amplifier, frequency response of RC coupled amplifier, Noise in amplifiers, feedback in amplifiers, Op-Amp characteristics, inverting & non-inverting amplifier, Op-Amp as an adder and subtractor.

3. Oscillators and Multivibrators:

Two port network representation of a transistor, Hybrid parameters or h – parameters, Positive feedback, Basic principle of Oscillators, requirements of feedback, RC Oscillator (Phase shift Oscillator), LC Oscillator (Hartley Oscillator) Transistorised. Astable multivibrator, monostable multivibrator, bistable Multivibrator,

4. Modulation and demodulation :

Modulation, Amplitude modulation, Modulation index, frequency modulation, phase modulation, demodulation, advantages of frequency modulation over amplitude modulation.

Reference Books:

1. Basic principle of electronics- V. K. Mehta.
2. Basic Electronics & Linear circuits- N.N. Bhargawa.
3. An introduction to Electronics edition-II or III – A.P. Malvino.
4. Radio engineering- M.L. Gupta.
5. An introduction of Electronics – K. J. M. Rao.

B.Sc. IInd year Physics (Semester-IV)
(Solid State Physics)
Course code PHY-206
Paper-XII

Period-45

Marks-50

1. Crystal Structure :

Introduction, Crystal lattice- plane lattice, space lattice, translation vectors, Unit cell, (primitive, non primitive Wigner-Sietz primitive cell) Basis, symmetry operations, point groups and space groups, type of lattices (two dimensional and three dimensional lattices), lattice directions and planes, Miller indices, Inter planer spacing, simple crystal structure.

2. Bonding and Band theory of solids :

Introduction, concept of inters-atomic forces, cohesive energy and types of bonding, primary bonds- (ionic bonds, covalent bond and metallic bond), secondary bonds- (Vander Walls bonds and hydrogen bonds).

The Kroning-Penney model, Energy versus Wave vector relationship, different representations (Brillouin zone)

3. Thermal properties of solids :

Classical theory of lattice heat capacity (Concept and comparison with experimental values), Einstein's theory of lattice heat capacity, Debye's model of lattice heat capacity, density of modes, limitations of Debye's model.

4. Free electron theory of metals and Transport properties:

Drude-Lorentz's classical theory, electrical conductivity, thermal conductivity, Wiedemann Franz law, significance of Fermi energy level, Hall effect, Hall voltage and Hall coefficient, experimental determination of Hall coefficient, Importance of Hall effect.

Reference Books:

1. Physics for degree student – C. L. Arora & Dr. P. S. Hemne – S. Chand publication
2. Solid State Physics and Electronics – R. K. Puri & V.K. Babbar- S. Chand publication
3. Fundamentals of Solid State Physics- Saxena, Gupta, Saxena – Pragati prakashan, Meerat
4. Solid State Physics, Revised VIth Editions, S.O. Pallai.
5. Introduction to Solid State Physics, VIIth Edition, C. Kittel.

B.Sc. IInd year (Semester-IV)
Physics Practical
Course code PHY-207
Paper-XIII

Marks-50

1. Energy band gap of semiconductor using thermister.
2. I.V. Characteristics of solar cell.
3. Calibration of bridge wire using Carry-Foster's bridge.
4. Determination of absolute capacity of condenser using B.G.
5. Full wave rectifier with Π filter.
6. Viscosity of liquid using Searle's viscometer.
7. High resistance by leakage through condenser.
8. Viscosity of liquid by oscillating disc method

Note: At least six experiments should be performed.

B.Sc. IInd year (Semester-IV)
Physics Practical
Course code PHY-208
Paper-XIV

Marks-50

- 1 Transistor characteristics in CE configuration.
2. Transistor characteristics in CB configuration
3. Study of CE amplifier
4. Hartly Oscillator using transistor.
- 5 Wien Bridge Oscillator using transistor/ Op-Amp
- 6 Op-Amp as adder/subtractor
- 7 JFET characteristics. (r_p , g_m and μ)
8. Self-inductance by Owen's Bridge

Note: At least six experiments should be performed.

Additional activity

- 1. Organize study tour industrial/research institute**
- 2. Conduct Seminars**

QUESTION PAPER PATTERN

B.Sc. S.Y. (III & IV Semester)

PHYSICS

Time: 2.00 Hours

[Max. Marks: 50]

NOTE 1. All Questions carry equal marks

2. Use of logarithmic table and electronic pocket calculator is allowed.

Q1 Chapt.I (Long question) 10marks

OR

Chapt.II (Long question)

Q2 Chapt.III (Long question) 10 marks

OR

Chapt.IV (Long question)

Q3 Attempt following 10 marks

a) Chapt. I (short question)

b) Chapt. II (short question)

Or

a) Chapt. III (short question) 10 marks

b) Chapt. IV (short question)

Q4 Attempt any two 10 marks

a) Chapter I Problem

b) Chapter II Problem

c) Chapter III Problem

d) Chapter IV Problem

Q. 5 MCQ 10 marks

Ten MCQ's having four alternatives based on theory and numerical.

(Minimum two MCQ's from each chapter)

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४,
संदर्भ क्र.एस.यु./सा.शा./सधवि /२०१३-१४/
६५९९-७०२
दिनांक - २७-०५-२०१४.

X
X
X
X
X


संचालक,
महाविद्यालये व विद्यापीठ
पिकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करून देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्ष अधिकारी, बी.ए. / बी.एससी./ बी.सी.एस./एम.एससी. विभाग, परीक्षा भवन,
 - ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे.
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
AURANGABAD.



REVISED SYLLABUS

OF

B.Sc. Chemistry
SECOND YEAR
[Optional]

Third & Fourth Semester

[Effective for - June, 2014-15]

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGBAD
B.Sc. (Chemistry) IN SEMESTER PATTERN FOR THREE YEAR DEGREE

YEAR	SEMESTER	PAPER NUMBER	PAPER TITLE	Hours	MARKS
First	I	Paper - I	Inorganic Chemistry	45	50
		Paper - II	Organic Chemistry	45	50
		Paper - III	Lab Course I	45	50
	II	Paper – IV	Physical Chemistry	45	50
		Paper – V	Inorganic Chemistry	45	50
		Paper – VI	Lab. Course – II	45	50
Second	III	Paper – VII	Organic Chemistry	45	50
		Paper – VIII	Physical Chemistry	45	50
		Paper - IX	Lab. Course-III	90	100
	IV	Paper – X	Inorganic Chemistry	45	50
		Paper – XI	Physical Chemistry	45	50
		Paper – XII	Lab. Course-IV	90	100
Third	V	Paper - XIII	Physical Chemistry	45	50
		Paper – XIV	Organic Chemistry	45	50
		Paper – XV	Lab. Course-V	90	100
	VI	Paper – XVI	Inorganic Chemistry	45	50
		Paper – XVII	Organic Chemistry	45	50
		Paper – XVIII	Lab. Course-VI	90	100

B.Sc. Chemistry
(Three Year Degree Course)

<u>First Year</u>		<u>First Semester</u>
Paper I	Inorganic Chemistry	(45 Hrs) 3 Hrs. / Week
I	Atomic Structure	15 Hrs.
II	Periodic Properties	10 Hrs.
III	S - Block Elements	10 Hrs.
IV	P - Block Elements	10 Hrs.
Paper II	Organic Chemistry	(45 Hrs) 3 Hrs / Week
I	Structure and Bonding	06 Hrs.
II	Mechanism of Organic reactions	10 Hrs.
III	Stereo - Chemistry	10 Hrs.
IV	Alkanes	04 Hrs.
V	Alkenes	06 Hrs.
VI	Arenes and Aromaticity	05 Hrs.
VII	Alkyl and Aryl Halides	04 Hrs.
Paper III	Lab Course I	(45 Hrs.) 3 Hrs / Week

B.Sc. Chemistry
(Three Year Degree Course)

<u>First Year</u>		<u>Second Semester</u>
Paper-IV	Physical Chemistry	(45 Hrs) 3 Hrs. / Week
I	Mathematical Concepts	06 Hrs.
II	Gaseous State	08 Hrs.
III	Liquid State	06 Hrs.
IV	Solid State	07 Hrs.
V	Colloidal State	08 Hrs.
VI	Chemical Kinetics and Catalysis	10 Hrs.
Paper-V	Inorganic Chemistry	(45 Hrs) 3 Hrs / Week
I	Chemistry of Noble gases	05 Hrs.
II	Chemical Bonding	20 Hrs.
III	Nuclear Chemistry	10 Hrs.
IV	Theory of volumetric analysis.	10 Hrs.
Paper-VI	Lab Course-II	(45 Hrs.) 3 Hrs / Week

B.Sc. Chemistry **(Three Year Degree Course)**

Second Year (Third Semester)

Paper VII	Organic Chemistry	Third Semester (45 hrs) 3Hrs / Week
1	Alcohols	06 Hrs
2	Phenols	06 Hrs
3	Aldehydes and Ketones	10 Hrs
4	Carboxylic Acids	09 Hrs
5	Organic Compounds' of Nitrogen	14 Hrs
Paper VIII	Physical Chemistry	(45 hrs) 3Hrs / Week
1	Thermodynamics-I	15 Hrs
2	Thermodynamics-II	20 Hrs
3	Chemical Equilibrium	10 Hrs
Paper IX	Lab Course III (Physical / Inorganic)	90 Hrs

Second Year (Fourth Semester)

Paper X	Inorganic Chemistry	Fourth Semester (45 hrs) 3Hrs / Week
1	Chemistry of Elements of First Transition series	10 Hrs
2	Coordination compounds	10 Hrs
3	Chemistry of Lanthanides	06 Hrs
4	Chemistry of Actinides	05 Hrs
5	Acids and Bases	06 Hrs
6	Non Aqueous solutions	08 Hrs
Paper XI	Physical Chemistry- II	(45 hrs) 3Hrs / Week
1	Phase Equilibrium	15 Hrs
2	Electro-Chemistry-I	15 Hrs
3	Electro-Chemistry-II	15 Hrs
Paper XII	Lab Course IV (Physical / Organic)	90 Hrs

**B.Sc. (Second Year)
(Third Semester)**

Organic Chemistry Paper VII 45 Hrs

1) Alcohols: 06 Hrs.

Definition: *Monohydric Alcohols*: Methods of Formation by reduction of Aldehydes, Ketones, Carboxylic Acids and Esters (one e.g. each) Acidic Nature, Reactions of Alcohols.

Dihydric Alcohols: Method of Formation of Ethylene Glycol-industrial method and From Alkenes using OsO_4 , Chemical Reactions of Ethylene Glycol-nitration, Acylation, Oxidation (Using $\text{Pb}(\text{OAc})_4$ without Mechanism Pinacol-Pinacolone rearrangement, *Trihydric Alcohols*: Preparation of Glycerol from propane, Reactions of Glycerol.

2) Phenols: 06 Hrs.

Preparation of Phenol from Chlorobenzene, Cumene and Benzene Sulphonic Acid, Physical properties, Acidic Nature of Phenol, Resonance stabilization of Phenoxide Ion. Reactions of Phenols-Electrophilic Aromatics Substitution, Acylation, Carboxylation (Without Mechanism) Reactions with Mechanism-intermolecular Fries Rearrangement, Claisen Rearrangement, Gattermann Synthesis and reamer Tiemann Reaction.

3) Aldehydes and Ketones: 10 Hrs.

Aldehydes: Preparation of Aldehydes from Acid Chloride, Gattermann-Koch Synthesis *Ketones*-Preparation from Nitriles and from Carboxylic Acid, Physical Properties of Aldehydes and Ketones. Mechanism of Nucleophilic Additions to Carbonyl Group with particular emphasis on Benzoin, Aldol Knoenenagel condensations, Mannich Reactions. Use of Acetals as Protecting Group. Oxidation of Aldehydes using Chromium Trioxide, Baeyer-Villegger Oxidation of Ketones.

4) Carboxylic Acids:

09 Hrs.

Acidity of Carboxylic Acids, Effects of substituent's of substituents on Acid strength, preparation of Acetic Acid from CO_2 from Nitriles, from Acid Chloride, Anhydride, Ester and Amide. Physical Properties and reactions of Carboxylic Acids-Synthesis of Acid Chloride, Ester and Amide, Hell-Volhard-Zelinsky Reaction. Reduction using LiAlH_4 , Mechanism of Decarboxylation, hydroxyl Acids-Malic, Tartaric and Citric Acid. Methods of Formation and Chemical reactions of Acrylic Acid.

5) Organic Compounds of Nitrogen:

14 Hrs.

Preparation of *Nitroalkanes*. Nitration of Benzene and Their Reduction in Acidic, Neutral and Basic Media.

Amines-Basicity of Amines, Amine Salt as PTC. Preparation of Alkyl and Aryl Amines (Reduction of Nitro Compounds', Nitriles) Reductive Amination, Hoffmann Bromamide Reactions. Reactions of Amines-Electrophilic Aromatic Substitution in *Aryl amines*, Reactions of Amines with Nitrous Acid.

B.Sc. (Second Year)
(Third Semester)

Physical Chemistry Paper VIII 45 Hrs (3 Hrs/week)

1) Thermodynamics: I

15 Hrs.

Definition: *of Thermodynamic Terms:* System, Surrounding types of system, intensive and extensive properties. Thermodynamic Process, Concept of heat and work. Work done in reversible and irreversible process, concept of maximum work (W_{\max}), Numerical Problems.

First law of Thermodynamics: Statement, Definition of Internal energy and Enthalpy.

Heat capacity, heat capacities at constant volume pressure and their relationship. Calculation of W, q, du and dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process, Numerical problems, Hess's law of heat Summation and its application.

2) Thermodynamic-II:

20 Hrs.

Second Law of Thermodynamics: Need for the law, different statement of the law Carnot Cycle and its efficiency, Numerical Problems. Carnot Theorem.

Concept of Entropy: Definition, Physical significance, Entropy as a State Function, Entropy change in Physical change, Entropy as criteria of Spontaneity & Equilibrium Entropy Change in Ideal Gases. Gibbs and Helmholtz Functions: Gibbs Function (G) and Helmholtz Function (A) as Thermodynamic Quantities. A and G as criteria for Thermodynamic Equilibrium and Spontaneity, their Advantage over Entropy change. Variation A with P, V and T .

3) Chemical Equilibrium:

10 Hrs.

Equilibrium Constant and Free Energy. Thermodynamic Derivation of Law of Mass Action. Le Chatelier's Principle. Reaction Isotherm and Reaction Isochore. Clapeyron Equation, Clausius-Clapeyron Equation and its Application.

B.Sc. (Second Year)

(Third Semester)

Lab Course-III

Paper IX

90 Hrs (6 Hrs/week)

Section A (Physical Chemistry)

Non Instrumental (Any Five)

i.	To determine critical solution temperature of Phenol- water system.
ii.	To determine solubility of benzoic acid at different Temperature and determine H of dissolution process.
iii.	To determine heat of neutralization (ΔH_n) of Na OH and HCl
iv.	To determine heat of neutralization (ΔH_n) of Na OH and Acetic acid.
v.	Partition coefficient of Benzene-water system using benzoic acid.
vi.	To determine the equilibrium constant for the reaction: $KI + I_2 \rightleftharpoons KI_3$.
vii.	Determine the molecular mass of polymer from viscometry measurements.
viii.	To investigate the Kinetics of iodination of Acetone.

Section B (Inorganic Chemistry)

Gravimetric Estimation: (Any Three)

i.	Estimation of Zinc gravimetrically as Zinc ammonium phosphate ($ZnNH_4PO_4$)
ii.	Estimation of Mn gravimetrically as Manganese Ammonium Phosphate ($MnNH_4PO_4$)
iii.	Estimation of Nickel gravimetrically as Ni-DMG
iv.	Estimation of Barium gravimetrically as Ba-Chromate ($BaCrO_4$)
v.	Estimation of Aluminum as Aluminum Oxinate.
vi.	To determine the equilibrium constant for the reaction: $KI + I_2 \rightleftharpoons KI_3$
vii.	Determine the molecular mass of polymer from viscometry measurements.
viii.	To investigate the Kinetics of Iodination of acetone.

Complexometric Titration: (Any Two)

i.	Estimation of Zinc by EDTA solution using EBT indicator.
ii.	Estimation of Nickel by EDTA using Murexide indicator
iii.	Estimation of copper by EDTA using fast sulphon black F indication
iv.	Estimation of Lead By EDTA using Xylenol Orange indicator.

B.Sc. (Second Year) (Fourth Semester)

(Inorganic Chemistry) Paper X 45 Hrs (3 Hrs/week)

1) Chemistry of Elements of First Transition Series: 10 Hrs.

General Characteristic features of d-block elements. Properties of the elements of the first transition series: Ionic Size, Atomic Size, Metallic properties, Ionization potential, magnetic properties, Oxidation State.

2) Co-ordination Compounds: 10 Hrs

Werner's Co-ordination Theory and its experimental verification effective atomic Number concept, chelates, nomenclature of co-ordination compounds, isomerism in co-ordination compounds, valence bond theory of transition metal complexes.

3) Chemistry of Lanthanide Elements: 06 Hrs.

Occurrence and Isolation of Lanthanides, Electronic Configuration Oxidation states, Ionic Radii, Lanthanide Contraction and its Consequences.

4) Chemistry of Actinides: 05 Hrs.

Occurrence, Position in the periodic table, Electronic configuration. Oxidation State, chemistry of separation of Np, Pu and Am from U

5) Acids and Bases: 06 Hrs.

Arrhenius, Bronsted-Lawry, The Lux-Flood, Solvent System and Lewis Concept of Acids and Bases

6) Non- Aqueous Solvents: 08 Hrs.

Physical Properties of a solvent, Types of Solvents and their general Characteristics, Reaction in Non-Aqueous Solvents with reference to liquid NH₃ and liquid SO₂.

**B.Sc. (Second Year)
(Fourth Semester)**

Physical Chemistry-II Paper XI 45 Hrs (3 Hrs/week)

1) Phase Equilibrium:

15 Hrs.

Statement and Meaning of the Terms: *Phase, Component*, Degree of Freedom, Derivation of Phase Rule Equation. Phase Equilibria of the One Component System: Water System. Phase Equilibria of Two Components System: Solid-Liquid Equilibria, Simple Eutectic Pb-Ag. System Desilverisation of Lead.

Solid Solutions: Compound Formation with congruent Melting Point (Mg-Zn) and Incongruent Melting Point ($\text{FeCl}_3\text{-H}_2\text{O}$) System. Freezing Mixture, Acetone-Dry Ice.

Liquid-Liquid Mixture: Raoult's Law and Henry's Law.

Ideal and Non-Ideal system. Azeotropes: $\text{HCl-H}_2\text{O}$ and Ethanol-Water System.

Partially Miscible Liquids: Phenol-Water, Trimethyl Amine-Water, Nicotine-water System, Lower and Upper consulate Trimethyl Amine-Water, Nicotine-water system, Lower and Upper Consulate Temperature. Effect of Impurity on Consulate Temperature.

2) Electro Chemistry-I

15 Hrs.

Electrical Transport: Conduction in metals and in Electrolyte Solutions. Specific Conductance and equivalent conductance, measurement of equivalent conduction, variation of equivalent and specific conductance with dilution. Numerical problems. Kohlrausch's law and its application. Arrhenius Theory of Electrolyte Dissociation and its limitations. Weak and Strong Electrolytes, Ostwald's Dilution Law, its use and Limitations. Transport Number: Definition, Determination by Hittorfs Method and Moving Boundary Method. Conductometric Titration: Types and its advantages.

3) Electrochemistry-II

15 Hrs

Types of Reversible Electrodes: Gas- Metal Ion, Metal-Metal Ion, Metal-Insoluble salt Anion and Redox Electrodes. Nernst Equation, Derivation of Cell, E.M.F. and single Electrode potential, Standard Hydrogen Electrode, Reference Electrodes, Standard Electrode Potential, Sign Conventions, Electro-Chemical Series and its significance. Electrolytic and Galvanic Cells, Reversible and Irreversible Cells, Conventional Representation of Electro Chemical Cells. E.M.F. of a cell and its measurement, Calculation of Thermodynamic Quantities of Cell Reactions (G, H and K)

Definition of pH, pKa-Determination of pH using SHE and Glass Electrode by Potentiometer method. Buffer-Acidic and Basic Buffers, Mechanism of Buffer Action, Henderson-Hasselbalch equation.

Corrosion: Dry (Atmospheric) Corrosion and Wet (Electro-Chemical) Corrosion Electrochemical Theory of Corrosion.

**B.Sc. (Second Year)
(Fourth Semester)**

Lab Course-IV Paper XII 90 Hrs (3 Hrs/week)

Section A: Physical Chemistry

Instrumentation: (Any Five)

- i. To determine normality and strength of HCl using (0.1N) NaOH Solution Conductometrically.
- ii. To determine normality and strength of acetic acid using (0.1N) NaOH solution Conductometrically.
- iii. To determine normality and strength of HCl using (0.1N) NaOH solution by pH-metrically.
- iv. To verify Lambert-Beers Law using KMnO_4 solution.
- v. To estimate the amount of Sugar using Polarimeter.
- vi. To determine refractive index of ethanol water system.
- vii. To determine indicator constant of indicator colorimetrically.

Section B: Organic Chemistry

Organic Derivatives:-

**Preparation, Crystallization and
Physical Constant. (Any Three)**

- | | | | |
|-----------------------------|---|---------------------|-------------------|
| i. Acetyl Derivatives | : | a) Aniline | b) Salicylic Acid |
| ii. Benzoyl Derivatives | : | a) Aniline | b) B-naphthol |
| iii. Hydrolysis Derivatives | : | a) Ethyl Benzoate | b) Aspirin |
| iv. Bromo-Derivatives | : | a) Phenol | b) Cinnamic Acid |
| v. Reduction Derivatives | : | a) M-dinitrobenzene | |
| vi. Osazone Derivatives | : | a) Sucrose | b) Glucose |

Organic Estimations: (Any Two)

- i. Estimation of nitro group by reduction.
- ii. Estimation of glucose.
- iii. Estimation of ester by hydrolysis.
- iv. Estimation of amides by hydrolysis.

Pattern of Question Paper

B.Sc. Second Year

Lab Course-III Physical and Inorganic Chemistry.

Paper-IX

Time: 06.00 Hours

Max.Marks:100

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Section A (Physical Chemistry)

50 marks

- Q.1 a. To determine critical solution temperature of phenol water system. **25 Marks**
- Or
- b) Determine the molecular mass of polymer from viscometer measurements.
- Or
- c) Partition coefficient of Benzene water system using benzene acid.
- Or
- d) To investigate the Kinetics of Iodination of Acetone.
- Q.2.a. To determine solidity of benzene acid at different temperature and determine H of dissolution process **25 Marks**
- Or
- b) To determine Hn of NaOH and CH₃COOH.
- Or
- c) To determine Hn of NaOH and HCl.
- Or
- d) To determine the equilibrium constant for the reaction $KI + I_2 \rightleftharpoons KI_3$.
-

Section B (Inorganic Chemistry)

Q.3 a. Estimation of Zn gravimetrically as $Zn NH_4 PO_4$ **20 Marks**

Or

b) Estimation of Mn gravimetrically as $Mn NH_4 PO_4$.

Or

c) Estimation of Barium gravimetrically as $BaCrO_4$.

Or

d) Estimation of Nickel gravimetrically as Ni-DMG.

Or

e) Estimation of Aluminium as Aluminium oxalate.

Q.4. a Estimation of Zinc by EDTA solution using EBT indicator. **20 Marks.**

Or

b. Estimation of Nickel by EDTA solution using Murexide indicator.

c. Estimation of Copper by EDTA Solution using test sulphon black F indicator.

Q.5 Record Book / Viva-Voce **10 Marks.**

Pattern of Question Paper

B.Sc. Second Year

Lab Course-IV

Physical and organic Chemistry

Paper-XII

Time: 06.00 Hours

Max.Marks:100

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Section A (Physical Chemistry)

50 marks

Q.1 a. To determine normality and strength of HCl using (0.1N) NaOH solution Conductometrically. **25 Marks**

Or

b) To determine normality and strength of CH₃COOH using (0.1N) NaOH solution Conductometrically.

Or

c) To determine Refractive Index of Ethanol-water system.

Or

d) To estimate the amount of sugar using Polarimeter.

Q.2.a. To determine normally and strength of HCl using (0.1N) NaOH solution by pH-metrically. **25 Marks**

Or

b) To Verify Lambert-Beers Law using KMnO₄ solution.

Or

c) To determine Indicator constant of Indicator colorimetric ally.

Section B (Organic Chemistry)

40 Marks.

Q.3 a. Estimation of Nitro group by reduction. Zn gravimetrically as Zn NH₄PO₄

25 Marks

Or

b) Estimation of glucose Mn gravimetrically as Mn NH₄ PO₄.

Or

c) Estimation of Ester by hydrolysis.

Or

d) Estimation of amide by hydrolysis.

Q.4. a Preparation of (organic derivative)
Its crystallization and physical constant of the prepared derivative.

15 Marks.

Q.5. Record Book / Viva-Voce

10 Marks

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S*/-090414/-

S*/-020514/-

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यू./विज्ञान/अभ्यासक्रम/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

- 42 -

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
- २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये.
- ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
- ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
- ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
- ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
- ७) कक्ष अधिकारी, बी.ए. / बी.एससी./ बी.सी.एस./एम.एससी. विभाग, परीक्षा भवन,
- ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
AURANGABAD.



REVISED SYLLABUS

OF

B.A./ B.Sc. Mathematics
SECOND YEAR
[Optional]

Third & Fourth Semester

[Effective for - June, 2014-15]

Dr. Babasaheb Ambedkar University, Aurangabad

Revised Syllabus

For

B.Sc. (Second Year) MATHEMATICS

WITH EFFECT FROM JUNE – 2014

Semester Third :

- | | |
|-------------------------------|------------------------------|
| 1. Paper No. MAT – 301 | : Number Theory |
| 2. Paper No. MAT – 302 | : Integral Transforms |
| 3. Paper No. MAT – 303 | : Mechanics - I |

Semester Fourth :

- | | |
|-------------------------------|---|
| 1. Paper No. MAT – 401 | : Numerical Methods |
| 2. Paper No. MAT – 402 | : Partial Differential Equations |
| 3. Paper No. MAT – 403 | : Mechanics - II |

B.A. (Second Year) MATHEMATICS

WITH EFFECT FROM JUNE – 2014

Semester Third :

- | | |
|-------------------------------|------------------------------|
| 1. Paper No. MAT – 301 | : Number Theory |
| 2. Paper No. MAT – 302 | : Integral Transforms |

Semester Fourth :

- | | |
|-------------------------------|---|
| 1. Paper No. MAT – 401 | : Numerical Methods |
| 2. Paper No. MAT – 402 | : Partial Differential Equations |

(With Effect from June - 2014)

B. A. & B.Sc. (Second Year)(Third Semester)(Mathematics)
Paper No. MAT – 301: (Number Theory) (Max. Marks : 50)

1. Divisibility Theory in the Integers:

The Division Algorithm, The greatest common divisor, The Euclidean algorithm, The Diophantine equation $ax + by = c$.

2. Primes and their Distribution:

The Fundamental Theorem of Arithmetic

3. The Theory of Congruences:

Basic Properties of congruences, Linear congruences

4. Fermat's Theorem:

Fermat's Factorization Theorem, The little Theorem, Wilson's Theorem.

5. Number-Theoretic Functions:

The functions τ and σ , The Mobius inversion formula

6. Euler's Generalization of Fermat's Theorem:

Euler's Phi-function, Euler's Theorem, Some properties of Phi function

Recommended Text Book:

David M. Burton: *Elementary Number Theory*: (Second Edition) – 1987

Scope: Ch. (2) : Complete

Ch. (3) : Article 3.1

Ch. (4) : Articles 4.2, 4.4

Ch. (5) : Articles 5.2, 5.3, 5.4

Ch. (6) : Articles 6.1, 6.2, 6.3

Ch. (7) : Articles 7.2, 7.3

References:

- 1) Ivan Niven, Herbert Zuckerman: *An introduction to the theory of Numbers*: Wiley Eastern Ltd, New Delhi.
- 2) S. G. Telang: *Number theory*: Tata McGraw Hills, New Delhi.
- 3) C. Y. Hsiung: *Elementary theory of Numbers*: Allied publishers Ltd, New Delhi.
- 4) S. B. Malik: *Basic Number Theory*:
- 5) Hari Kishan: *Theory of Numbers*: Krishna Prakshan Meerut.
- 6) Ajay Chaudhari: *Introduction to theory of Numbers*: New Central book Agency(P) Ltd. Calcutta.
- 7) Ivan Niven, Herbert Zuckerman H. L. Montgomery: *An introduction to the theory of Numbers*: John Wiley and Sons New Delhi.
- 8) Pundir, Pundir: *Theory of Numbers*: Pragati Prakashan Meerut.
- 9) G. E. Andrews: *Number Theory*: Hindustan Publishing Corporation, New Delhi.

B. A, & B.Sc. (Second Year)(Third Semester)(Mathematics)
Paper No. MAT – 302: (Integral Transforms) (Max. Marks : 50)

1. Beta and Gamma Functions:

Euler's Integrals - Beta and Gamma functions, Elementary properties of Gamma Function, Transformation of Gamma Function, Another form of Beta Function, Relation between beta and Gamma functions, Other Transformations. [1]

2. Laplace Transform:

Piece-wise or sectional continuity, function of exponential order, Function of class A , The transform concept, Laplace Transform, Notation, Some Standard results. [2]

3. Inverse Laplace Transform:

Definition, Null function, Uniqueness of inverse Laplace transform, partial fractions, Heaviside's expansion formula, the complex inversion formula

4. Applications to Differential Equations:

Differential Equation, Notations (Problems related to Ordinary Differential Equations only) [2]

5. Fourier Transform:

Infinite Fourier sine transform of $F(x)$, Finite Fourier cosine transform of $F(x)$, Infinite Fourier transform of $F(x)$, Relationship between Fourier transform and Laplace transform, Finite Fourier sine transform, Finite Fourier cosine transform, Fourier Integral Theorem [2]

Recommended Text Books:

1. J. N. Sharma, A. R. Vasishtha : *Real Analysis* : Krishna Prakashan media Pvt. Ltd. Meerut.

Scope : Ch. (14) : Art. 9, 10, 11, 12, 13, 14, 15, 16, 17

2. J. K. Goyal, K. P. Gupta : *Laplace And Fourier Transforms* : Pragati Prakashan, Meerut – Twentieth Edition 2007

Scope: Ch. (1) : Part – I : 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.5, 1.6,

Part – II : 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.5

Part – III : 1.0, 1.1.

Ch. (2) : Part – I : 2.0, 2.1, 2.2, 2.3,

Part- II : 2.0, 2.1

References:

1. B.J.Beerends, etl : *Fourier and Laplace Transforms* : Cambridge University Press – 2003.
2. Lokenath Bebnath, Dambaru Bhatta : *Integral Transforms and their Applications* : Chapman and Hall/CRC-2007.
3. E.J.Watson : *Laplace Transforms and Applications* : Van Nostrand Reinhold Company.
4. J. Williams : *Laplace Transforms* : George Allen and Unwin Ltd, London -1973.
5. Joe L. Schiff : *The Laplace Transform:Theory and Applications* : Springer-Verlag NewYork – 1999.
6. M.D.Raisinghanian : *Integral Transforms* : S.chand and Company, New Delhi.
7. M.D.Raisinghanian : *Laplace and Fourier Transforms* : S.chand and Company, New Delhi.
8. Goyal, Gupta : *Integral Transforms*: Pragati Prakashan Meerut.

B.Sc. (Second Year) (Third Semester)(Mathematics)
Paper No. MAT – 303 : (MECHANICS – I) (Max. Marks : 50)

1. Forces acting on a Particle:

Particle, Rigid body, Force, The force as a vector, Equilibrium, An axiom for equilibrium of two forces, Statics, Resultant of forces, Law of parallelogram of forces, Principle of the transmissibility of force, Deductions, Resultant of forces $m \cdot \overline{OA}$ and $n \cdot \overline{OB}$, Components and Resolved parts, the algebraic sum of resolved parts of two forces, To find the magnitude and direction of the resultant of any number of coplanar forces acting at a point, Resultant of parallel forces.

2. Equilibrium of Forces acting on a Particle:

Triangle law of forces, Converse of the triangle law of forces, Polygon of forces, Lami's theorem, Conditions of equilibrium of forces acting on a particle.

3. Forces acting on a Rigid Body:

Introduction, Moment of a force, Sum of vector moments of two like parallel forces, Couples, Conditions of equilibrium of forces acting on a rigid body, Trigonometrical Theorems.

4. Centre of Gravity:

Centroid of weighted points, Centre of gravity, Centre of gravity of some uniform bodies.

Recommended Text Book:

V. Tulsani, T. V. Warhekar and N. N. Saste : Mechanics and Differential Geometry:
S. Chand and Co. (Pvt) LTd, New Delhi (Second Edition) – 1987

Scope: Part (I): Statics

Ch. (1) : Complete

Ch. (2) : Complete

Ch. (3) : Complete

Ch. (4) : Articles 4.1 to 4.7

References :

1. B. R. Thakur, G. P. Shrivastava : *Mechanics* : Ram Prasad and Sons, Agra – 3.

2. M. L. Khanna : *Dynamics* : Kedarnath Ramnath Prakashan, Meerut.

3. S. L. Loney : *An Elementary Treatise on Statics* : A. I. T. B. S. Publishers and Distributors, New Delhi.

B. A. & B. Sc. (Second Year)(Fourth Semester)(Mathematics)
Paper No. MAT – 401: (Numerical Methods) (Max. Marks : 50)

1. Solution of Algebraic and Transcendental Equations:

Introduction, Bisection method, Method of false position, Newton-Raphson method, Generalized Newton's method.

2. Interpolation:

Introduction, Finite differences, Forward differences, Backward differences, Central differences, Symbolic relations and separation of symbols, Differences of a polynomial, Newton's formulae for interpolation, Interpolation with unevenly spaced points, Lagrange's interpolation formula, Hermite's interpolation formula, Divided differences and their properties, Newton's general interpolation formula.

3. Curve Fitting and Approximations:

Introduction, Least-Squares curve fitting procedures, fitting a straight line, nonlinear curve fitting, Approximations of functions, Chebyshev polynomials, Economization of power series.

4. Solution of Linear System of Equations:

Solution of Linear Systems-direct methods, Gaussian elimination method, Method of factorization, Solution of Linear Systems-iterative methods, The Eigenvalue problem, Householder's method, Eigenvalues of a symmetric tridiagonal matrix, The QR method

5. Numerical Solution of Ordinary Differential Equations:

Introduction, Solution by Taylor's series method, Picard's method of successive approximations, Euler's method, Runge Kutta methods

Recommended Text Book:

S. S. Sastry : Introductory Methods of Numerical Methods : Third Edition, Prentice Hall India, New Delhi.

Scope:

Chapter 2: Articles 2.1, 2.2, 2.4, 2.5, 2.5.1

Chapter 3: Articles 3.1, 3.3, 3.3.1 to 3.3.4, 3.5, 3.6, 3.9, 3.9.1, 3.9.3, 3.11, 3.11.1

Chapter 4: Articles 4.1, 4.2, 4.2.1, 4.2.2, 4.6, 4.6.1, 4.6.2

Chapter 6: Articles 6.3, 6.3.2, 6.3.4, 6.4, 6.5, 6.5.1 to 6.5.3

Chapter 7: Articles 7.1, 7.2, 7.3, 7.4, 7.5

Reference Books:

1). H.C.Saxena: Finite Differences and Numerical Analysis, S.Chand and Co.Pvt. Ltd, New Delhi

2). M.K.Jain, S.R.K. Iyengar, R.K.Jain: Numerical Methods for Scientific and Engineering Computation, New Age International Publishers, New Delhi.

B. A. & B. Sc. (Second Year)(Fourth Semester)(Mathematics)
Paper No. MAT – 402: (Partial Differential Equations) (Max. Marks : 50)

1. Prerequisites:

Derivation of a Partial Differential Equation by the elimination of arbitrary constants, Derivation of a Partial Differential Equation by the elimination of arbitrary functions,

2. Partial Differential Equations of Order One (Linear Equations) :

Definition of Partial Differential Equations, Lagrange's Linear Partial Differential Equation, Geometrical interpretation of the Lagrange's Linear Partial Differential Equation $Pp + Qq = R$.

3. Non-linear Partial Differential Equations of Order One:

Complete and Particular Integrals, General Integral, Singular Integral, Special method, Standard form I, Standard form II, Standard form III, Standard form IV, Charpit's method, Non-linear Partial Differential Equations of order one with three or more independent variables, Jacobi's method.

4. Linear Partial Differential Equations:

Definitions, Linear Homogeneous Partial Differential Equations with constant coefficients, Non-Homogeneous Linear Partial Differential Equations, Equations reducible to Linear form with constant coefficients.

5: Partial Differential Equations of Second Order:

Equations that can be integrated by inspection, Monge's method to solve the equation $Rr + Ss + Tt = V$, Method of Transformations (Canonical Forms)

Recommended Text Book:

P.P. Gupta, G.S.Malik, S.K.Mittal : *Partial Differential Equations* (Second Revised Edition – 2003) Pragati Prakashan, Meerut, ISBN-81-7556-518-7

Note: Questions on Prerequisite may not be asked

Scope:

Chapter 4: Articles 4.1, 4.4-4.5

Chapter 5: Complete Chapter (5.1-5.10)

Chapter 6: Articles 6.1- 6.4

Chapter 7: Articles 7.1, 7.2, 7.3, 7.5, 7.6

Reference Books:

1. H.K.Dass : *Advanced Engineering Mathematics* ; S. Chand and Co. Ltd, New Delhi.
2. N. Ch. S. N. Iyengar : *Differential Equations* ; Anmol Publications Pvt. Ltd, New Delhi.
3. M. L. Khanna : *Partial Differential Equations* ; Kodarnath and Ramnath Prakashan, Meerut.

B.Sc. (Second Year)(Fourth Semester)(Mathematics)

Paper No. MAT – 403 : (Mechanics – II)

(Max. Marks : 50)

1. Kinematics and Dynamics of a Particle in Two Dimensions:

Introduction, Definitions, Velocity and acceleration in terms of vector derivatives, Tangent and unit vector along the tangent, Rate of change of unit vector moving in a plane, Curvature principal normal, Tangential and normal components of velocity and acceleration, Angular speed and angular velocity, Radial and transverse components of velocity and acceleration, Areal speed and areal velocity.

2. Kinetics of a Particle:

Introduction, Newton's law of motion, Matter, Linear momentum, Angular momentum, An Impulsive force and its impulse, Conservation of linear momentum, Impact of two bodies, Work, Energy, Scalar point function, Vector point function, Field of force, Conservative field of force.

3. Motion of a Projectile and Motion in a Resisting Medium:

Rectilinear Motion, Motion under gravity, Projectile, Motion of projectile, Range on an inclined plane, Parabola of Safety, Projectile to pass through a given point, Motion in a resisting medium, Motion of a body moving under gravity and in a medium whose resistance varies as velocity.

4. Central Orbits:

Definitions, Areal velocity in Central Orbit, Differential equation of central orbit, Apses, Law of Force, Pedal equation of some curves

Recommended Text Book:

V. Tulsani, T. V. Warhekar and N. N. Saste : *Mechanics and Differential Geometry*:
S. Chand and Co. (Pvt) Ltd, New Delhi (Second Edition) – 1987

Scope: Part (I): Dynamics of a Particle

Ch. (1) : Complete

Ch. (2) : Complete

Ch. (3) : Complete

Ch. (4) : Articles 4.01 to 4.10

References :

1. B. R. Thakur, G. P. Shrivastava : *Mechanics* : Ram Prasad and Sons, Agra – 3.
2. M. L. Khanna : *Statics* : Kedarnath Ramnath Prakashan, Meerut.
3. S. L. Loney : *An Elementary Treatise on Dynamics of a particle and of Rigid Bodies* : A. I. T. B. S. Publishers and Distributors, New Delhi.



Dr. B. R. Sontakke
Chairman,
B. O. S. in Mathematics

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद**परिपत्रक क्रमांक/एस.यु./विज्ञान/अभ्यासक्रम/७४/२०१४**

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षांच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षांच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारित करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
 औरंगाबाद-४३१ ००४,
 संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
 ६५९९-१०२
 दिनांक :- २७-०५-२०१४.

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 संचालक,
 महाविद्यालये व विद्यापीठ
 विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
- २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
- ३) संचालक, युनिक यांना विनंती करण्यात येते वी, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
- ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
- ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
- ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
- ७) कक्ष अधिकारी, बी.ए. / बी.एससी. / बी.सी.एस. / एम.एससी. विभाग, परीक्षा भवन,
- ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे.

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
AURANGABAD.



REVISED SYLLABUS

OF

B.Sc. Botany
SECOND YEAR
[Optional]

Third & Fourth Semester

[Effective for - June, 2014-15]

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II YEAR SYLLABUS

Subject -BOTANY

Semester –III and IV

	Paper No	Title of Paper	Lectures	Marks
B. Sc. II	Semester- III			
	VII	Taxonomy of Angiosperms	45	50
	VIII	Plant Ecology	45	50
	IX	Practical based on Paper - VII	45	50
	X	Practical based on Paper - VIII	45	50
	SEMESTER – IV			
	XI	Gymnosperms and Utilization of plants	45	50
	XII	Plant Physiology	45	50
	XIII	Practical based on Paper - XI	45	50
	XIV	Practical based on Paper - XII	45	50

Effective From – Academic year -2014-15

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VII

Taxonomy of Angiosperms

Period-45L

Unit-01

1. Salient features, origin and evolution of Angiosperms. (03)
2. Systems of classification –Introduction of Natural, Artificial and Phylogenetic. (01)
3. Bentham and Hooker’s system of classification up to series level, its merits and demerits. (02)
4. Taxonomy in relation to anatomy, embryology, palynology, ecology and cytology. (05)
5. Concept of Binomial Nomenclature and its advantages . (02)
6. Concept of genus, species and epithet. (02)
7. Herbaria:- What is herbaria, procedure for collection of plants, pressing of the plants specimen, drying of specimen, poisoning, mounting, labelling of specimens, storing of specimen, function of herbaria and some important herbaria of the India; Digital herbaria. Botanical Gardens: What is botanical garden, functions of botanical garden and major botanical gardens of India. (05)

Unit: 02

Study of the following families: systematic position, salient features, floral formula, (25)
floral diagram, common examples and their economic importance.

i. Annonaceae

ii. Malvaceae

iii. Leguminosae

Fabaceae (Papilionaceae)

Caesalpiniaceae

Mimosaceae

iv. Apocynaceae

v. Solanaceae

vi. Acanthaceae

vii. Lamiaceae (Labiatae)

viii. Nyctaginaceae

ix. Liliaceae

x. Poaceae (Gramineae)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VIII

Plant Ecology

Period- 45L

Unit – 1

Plant and environment

A)Climatic factors –

- a) Light as an ecological factor, global radiation and photosynthetically active radiation (02)
- b) Temperature as an ecological factor. (02)
- c) Water as an ecological factor, physicochemical properties of water. (03)

B) Edaphic factor –

Soil formation, soil profile, physicochemical properties of soil, major soil types of India, soil erosion and soil conservation. (08)

Unit:2

1. Response of plants to water

Morphological, physiological and anatomical response of plants to water:– hydrophytes, xerophytes, halophytes and epiphytes. (12)

2. Phytogeography: (03)

Biogeographical regions of India, vegetation types of India.

Unit: 3

1. Community ecology:

Community characteristics -frequency, density, life forms, biological spectrum. (06)

1. Ecosystem:

Structure -biotic and abiotic components, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles-nitrogen and phosphorus. (09)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II YEAR (Practical)

Semester -III

Paper- IX

Taxonomy of Angiosperms

(Based on Paper- VII)

45 L

Angiosperms:

Study of locally available plants of the following families :

1. Annonaceae
2. Malvaceae
3. Leguminosae
 - a) Fabaceae (Papilionaceae)
 - b) Caesalpiniaceae
 - c) Mimosaceae
4. Apocynaceae
5. Solanaceae
6. Acanthaceae
7. Lamiaceae (Labiatae)
8. Nyctaginaceae
9. Liliaceae
10. Poaceae (Gramineae)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II year (Practical)

Semester - III

Paper - X

Plant Ecology

(Based on Paper no –VIII)

45 L

1. Study of morphological and anatomical adaptations in hydrophytes – *Hydrilla*, *Eichhornia*, *Typha* and *Nymphaea* .
2. Study of morphological and anatomical adaptations in xerophytes -*Aloe*, *Nerium*, *Casuarina*.
3. Study of morphological adaptations in halophytes -Pneumatophore, Stilt roots.
4. Study of morphological and anatomical adaptations in epiphytes.
5. Study of vegetation by quadrat method.
6. Estimation of Importance Value Index (IVI) of grassland ecosystem on the basis of relative frequency, relative density and relative abundance.
7. Determination of water holding capacity of different soils.
8. Study of meteorological instruments -Rain gauge, Hygrometer, Barometer.
9. Determination of percent leaf area injury of different infected leaf samples.
10. Estimation of salinity of different water samples.
11. Determination of pH of different soils by pH papers/universal indicator/pH meter.

Note for paper IX and X:

Candidate shall submit the following at the time of practical exams: Certified laboratory record book, Field note book, Tour report and Collection of specimens. In addition to number of practicals prescribed above, the students are required to undertake field excursions to the places of botanical interest and industrial places under the guidance of teachers. Collection of rare flowering and non flowering plants should be avoided during excursion. There shall be frequent study tours in local areas. T.A. and D.A. be paid to the teachers, peons and field collectors as per university rules. The record book is to be signed periodically by teacher in charge and certified by the Head of Department at the end of the term. Candidate should not be allowed to appear for practical examination without a certified record book or a certificate from the Head of Department.

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II Year (Theory)

Semester - IV

Paper - XI

Gymnosperms and Utilization of Plants

45 L

Unit:1

Gymnosperms:

1. Salient features, classification as per Sporne 1965, economic importance. (02)
2. Geological time scale, fossilization, types of fossils, *Lyginopteris*, fossil fuels. (04)
3. Contributions of Prof. Birbal Sahani. (01)
4. Study of morphology, anatomy, reproduction (excluding developmental stages) and graphical representation of life cycle of the following types: (16)
 - a) Cycadales – *Cycas*
 - b) Coniferales – *Pinus*
 - c) Gnetales - *Gnetum*

Unit:2

Utilization of Plants:

1. Domestication of plants and their centers of origin. (02)
2. History, origin, cultivation, harvesting, improved varieties and economic importance of the following plants: (15)
 - i. Food plants – Wheat, Jowar.
 - ii. Sugar – Sugarcane.
 - iii. Fibers -Cotton, Jute.
 - iv. Vegetable oils – Groundnut, Sunflower.
 - v. Beverages – Tea, Coffee.
 - vi. Mushroom e. g. (Oyster) *Pleurotus*.
3. Botanical name, family name and economic importance of the following plants: (05)
 - i. Medicinal plants – Korphad, Aswagandha, Turmeric and Nirgudi.
 - ii. Timber and Gum – Teak, Neem, Babul, Sisham.
 - iii. Cosmetics and Perfumes – Rose, Mogara, Tuberose.
 - iv. Spices – Clove, Black pepper, Cumin, Coriander, Cinnamon.

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II Year (Theory)

Semester -IV

Paper -XII

Plant Physiology

45 L

Unit:1

1. Plant water relations:

- a) Diffusion, osmosis, plasmolysis and imbibition. (02)
- b) Water absorption and ascent of sap (Transpiration pull theory). (03)
- c) Transpiration – Definition, types -cuticular, lenticular and stomatal, structure of stomata, mechanism of opening and closing of stomata (starch – sugar hypothesis). (02)

2. Mineral nutrition:

- a) Macro and microelements: roles and deficiency symptoms of N, P, K, Mg, Ca, Fe, Zn, Bo, Mo.
- b) Mineral uptake – passive (ion exchange theory) and active (carrier concept) . (05)

3. Translocation of solutes:

Mass flow hypothesis, protoplasmic streaming theory, Source and sink relationship. (03)

Unit:2

1. Enzymes :

Chemical nature holoenzyme , apoenzyme, prosthetic group, cofactor and coenzyme, properties , nomenclature, classification based on type of reactions, mechanism of enzyme action . (06)

2. Growth: Definition, Phases of Growth, Sigmoid growth curve. (02)

3.Growth regulators:

Discovery, structure, roles and practical applications of Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene. (07)

Unit:3

1. Photosynthesis:

Definition, ultrastructure of chloroplast, photosynthetic pigments, Light reactions -Hill reaction, red drop and Emerson enhancement effect, two pigment systems (PS I, PS II), photophosphorylation – cyclic and non cyclic, Z-scheme; Dark reactions -C₃, C₄ and CAM pathways. (08)

2. Respiration:

Definition, Ultrastructure of mitochondria, types of respiration, Glycolysis, TCA Cycle, Electron transport system, alcoholic and lactic acid fermentation. (07)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II year (Practical)

Semester -IV

Paper -XIII

**Gymnosperms and Utilization of plants
(Based on paper no - XI)**

45L

Gymnosperms:

a) *Cycas*

- i. Habit, young leaf, bulbils, male cone, microsporophyll, megasporophyll, pollen grains, mature seed.
- ii. Study through permanent slides-Normal root (T.S.). Stem (T.S.), Ovule (L.S.).
- iii. Study through hand section-Coralloid root (T.S.), Rachis (T.S.), Leaflet (T.S.).

b) *Pinus*

- i. Habit, long and dwarf shoot, scale leaves, foliage leaves, male cone, female cone, pollen grains (W.M.), winged seed.
- ii. Study through hand sections and permanent slides Root (T.S.), Stem (T.S.), Needle (T.S.).
- iii. Study through permanent slide - T.L.S. & R.L.S. of stem, L.S. of male cone, L.S. of female cone.

c) *Gnetum*

- i) Habit, T. S. of Stem, Male cone and female cone.

Paleobotany:

- a) Types of fossils (Specimens).
- b) *Lygynopteris* (Specimen / Permanent slide).

Utilization of plants :

- a) Food plants – Study of the morphology, structure,and histochemical tests of food storing tissue in Jowar & Wheat.
- b) Histochemical test of lignin and cellulose.
- c) Cultivation of Oyster (*Pleurotus*) mushroom on agricultural waste.
- d) Vegetable oils – hand section of Groundnut & Sunflower Seed and staining of oil droplets by Sudan III.
- e) Study of the sources of Timber, Gum, Medicinal plants, Cosmotics and Perfumes.
- f) Study of Black pepper, Clove, Cinnamon, Cumin, Coriander.
- f) Field notebook, specimen collection, and tour report.

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II year (Practical)

Semester -IV

Paper- XIV

Plant Physiology

(Based on paper no. -XII)

45L

1. Osmosis by egg membrane and potato osmoscope.
2. Plasmolysis in *Tradescantia* leaves.
3. Effect of different conc. of organic solvents on membrane permeability.
4. Determination of water potential of any tuber.
5. Detection of mineral elements in plant ash.
6. Digestion of starch by amylase.
7. Detection of enzyme activity : oxidase, peroxidase, catalase and dehydrogenase.
8. Separation of chloroplast pigments by paper chromatography.
9. Demonstration of Hill reaction.
10. Effect of different intensities of light on photosynthesis.
11. Effect of different colors of light on photosynthesis.
12. Fermentation by Kuhnes fermentation vessel.
13. Isolation of starch.
14. Isolation of pectin.
15. Estimation of total and reducing sugars in fruit juice by Fehling solution.
16. Separation of amino acids by paper chromatography.
17. Effect of IAA and Gibberellins on seed germination.

Note for paper XI and XII

Candidate shall submit the following at the time of practical examination: Certified laboratory record book. Field report , Tour report. and Collection of specimens. In addition to number of practicals prescribed above, the students are required to undertake field excursions to the places of botanical interest and industrial places under the guidance of teachers. Collection of rare flowering and non flowering plants should be avoided during excursion. There shall be frequent study tours in local areas. T.A. and D.A. be paid to the teachers, peons and field collectors as per university rules. The record book is to be signed periodically by teacher in charge and certified by the Head of the Department at the end of the term. Candidate should not be allowed to appear for practical examination without a certified record book or a certificate from the Head of the Department.

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VII

Taxonomy of Angiosperms

Time: 2 Hour

Max. Marks: 50

N.B.: i) Attempt all questions

ii) All questions carry equal marks

iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question(Unit 1) 10

or

Long answer question (Unit 1)

Q.2. Long answer question(Unit 2) 10

or

Long answer question.....(Unit 2)

Q.3. Long answer question(Unit 2) 10

or

Long answer question.....(Unit 2)

Q.4. Short notes on any two of the following (based on all Units) 10

a) Short answer question

b) Short answer question

c) Short answer question

d) Short answer question

Q.5. Multiple choice question: (based on all Units) 10

1)(Unit 1)

2)(Unit 1)

3)(Unit 1)

4)(Unit 1)

5)(Unit 1)

6)(Unit 2)

7)(Unit 2)

8)(Unit 2)

9)(Unit 2)

10)(Unit 2)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VIII

Plant Ecology

Time: 2 Hour

Max. Marks: 50

N.B.: i) Attempt all questions

ii) All questions carry equal marks

iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question(Unit 1) 10

or

Long answer question (Unit 1)

Q.2. Long answer question(Unit 2) 10

or

Long answer question.....(Unit 2)

Q.3. Long answer question(Unit 3) 10

or

Long answer question.....(Unit 3)

Q.4. Short notes on any two of the following (based on all Units) 10

a) Short answer question

b) Short answer question

c) Short answer question

d) Short answer question

Q.5. Multiple choice question: (based on all Units) 10

1)(Unit 1)

2)(Unit 1)

3)(Unit 1)

4)(Unit 2)

5)(Unit 2)

6)(Unit 2)

7)(Unit 3)

8)(Unit 3)

9)(Unit 3)

10)(Unit 3)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester- IV

Paper -XI

Gymnosperms and Utilization of plants

Time: 2 Hour

Max. Marks: 50

N.B.: i) Attempt all questions

ii) All questions carry equal marks

iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question(Unit -1) 10

or

Long answer question.....(Unit- 1)

Q.2. Long answer question(Unit- 1) 10

or

Long answer question(Unit-1)

Q.3. Long answer question(Unit- 2) 10

or

Long answer question(Unit- 2)

Q.4. Short notes on any two of the following **(based on all Units)** 10

a) Short answer question

b) Short answer question

c) Short answer question

d) Short answer question

Q.5. Multiple choice question: **(based on all Units)** 10

1)(Unit 1)

2)(Unit 1)

3)(Unit 1)

4)(Unit 1)

5)(Unit 2)

6)(Unit 2)

7)(Unit 2)

8)(Unit 2)

9)(Unit 2)

10)(Unit 2)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester- IV

Paper- XII

Plant Physiology

Time: 2 Hour

Max. Marks: 50

N.B.: i) Attempt all questions

ii) All questions carry equal marks

iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question(Unit- 1) 10

or

Long answer question.....(Unit-1)

Q.2. Long answer question(Unit-2) 10

or

Long answer question(Unit-2)

Q.3. Long answer question(Unit- 03) 10

or

Long answer question(Unit-3)

Q.4. Short notes on any two of the following **(based on all Units)** 10

a) Short answer question

b) Short answer question

c) Short answer question

d) Short answer question

Q.5. Multiple choice question: **(based on all Units)** 10

1)(Unit 1)

2)(Unit 1)

3)(Unit 1)

4)(Unit 1)

5)(Unit 2)

6)(Unit 2)

7)(Unit 2)

8)(Unit 3)

9)(Unit 3)

10)(Unit 3)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty of Science

Practical Examination

B.Sc. II YEAR (BOTANY)

Semester- IV

Paper -IX and XIII

(Taxonomy of Angiosperm, Gymnosperms and Utilization of plants)

Time: 09.00 A.M. to 01.00 P.M.

Marks: 100

Date: _____ Batch No. _____

Center: _____

-
- Q.1. Identify, classify giving reasons and describe the specimen "A" 20
Give floral formula and floral diagram.
- Q.2. Make a double stained permanent preparation of the given specimen 'B'
(Gymnosperm). Identify and describe with a well labeled diagram. 20
- Q.3. Perform Micro chemical test in given material "C"
(Protein / Carbohydrate /Lipid / cellulose / Lignin) 10
- Q.4. Identify and describe the specimen D, E, F, G and H as per the instructions 25
(D and E- Angiosperms, F- Gymnosperms, G- and H- Utilization of plants)
- Q.5. Submission: 10
- a) Record book,
 - b) Permanent slides and collection, field notebook/Tour report 10
 - c) Viva - voce and collection 05

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty of Science

Practical Examination

B.Sc. II YEAR (BOTANY)

Semester IV

Paper X and XIV

(Plant Ecology and Plant Physiology)

Time: 02.00 P. M. to 06.00 P.M.

Marks: 100

Date: _____

Batch No. _____

Center: _____

- Q.1. Identify and describe morphological and anatomical adaptations in the given specimen. Make a temporary preparation of the given specimen. 20
- Q.2. Conduct the ecological experiment, allotted to you, write the principal and record the observations and results. 15
- Q. 3. Make a list of materials required for the physiological experiment allotted to you. Show it to the examiner, write the procedure and record the readings. 20
- Q. 4. Make a list of materials required for the physiology experiment allotted to you. Show results to the examiner. 20
- Q.5. Submission:
- a) Record book, 10
 - b) Project report and collection 10
 - c) Viva - voce 05

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यू./विज्ञान/अभ्यासक्रम/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सूचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षांच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षांच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारित तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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:: [2] ::

[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४,
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-१००२
दिनांक :- २७-०५-२०१४.

X
X
X
X
X
X


संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक यांना किंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करून देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्ष अधिकारी, बी.ए. / बी.एससी. / बी.सी.एस./एम.एससी. विभाग, परीक्षा भवन,
 - ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे.
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.



**Revised Syllabus of
B.Sc. Second Year
Zoology [Optional]
Third and Fourth Semester**

Effective from 2014-2015

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
B.Sc. Zoology Pattern in Semester System

B. Sc. II Year Zoology

III	ZOL-301	Paper – VII	Vertebrate Zoology	50
	ZOL-302	Paper – VIII	Genetics- II	50
	ZOL-303	Paper – IX	Practical based upon Paper VII	50
	ZOL-304	Paper – X	Practical based upon Paper VIII	50
IV	ZOL-401	Paper – XI	Animal Physiology (Special Emphasis on Mammals)	50
	ZOL-402	Paper – XII	Biochemistry & Endocrinology	50
	ZOL-403	Paper – XIII	Practical based upon Paper XI	50
	ZOL-404	Paper – XIV	Practical based upon Paper XII	50

B. Sc. III Semester
Course Code - ZOL- 301
PAPER: VII
VERTEBRATE ZOOLOGY

1. Agnatha:- Out line classification, general characters and affinities of Cyclostomata	02
2. Pisces : - Out line classification and general characters. <i>Scoliodon</i> : - External characters, Digestive system, Respiratory system, Blood Vascular System and Nervous System.	08
3. Amphibia: - Out line classification and general characters. Development of frog: - Fertilization Cleavage Blastula Gastulation and formation of germinal layers. Neotony in Amphibia Parental care in amphibia.	06
4. Reptilia: - Out line classification and general characters. <i>Calotes</i> :-External features, Respiratory system and Blood vascular system. Poisonous and non- poisonous snakes.	06
5. Aves: - Out line classification and general characters. <i>Columba livia</i> : - External features, Respiratory system, Embryology of chick.-Cleavage Blastula Gastulation and formation of germinal layers and extra embryonic membranes. Flight adaptation in birds. Migration in Birds.	10
6. Mammalia: - Out line classification and general characters. <i>Ratus ratus</i> : - External features, Blood Vascular System, Urino-genital System and Adaptive radiation in mammals. Placentation in Mammals.	13
Total Periods: -	45

B.Sc. III Semester
Course Code - ZOL- 302
PAPER: VIII
GENETICS – II

1. Genes and its expression :- Definition, concept and function of gene. Transcription of gene: - Initiation, elongation and termination. Genetic code:- Concept of codon, properties of genetic code Translation of gene: - Initiation, elongation and termination.	08
2. Population Genetics :- Gene Pool., Gene Frequency. Herdy-weinberg's Law. Application of Herdy-weinberg's Law.	05
3. Human Genetics: - Human chromosomes. Sex linked inheritance- X and Y Linked. Dizygotic and monozygotic twins. Inborn errors in metabolism: - PKU, Albinism. Genetic disorders:- Down's syndrome, Turners' syndrome, Klinefelter's syndrome. Use of human genetics in medical science: - Disease diagnosis Gene therapy and DNA finger printing.	12
4. Microbial Genetics: - Transformation. Conjugation. Transduction.	05
5. Genetic Engineering: - Introduction: - Definition, Concept and significance. Restriction enzymes: - Concept and types. Cloning vectors: - Plasmid, cosmid, phase. Construction of r-DNA. Application of r-DNA technology.	10
Total Periods: -	45

RECOMMENDED BOOKS
VERTEBRATE ZOOLOGY

- A life of Vertebrate – K.Z.Young, ELBS Oxford University Press.
 - Modern Text Book of Zoology Vertebrate – R.L.Kotpal, Rastogi Publication Meerut.
 - A Text Book of Chordate Zoology – R.C.Dalela –Jaiprakashnath Publication Meerut.
 - Chordate Zoology – E.L.Jordan and P.S.Verma, S.Chand and Company New De
 - Zoology- S. A. Miller and J. B. Harley, Tata McGraw Hill.
 - Biological Science, 3rd Ed. D. J. Taylor, N. P. O. Green and G. W. Stout,
 - Cambridge Univ. Press. Low priced Ed.
 - Verma &Agarwal- chordate Embryology – S.Chand publication.
-

GENETICS-II

- Genetics. By Verma, PS and Agarwal, VK., S. Chand and Co., New Delhi
- Principles of Genetics. By Sinnott Dunn & Dobzhansky, Tata McGraw Hill, New Delhi, India.
- Genetics. By Gupta, PK., Rastogi Publications, Meerut
- Genetics. By Sarin, C., Tata McGraw Hill, New Delhi.
- Principles of Genetics. By Gardner, EJ, Simmons, MJ and Snustad, DP. John Wiley and sons
- Genetics-Strikberger, Macmillan Pub.
- Principles of Genetics- Tamarin, 7th Ed. Tata McGraw Hill.
- Genetics-- Winchester. Oxford IBH Pub
- Introductions genetic analysis – Griffith et.al.

B.Sc. III Semester
Course Code - ZOL- 303
PAPER: IX
VERTEBRATE ZOOLOGY (Practical)

1. Museum study of vertebrates. (At least 20).	05
2. Dissection of Scoliodon / Labeo Afferent and efferent, Cranial Nerves. Brain	03
3. Dissection of Rat/ Frog ; Urinogenital system, Arterial system, Venous System, Brain of Rat.	05
4. Mounting of Placoid, Cycloid and Ctenoid scales of fish	01
5. Study of Embryological development of chick according to hours of incubation.	01
6. Visit to Zoological museum/Zoo Park is compulsory and Submission of report	
7. Write a report on common birds/mammals in your locality, scientific names and economic importance.	
Total Practical periods: -	15

B.Sc. III Semester
Course Code - ZOL- 304
PAPER: X
GENETICS – II (Practical)

1. Preparation of paper model of DNA and study of DNA structure	01
2. Study of protein synthesis with the help of charts/models.	02
3. Estimation of DNA from animal tissue with the help of Diphenyl amine method.	02
4. Study of preparation of Normal Karyotype of human.	01
5. Karyotypic study of Down's syndrome, Turner's syndrome, Klinefelter's syndrome with the help of photograph.	02
6. Detection of Barr body from epithelial cell.	01
7. Problems on sex linked inheritance.	02
8. Problems based on Hardy – Weinberg's law	02
9. Study of gene frequency and mutants of man ; Attached and free ear lobe. Colour of eye. Rolling of tongue. Blood group frequency.	02
Total Practical periods:-	15

Pattern of Question Paper**B.Sc. III Semester****Course Code - ZOL- 301****PAPER: VII****VERTEBRATE ZOOLOGY****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter 1&2
OR
Based on chapter 1&2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter 3&4
OR
Based on chapter 3&4 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter 5&6
OR
Based on chapter 5&6 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters

OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

Pattern of Question Paper**B.Sc. III Semester****Course Code - ZOL- 302****PAPER: VIII****GENETICS – II****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter 1&2
OR
Based on chapter 1&2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter 3
OR
Based on chapter 3 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter 4&5
OR
Based on chapter 4&5 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters
OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

B.Sc. IV Semester**Course Code - ZOL- 401****PAPER: XI****ANIMAL PHYSIOLOGY (Special Emphasis on Mammals)**

1. Digestion :-	07
Brief Introduction to digestive system.	
Buccal digestion - salivary secretion and digestion.	
Gastric digestion - gastric secretion and digestion.	
Intestinal digestion - Pancreatic secretion, bile juices and digestion in Small intestine, digestion and absorption in large intestine.	
2. Respiration :-	09
Respiratory organs.	
Breathing mechanism.	
Respiratory pigments: - Properties and function of respiratory pigments.	
External respiration.	
Internal respiration.	
Transport of gases.	
3. Circulation :-	05
Working of mammalian heart.	
Blood and its composition.	
Mechanism of blood clotting.	
4. Excretion :-	05
Structure of kidney.	
Structure of uriniferous tubules.	
Urine formation: - Ultra filtration selective, re-absorption and tubular secretion.	
Counter current multiplier system.	
5. Nerve Physiology :-	06
Structure of nerve cells and neuron.	
Neurotransmitters.	
Synapses: - Ultra structure and function.	
6. Muscles Physiology :-	05
Ultra structure of smooth muscle, striated muscles, and cardiac muscles.	
Muscle contraction.	
Simple twitch and fatigue	
7. Reproduction :-	08
Structure of gonads, Gametogenesis.	
Role of sex hormones in Reproduction.	
Reproductive cycles – oestrous and menstrual cycle	
Total Periods: -	45

B.Sc. IV Semester**Course Code - ZOL- 402****PAPER: XII****BIOCHEMISTRY AND ENDOCRINOLOGY****A-BIOCHEMISTRY**

- | | |
|--|-----------|
| 1. Enzymes :-
Definition, concept and nomenclature,
Properties, classification,
Mechanism of enzyme action,
Factors affecting enzyme action (Temperature, pH, Substrates & Co-enzyme.) | 05 |
| 2. Carbohydrates :-
Definition Classification, monosaccharide, disaccharides, oligosaccharides and polysaccharides.
Metabolism: - Glucogenesis, Gluconeogenesis, Glycolysis, TCA. & oxidative phosphorylation. | 06 |
| 3. Proteins :-
Definition , classification -simple , conjugated and derived proteins,
Structure of proteins: - Primary, secondary, tertiary and quaternary.
Metabolism: - Deamination and transamination. | 06 |
| 4. Lipids:
Definition, classification, simple, compound and derived lipids.
Metabolism: - β oxidation and cholesterol biosynthesis . | 05 |
| 5. Vitamins: - Sources and deficiency | 02 |

B- ENDOCRINOLOGY

- | | |
|--|-----------|
| 1. Endocrine system of vertebrates: -
Introduction: - Definition of endocrine, Paracrine and Autocrine system.
Significance of endocrine and neuro - endocrine system. | 04 |
| 2. Pituitary gland: - Morphology & histological structure, Hormones and their function. | 05 |
| 3. Thyroid gland: - Morphology & histological structure, Hormones and their function. | 03 |
| 4. Adrenal gland: - Morphology & histological structure, Hormones and their function. | 05 |
| 5. Pancreas: - Islets of Langerhans- Histological structure
Hormones and their function. | 02 |

Total Periods: - 45

RECOMMENDED BOOKS
ANIMAL PHYSIOLOGY

- William S.Hoar- General and Comparative Physiology, prentice hall of India ltd.
 - Wood E.W. Principle of Animal physiology
 - Nagbhushnum R., Sarojini R., Kodarkar M.S. –Animal Physiology
 - Verma ,Agarwal & Tyagi-animal physiology
 - Moeye K.-Animal Physiology, Cambridge low prize edition.
 - Dantzler, W.H. Comparative Physiology (Handbook of Physiology): Vol. 1, 2, (ed.)
Oxford University Press, New York, USA
 - R. Eckert. Animal Physiology: Mechanisms and Adaptation. W.H.
 - Mohan Arora – animal physiology , Himalaya publication
 - A.K. Berry. –animal physiology
-

BIOCHEMISTRY AND ENDOCRINOLOGY

- J.L. Jain –biochemistry S.Chand Publication, meerut
- Lehninger- Biochemistry, Kalyani Publications
- Stryer-Biochemistry, W.H Freeman and Co., New York
- Granner and Rodwell - Harper's Illustrated Biochemistry, Murray, (27th Ed.),
McGraw Hill, New York, USA
- Nelson and Cox - Principles of Biochemistry. Lehninger. 2nd Ed. CBS publishers.
- J H Wet - General Biochemistry Wiley Eastern Ltd.
- Rangnatha Rao K-Text Book of Biochemistry, Prentice-Hall of India
- C.B.Powar- Biochemistry – (Himalaya Pub.)
- Das.-Biochemistry
- E.J.W. Barrington, General and Comparative Endocrinology,
Oxford, Clarendon Press.
- R.H. Williams, Textbook of Endocrinology, W.B. Saunders

B.Sc. IV Semester
Course Code - ZOL- 403
PAPER: XIII
ANIMAL PHYSIOLOGY (PRACTICAL)

1. To study the digestive enzymes from cockroach/Human Saliva.	02
2. Total count of RBC /WBC from given blood sample.	04
3. Preparation of Heamatin crystals from blood sample.	01
4. Hb% from given blood sample.	01
5. Effect of isotonic, hypotonic, and hypertonic solutions on blood cell (RBCs)	01
6. Detection of nitrogenous waste product from the extract of different animals	01
7. Detection of nitrogenous waste product in fish/frog water tank.	01
8. Estimation of O ₂ consumed by fish in relation to temperature by Wrinkle's method.	02
9. Typographic reading of skeletal muscle properties , heart beating in Toad / Rat. (Demo only)	01
10. Histological study of following.	01
T.S. of Kidney	
T.S. of Testis	
T.S. of Ovaries	
T.S. of Pancreas	
T.S. of Intestine	

Total practical periods: - 15

B.Sc. IV Semester**Course Code - ZOL- 404****PAPER: XIV****BIOCHEMISTRY AND ENDOCRINOLOGY (PRACTICAL)**

1. Preparation of solutions of given percentage, normality and molarity.	02
2. Study of analytical instrument principle and applications. pH meter, Colorimeter, Centrifuge Electrophoresis	04
3. Factors affecting enzymes activity temperature and pH.	02
4. Detection of amino acid by paper chromatography.	01
5. Qualitative test for organic compound. Carbohydrate. Protein. Fats.	03
6. Quantitative estimation of protein from animal tissue using Lawry's method.	02
7. Study of permanent histological slides of endocrine glands. T.S. of Pituitary gland, T.S. of Thyroid gland, T.S. of Adrenal Gland, T.S. of Islets of langarhance. T.S. of Testis T.S. of Ovaries	02

Total practical periods: - 15

Pattern of Question Paper**B.Sc. IV Semester****Course Code - ZOL- 401****PAPER: XI****ANIMAL PHYSIOLOGY (Special Emphasis on Mammals)****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter 1 & 2
OR
Based on chapter 1 & 2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter 3, 4 & 5
OR
Based on chapter 3, 4 & 5 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter 6 & 7
OR
Based on chapter 6 & 7 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters

OR
Based on all chapters |
| Q.5. Multiple choice questions:
1.
2.
3.
4.
5.
6.
7.
8.
9.
10. | Based on all chapters |

Pattern of Question Paper**B.Sc. IV Semester****Course Code - ZOL- 402****PAPER: XII****BIOCHEMISTRY AND ENDOCRINOLOGY****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter Sec. A 1 & 2
OR
Based on chapter Sec. A 1 & 2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter Sec. A 3, 4 & 5
OR
Based on chapter Sec. A 3, 4 & 5 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter Sec. B 1 to 5
OR
Based on chapter Sec. B 1 to 5 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters

OR
Based on all chapters |
| Q.5. Multiple choice questions:
1
2
3
4
5
6
7
8
9
10 | Based on all chapters |

SKELETON OF QUESTION PAPER**B. Sc. III & IV Semester****Course Code - ZOL-303+403****PAPER: IX+XIII****VERTIBRATE ZOOLOGY+ANIMAL PHYSIOLOGY (PRACTICAL)****Time: - 4:00 hrs****Total marks:-100**

Q.1.	Dissect fish.....so as to expose it'ssystem	20
	OR	
	Dissect Frog / Ratso as to expose it'ssystem	
Q.2.	Estimation of O ₂ consumption in relation to temperature.	20
	OR	
	Detection of any two nitrogenous waste products from the given sample	
	OR	
	Total count of RBC/WBC from given blood sample	
Q.3.	Mounting ofscale of fish.	10
	OR	
	Effect of hypotonic/ isotonic/ hypertonic solution on RBC	
	OR	
	Preparation of haematin crystals from given blood sample	
Q.4.	Identification of given spot (Museum study -05. Chick embryo - 02 & histology -03)	30
Q.5.	Record books	10
Q.6.	Submission of slide (At least five)	05
Q.7.	Vivo-voce.	05

SKELETON OF QUESTION PAPER**B.Sc. III & IV Semester****Course Code - ZOL-304+404****PAPER: X + XIV****GENETICS – II + BIOCHEMISTRY AND ENDOCRINOLOGY (PRACTICAL)****Time: - 4:00 hrs****Total marks:-100**

-
- | | |
|---|-----------|
| Q.1. Estimation of total DNA from..... Tissue
OR
Problems on sex linked inheritance/ Hardy –Weinberg's law. | 20 |
| Q.2. Quantitative estimation of Protein from..... Tissue
OR
Detection of organic compound from given samples A&B .Report the test, observation and results.
OR
Preparation of DNA model. | 20 |
| Q.3. Calculates the RF values of given amino acids.
(Using paper chromatography)
OR
Prepare the solutions of given percentage/normality/ molarity
(At least two types)
OR
Detection of Barr body from epithelial cells. | 15 |
| Q.4. Identify the given spots and comment.
(Syndroms-02. Endocrine glands-03) | 30 |
| Q.5. Record book | 10 |
| Q.6. Viva-voce | 05 |

S-30th May, 2015 AC after Circulars from Circular No.1 & onwards - 6 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR NO.ACAD/SU/Sci./B.Sc. & M.Sc. Syll./5/2015**

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under :-**

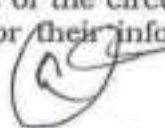
Sr. No.	Name of the Subject	Semester
[1]	B.Sc. Computer Science Degree Course	III & IV
[2]	B.Sc. Information Technology Degree Course	III & IV
[3]	B.C.A. Science Degree Course	III & IV
[4]	B.Sc. Animation Degree Course	III & IV
[5]	B.Sc. Bioinformatics Degree Course	III & IV
[6]	B.Sc. Computer Science [Optional]	III & IV
[7]	B.Sc. Information Technology [Optional]	III & IV
[8]	B.Sc. Computer Applications [Optional]	III & IV
[9]	B.Sc. Computer Maintenance [Optional]	III & IV
[10]	B.Sc. Environmental Science [Optional]	V & VI
[11]	B.Sc. Bio-Chemistry [Optional]	V & VI
[12]	B.Sc. Forensic Science Degree Course	V & VI
[13]	B.Sc. Industrial Chemistry [Optional]	V & VI
[14]	B.Sc. Electronics [Optional]	V & VI
[15]	B.Sc. Zoology [Optional]	V & VI
[16]	B.Sc. Microbiology [Optional]	V & VI
[17]	B.Sc. Instrumentation Practice [Optional]	V & VI
[18]	B.Sc. Statistics [Optional]	V & VI
[19]	B.A. Statistics [Optional]	V & VI
[20]	B.A. / B.Sc. Mathematics [Optional]	V & VI
[21]	B.Sc. Home Science Degree Course	V & VI
[22]	B.Sc. Textile Interior Decoration Degree Course	V & VI
[23]	B.Sc. Fishery Science [Optional]	V & VI
[24]	B.Sc. Dairy Science & Technology [Optional]	V & VI
[25]	B.Sc. Botany [Optional]	V & VI
[26]	B.Sc. Physics [Optional]	V & VI
[27]	M.Sc. Computer Science	III & IV
[28]	M.Sc. I.T.	III & IV

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/Sci./
2015/3761-4160
Date:- 16-06-2015.

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Director,
Board of College and
University Development.

S-30th May, 2015 AC after Circulars from Circular No.1 & onwards - 7 -

:: 2 ::

Copy forwarded with compliments to:-

- 1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

- 1] The Controller of Examinations,
- 2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
- 3] The Superintendent, [B.Sc. Unit],
- 4] The Superintendent, [M.Sc. Unit],
- 5] The Programmer [Computer Unit-1] Examinations,
- 6] The Programmer [Computer Unit-2] Examinations,
- 7] The Record Keeper.

S*/-160615/-

==**==

NAAC Re-accredited with Grade 'A'
Dr. Babasaheb Ambedkar Marathwada University
Aurangabad-431004

SYLLABUS
B.Sc. (Computer Science) (Optional)
Second Year

(effective from 2015-16)

[Signature]

Dr. Bahasaheb Ambedkar Marathwada University, Aurangabad

Curriculum Structure and Scheme of Evaluation: B.Sc. (Computer Science) (Optional)

Semester III									
1	CSO7	Advance C Programming	3		3	50	-	2	50
2	CSO8	Data Structure	3		3	50	-	2	50
3	CSO9	Advance C Programming	-	3	3	-	50	3	50
4	CSO10	Data Structure	-	3	3	-	50	3	50
Total of Semester – III			6	3	9	100	100		200
Semester IV									
1	CSO11	Programming in CPP	3		3	50	-	2	50
2	CSO12	DBMS Using SQL	3		3	50	-	2	50
3	CSO13	Programming in CPP	-	3	3	-	50	3	50
4	CSO14	DBMS Using SQL	-						
Total of Semester – IV			6	3	9	100	100		200



B.Sc. (Computer Science) (Optional)
Semester III

Paper No.: CS07

B.Sc.(C.S.) (Opt.) Semester : III

Paper title: Advance C Programming

<p>Unit –I</p> <p>Functions Introduction, types of functions. Defining functions, Arguments, Function prototype, actual parameters and formal parameters, Calling function, Returning function results, Call by value, Recursion.</p> <p>Structure & Union Structure: Introduction, Declaration and initializing structure, Accessing structure members, Nested structures, Arrays of structure, typedef statement. Unions: Declaration, Difference between structure and union</p>	<p>Unit –II</p> <p>Pointers: Introduction, Memory organization. Declaration and initialization of pointers. The pointer operator * and &, De-referencing, Pointer expression and pointer arithmetic, Pointer to pointer.</p> <p>Storage Class & Library Functions: Storage classes, Scope, visibility and lifetime of variable, block and file scope, auto, extern, static and register storage classes. String handling functions: strcpy(), strcmp(), strcat(), strlen(),strupr(),strlwr(), gets(), puts()</p> <p>Data conversion functions from stdlib.h: atoi(), atol(), atof(), itoa(), ltoa(), random(), calloc(),malloc(),exit(), abs(), toupper(), tolower()</p> <p>Preprocessor Directives: File inclusion and conditional compiler directives, Macro substitution, #define, #if, #ifdef, #else, #elif, #endif</p>
<p>Unit –III</p> <p>File handling: Introduction, Opening & closing a file, Input/Output operations on files, text and binary files, getch(), putc() function. File copy program, fprintf() and fscanf(), fread() and fwrite() function. Writing and reading records from binary file, Appending, modifying and deleting a record from file, Random access functions fseek(), rewind(), fflush(), remove(), rename().</p> <p>Command line arguments: use of argc and argv.</p> <p>Graphics in C: Introduction: initgraph() and delectgraph() function, Drawing object in C, Line, Circle, Rectangle, Ellipse, Changing foreground & background colors, Filling object by color, outtextx() function.</p>	

Books:

- 1) Let us C Solutions : Y.P. Kanetkar [bpb publication]
- 2) Programming in C : E. Balagurusamy. [Tata macgraw hill]
- 3) Programming in C : Goterfried [Shaums Series]
- 4) Graphics Under C : Y. Kanetkar
- 5) Spirit of "C" : Moolish Kooper.
- 1) Test your Skills in C : Y.Kanetkar

Paper No.: CS08

B.Sc.(C.S.) (Opt.) Semester : III

Paper title: Data Structure

Unit -I	
Introduction to Data Structure: Introduction, Basic Terminology : Data item, Fields, Records, Files, Entity, Attributes Data Organization and Data Structure Arrays Representation of Linear Arrays, Traversing, Insertion and Deletions, Sorting & Searching Algorithms, Multidimensional Arrays : 2D & M-D Concept, Record: Record Structures, Representation in Memory	
Unit -II	
Linked List Concept of Linked List, Representation of linked List in memory, Traversing a linked list, Searching a linked list : sorted and unsorted, Insertion & Deletion in Linked List Header Linked List & Two way List.	
Unit -III	
Stacks, Queues , Recursion Stack: Operation , Array Representation of Stack, linked representation of stack, Arithmetic Expression, POLISH & POSTFIX, Application of stacks: Quicksort, Recursion. Queue: Representation of queues & link, Types of Queues : Deques & Priority Queues	

Books:

- 1) Data Structures : By Seymour Lipschutz, Tata Mcgraw- Hill Publication.
- 2) Fundamentals of Data structures, by Horowitz and Sahani (Galgotia Publications).
- 3) An introduction to data structures and application, by Jean Paul Tremblay & P at G. Sorenson (McGraw Hill).
- 4) Data Structures, by Tannenbaum, (PHI).

Course: B.Sc.(C.S.)

Semester : III

Paper title: Practical Based on Adv. C Programming

Paper No.: CS09

1. Swapping of numbers by using call by reference.
2. Program to pass array to function.
3. Program for passing structure pointer to function.
4. String manipulation function e.g. string copy, concatenation, compare, string length, reverse.
5. Program for reading/writing text file.
6. Program for reading/writing binary file.
7. File copy program.
8. Program to modify a record from binary file.
9. Program to delete a record from binary file.
10. Program on conditional compiling.
11. Program on macro substitution.
12. Program for data conversion.
13. Program to draw simple pictures (human face, clock, hat, etc.) using graphics functions.
14. Program using command line arguments.
15. Program to demonstrate the storage class.
16. Program to sort names.

Course: B.Sc.(C.S.)

Semester : III

Paper title: Practical Based on Data Structure

Paper No.: CSO10

Assignments: Write the Program using C (if applicable) :

1. Write a program using $DIY(J,K)$ which reads a positive integer $N > 10$ and determines whether or not N is a prime number.
2. Write a program which counts the number of particular character/word in the String.
3. Write a program which reads words $WORD1$ and $WORD2$ and then replaces each occurrence of word1 in text by word2.
4. Write the programs for traversing of n item using the array.
5. Write the programs for insertion and deletion of n item using the array.
6. Implement Linear and binary search algorithm using C.
7. Implement Bubble sort using C.
8. Write the programs for traversing of n item from the linked list.
9. Write the programs for push and pop operation using the stacks.
10. Write the programs for insertion and deletion of n item from the queues.



B.Sc. (Computer Science) (Optional)
Semester IV

Paper No.: CS011

B.Sc.(C.S.) (Opt.) Semester : IV

Paper title: Programming in C++

Unit –I

Introduction of OOPs

Procedural Vs Object Oriented Programming, Basic concepts of Object Oriented Programming, Class, Object, Data Abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing. Benefits and applications of OOP, History and overview of C++, C++ program structure. Reference variables, Scope resolution operator, Member de-referencing operators. new and delete, cin and cout, The endl and setw manipulator.

Functions in C++ :

Function prototype, Call by reference (using reference variable), Return by reference, Inline function, Default arguments, Const arguments.

Unit -II

Function overloading:

Different numbers and different kinds of arguments

Objects and Classes:

Specifying a class, private and public, Defining member functions, Nesting of member function, Object as data types, Memory allocation for objects, static data members and member functions. Array of objects, Objects as function argument, returning objects, Friend function and its characteristics.

Unit –III

Constructors and Destructors:

Introduction, default and parameterized constructors, Multiple constructors in a class, Copy Constructor, Destructors

Operator Overloading:

Overloading unary operators, Rules for operator overloading, Overloading without friend function and using friend function, Overloading binary operators such as arithmetic and relational operators, Concatenating

Strings, Comparison operators.

Books:

1. Object Oriented Programming with C++ E. Balagurusamy, Tata McGraw-Hill Publishing
2. Object Oriented Programming In C++ Robert Lafore, Galgotia
3. Let us C++ YeshwantKanetkar: bpb publication

Paper No.: CSO12

B.Sc.(C.S.) (Opt.) Semester : IV

Paper title: DBMS Using SQL.

Unit –I

Basic Concept

Data Definition, Types of Data, Record and File, File based System & Processing Database System Application, Purpose of Database System Abstraction & Data Integration Three level Architecture proposal for a DBMS, Component of a DBMS: Users, Facilities & Structure, Advantageous & Disadvantageous of DBMS.

Data Modeling & Design

Data Association - Entities, Attributes & Association, Relationship among Entities, Representation of Association & Relationships

Data Model: Importance of Data Model, Types of Data Model: Relational, I-R, Semi-structured, Object-Oriented, Network & Hierarchical Data Model.

Advantageous & Disadvantageous of above model.

Unit –II

Entity-Relationship Data Model

Entity, Entity Set, Types of Entities, Strong & Weak Entity, Representation Attribute, Types of Attributes, Representation Relationship: Binary & Ternary, Representation Mapping Cardinality, Entity-Relationship Design Issues

Relational Data Model

Basic Structure of Relational Data Model, Database Schema Constraints: Integrity Rule 1 & 2

Normal Form: Anomalies, Functional Dependency, Dependency Diagram, First Normal Form, Second Normal Form, Third Normal Form, Conversion from Universal to 1 NF, 1NF to 2 NF and 2NF to 3NF.

Unit –III

Relational Algebra

Basic Operation – Union, Intersection, Difference and Cartesian Product Advanced Operation- Projection, Selection, Join (Inner and Outer) & Division Examples based on above Operation. Relation Algebraic Queries.

Introduction to Oracle

Oracle Software: Versions of Oracles, Products of Oracle, Tools of Oracle SQL: Logging to SQL/ISQL, SQL plus worksheet.

Books:

- 1) Database System Concepts (Sixth Edition) AviSilberschatz, Henry F. Korth, S. Sudarshan
- 2) An Introduction to Database Systems by Bipin C. Desai
- 3) Easy Oracle SQL: Get Started Fast Writing SQL Reports with SQL.*Plus By John Gammany.
- 4) Mastering Oracle SQL. By Sanjay Mishra, Alan Beaulieu

Course: B.Sc.(C.S.)

Semester : IV

Paper title: Practical Based on Programming in C++

Paper No.: CS013

Minimum: 12 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) (Opt.)

Semester : IV

Paper title: Practical Based on Database Management System

Paper No.: CS 014

- 1) Design five schemas for any organization like: College, school, hospital, travel agency, company, bank etc.
- 2) Normalize the above five selected schemas as per 1NF,2NF and 3NF
- 3) Draw E-R Diagram for the same.
- 4) Solve at least ten Relational Algebraic Queries

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यू./विज्ञान/अभ्यासक्रमां/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षांच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षांच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारित तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

**DR. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD**



**Revised SYLLABUS of
B.Sc. SECOND YEAR
ELECTRONICS (OPTIONAL)
(THIRD & FOURTH SEMESTER)**

{ Effective for – June- 2014 -2015 }

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.Sc. Electronics (Optional) Course Structure in Semester System (III AND IV SEMESTER)

B.Sc. Second Year

Semester	Course Code	Paper Number	Title of Paper	Credits	Marks
III	ELE-301	Paper-VII	Operational Amplifiers	03	50
	ELE-302	Paper-VIII(A) OR Paper- VIII(B)	8086 Microprocessor OR 8085 Microprocessor – I	03	50
	ELE-303	Paper-IX	Practicals based on Paper – VII	1.5	50
	ELE-304	Paper-X (A) OR Paper-X (B)	Practicals based on Paper – VIII(A) OR Practicals based on Paper – VIII(B)	1.5	50
IV	ELE-401	Paper- XI	Communication Electronics	03	50
	ELE-402	Paper-XII(A) OR Paper-XII(B)	8086 Microprocessor Interfacing OR 8085 Microprocessor – II	03	50
	ELE-403	Paper-XIII	Practicals based on Paper – XI	1.5	50
	ELE-404	Paper-XIV (A) OR Paper-XIV (B)	Practicals based on Paper – XII(A) OR Practicals based on Paper – XII(B)	1.5	50

**THE COLLEGE HAS TO SELECT EITHER VIII(A), X(A), XII(A) AND XIV(A) OR
VIII(B), X(B), XII(B) AND XIV(B) ONLY AS AN ELECTIVE.**

Note: For Theory Paper, 1 Credit = 15 Periods;
For Practical Paper, 1 Credit = 30 Periods

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B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-301 Paper – VII

(Effective from June 2014)

Title: Linear Integrated Circuits

Marks: 50

Periods: 45

Credits: 03

1. Operational Amplifier: (15 periods) [1.0 credits]

Differential amplifier-Dual input balanced output differential amplifier, block diagram of typical Op-Amp, schematic symbol, interpreting data sheet, the ideal Op-Amp, equivalent circuit of an Op-Amp, Op-Amp Parameters-Input-Impedance, Output impedance, input offset voltage, Open Loop Voltage gain, input bias current, slew rate [definitions only] open loop Op-Amp configurations

2. Operational Amplifier Applications: (15 periods) [1.0 credits]

Voltage series feedback amplifier, Voltage shunt feedback amplifier, DC and AC amplifiers, summing, scaling and averaging amplifiers, voltage to current converter (Low voltage DC voltmeter and low voltage AC voltmeter only) , integrator, differentiator, basic comparator, zero-crossing detector, Schmitt trigger

3. Oscillators: (09 periods) [0.6 credits]

Oscillator principle, oscillator types, frequency stability, phase shift oscillator, Wien Bridge oscillator, square wave generator, triangular wave generator, saw tooth wave generator, voltage controlled oscillator

4. The 555 Timer: (06 periods) [0.4 credits]

The 555 as monostable multivibrator, monostable multivibrator applications, The 555 as an astable multivibrator, astable multivibrator applications, Free running ramp generator

Books Recommended:

1. Op-Amps & Linear Integrated Circuits (Second Edition) [Chapters 1 to 4]
Ramakant Gaikwad, Prentice Hall of India
2. Electronics Principles and Applications (Fifth edition) [Chapters 1 and 2.]
John D Ryder
3. Linear Integrated Circuits D Roy Choudhry & Shail B Jain
New Age International Publishing
4. Electronic Devices (Sixth Edition) Floyd
Pearson Education
5. Op Amps & Linear Integrated Circuits James M Fiore
Thomson Learning
6. Integrated Circuits K R Botkar,
Khanna Publishers, New Delhi.

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B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-302 Paper – VIII (A)

(Effective from June 2014)

Title: 8086 MICROPROCESSOR

Marks: 50

Periods: 45

Credits: 03

- 1. The 8086 Microprocessor: (15 periods) [1.0 credits]**
Generation of Microprocessor, registered organization of 8086, features of 8086, Pin diagram (Signal Description), CPU architecture, Physical Memory Organisation general bus operation, I / O processing capability, special processor activities, minimum mode 8086 system and timing, maximum mode 8086 system and timing
- 2. The 8086 Microprocessor Instruction set: (15 periods) [1.0 credits]**
Machine language instruction formats, addressing modes of 8086, Data copy / transfer instructions, Arithmetic instructions, logical instruction, Branch instructions, loop instructions, machine control instructions, Flag manipulation instructions, Shift and rotate instructions, String instructions
- 3. Assembly language programming : (15 periods) [1.0 credits]**
Assembly language programs- addition of two numbers, addition of a series of 8 bit numbers, find the largest number from given array of 8 bit numbers, find out odd and even numbers from the given series of hexadecimal numbers, find out positive numbers and negative numbers from a given series of signed numbers, move a string of data from one location to other location, arrange given array of 8 bit numbers in ascending order, arrange given array of 8 bit numbers in descending order, one byte BCD addition, factorial of a 8 bit number, average of block of 8 / 16 bit data.

Books Recommended:

1. Advanced Microprocessors and Peripherals (Second Edition) [Chapters 1 to 3]
– A K Ray & K M Bhurchandi Tata McGraw Hill 2009
2. The INTEL Microprocessors 8086 /8088, 80186/80188, 80286, 80386, 80486,
Pentium and Pentium Processor –Barry B. Brey Printice-Hall INDIA
3. Microprocessors – S. K. Gupta Pragati Prakashan Meerut
4. Microprocessors – II –A. P. Godse Technical Publications PUNE

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B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-302 Paper – VIII (B)

(Effective from June 2014)

Title: 8085 MICROPROCESSOR – I

Marks: 50

Periods: 45

Credits: 03

- 1. Microprocessor Architecture and Organisation: (09 periods) [0.6 credits]**
The ideal microprocessor, architecture of microprocessor, organisation of microprocessor, features of Intel 8085, 8085 functional pin description, 8085 CPU architecture
- 2. The Configuration: (09 periods) [0.6 credits]**
Demultiplexing $AD_7 - AD_0$, generation of control signals, 8085 clock circuit, basic 8085 microprocessor unit, 8085 instruction fetching and execution operation
- 3. 8085 Instruction Set : (12 periods) [0.8 credits]**
Instruction formats, addressing modes, op-code format, classification of instruction set, instruction set
- 4. 8085 Programming: (15 periods) [1.0 credits]**
Programming technique, simple programs, concept of looping,

Books Recommended:

1. 8 - bit Microprocessors System Design – V J Vibhte & P B Borole
[Chapters 1 to 4] Technova Publications, PUNE
2. Microprocessor Architecture, Programming, and Applications with the **8085**
(5th Edition) –Ramesh S. Gaonkar Penram International Publishing.
3. Microprocessors –I –A. P. Godse Technical Publications PUNE

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B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-303 Paper – IX (Practical) [1.5 credits]

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 07 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments

(Marks 50)

1. Study of Op – Amp as a non inverting amplifier.
2. Study of Op – Amp as an inverting amplifier.
3. Study of Op – Amp as an inverting adder.
4. Study of Op – Amp as an inverting subtractor.
5. Study of Op – Amp as an integrator.
6. Study of Op – Amp as a differentiator.
7. Study of Op – Amp as a Schmitt trigger.
8. Study of Op – Amp as an analog computer to solve simple equation.
9. Study of Op – Amp as Low voltage DC voltmeter
10. Built and study Wien Bridge oscillator using Op – Amp.
11. Built and study phase shift oscillator using Op – Amp.

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B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-304 Paper – X [A] [1.5 credits]

(Practicals based on 8086)

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 07 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments

(Marks 50)

1. Assembly language program to find sum of 8 bit numbers.
2. Assembly language program to find sum of 8 bit numbers in a given array.
3. Assembly language program to find out positive numbers and negative numbers from a given series of signed numbers.
4. Assembly language program to find average of block of data containing N numbers.
5. Assembly language program to determine whether the number is even or odd. If the number is odd, copy 00 to ML ----- otherwise copy EE.
6. Assembly language program to move a string of data from one location to other location.
7. Assembly language program to find a factorial of 8 bit number.
8. Assembly language program to find square root of a 16 bit number.
9. Assembly language program to perform one byte BCD addition.
10. Assembly language program to arrange given array of 8 bit elements in ascending order.
11. Assembly language program to arrange given array of 16 bit elements in descending order.
12. Assembly language program to add two multi-byte numbers and store the result as a third number.

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B. SC. FOURTH SEMESTER

Subject: ELECTRONICS

Course: ELE-304 Paper – X [B] [1.5 credits]
(Practicals based on 8085)

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 07 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments

(Marks 50)

1. Assembly language program to find sum of two 8 bit numbers.
2. Assembly language program to find sum of 8 bit numbers in a given array.
3. Assembly language program to find difference of two given numbers.
4. Assembly language program to find largest number in a block of data containing N numbers.
5. Assembly language program to find smallest number in a block of data containing N numbers.
6. Assembly language program to move a block of data from one location to other location.
7. Assembly language program to find a factorial of 8 bit number.
8. Assembly language program to find sum of two 16 bit numbers.
9. Assembly language program to perform one byte BCD addition.
10. Assembly language program to multiply two single byte numbers.

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B. SC. FOURTH SEMESTER

Subject : ELECTRONICS

Course: ELE-401 Paper - XI

(Effective from June 2014)

Title: COMMUNICATION ELECTRONICS

Marks: 50

Periods: 45

Credits: 03

- 1. Types of Modulation: (15 periods) [1.0 credits]**
Amplitude modulation, expression for amplitude modulated voltage, waveforms of amplitude modulated voltage, sidebands produced in amplitude modulated wave, Frequency modulation, expression for frequency modulated voltage, waveforms of frequency modulated voltage, sidebands produced in frequency modulated wave, Phase modulation, comparison of frequency modulated and phase modulated expressions
- 2. Pulse Modulation: (06 periods) [0.4 credits]**
Pulse amplitude modulation, pulse code modulation, pulse frequency modulation, pulse position modulation, pulse width modulation
- 3. Modulation and Detection: (12 periods) [0.8 credits]**
Amplitude modulation theory, Square Law modulation, class C linear diode detector, varactor diode frequency modulator, Armstrong modulator, phase discriminator, AM transmitter, Superheterodyne receiver
- 4. Digital Communication: (12 periods) [0.8credits]**
Synchronization, Asynchronous transmission, Probability of error in base-band transmission, Matched filter, Bit timing recovery, Digital carrier system, amplitude shift keying, frequency shift keying, phase shift keying, differential phase shift keying

Books Recommended:

- 1) Electronics and Radio Engineering – M L Gupta (Chapters 1, 2 and 3)
Dhanpat Rai & Sons
- 2) Electronic Communications [IV Edition] –Dennis Roddy & J Coolen,
(Chapters 2, and 4) PHI Private Ltd. New Delhi
- 3) Advanced Electronic Communication Systems –Wayne Tomasi,
PHI publication 2001.
- 4) Introduction to Telecommunication –A A Gokhale, Thomson Learning

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B. SC. FOURTH SEMESTER
Subject: ELECTRONICS
Course: ELE – 402 Paper – XII(A)

(Effective from June 2014)

Title: 8086 MICROPROCESSOR INTERFACING

Marks: 50

Periods: 45

Credits: 03

- 1. Interfacing of memory and I/O** **(09 Periods) [0.6 credits]**
Semiconductor memory interfacing, static RAM interfacing, dynamic RAM interfacing, interfacing I/O ports
- 2. Programmable Input – Output 8255:** **(12 Periods) [0.8 credits]**
Features of 8255, PIO 8255 pin diagram and architecture, modes of operation of 8255, Interfacing ADC, interfacing of DAC, stepper motor interfacing
- 3. Communication Interface:** **(12 Periods) [0.8 credits]**
Features of 8251, Methods of data communication, architecture and signal description, operating modes, interfacing and programming of 8251
- 4. Programmable Interval Timer:** **(12 Periods) [0.8 credits]**
Features of 8253 Pin diagram and architecture, control word, operating modes, programming and interfacing 8253.

Books Recommended:

1. Advanced Microprocessors and Peripherals (Second Edition) [chapters 1 to 4]
– A K Ray & K M Bhurchandi Tata McGraw Hill 2009
2. The INTEL Microprocessors 8086 /8088, 80186/80188, 80286, 80386, 80486,
Pentium and Pentium Processor –Barry B. Brey Printice-Hall INDIA
3. Microprocessors – S. K. Gupta Pragati Prakashan Meerut
4. Microprocessors – II –A. P. Godse Technical Publications Pune

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B. SC. FOURTH SEMESTER

Subject: ELECTRONICS

Course: ELE-402 Paper – XII (B)

(Effective from June 2014)

Title: 8085 MICROPROCESSOR – II

Marks: 50

Periods: 45

Credits: 03

- 1. Instruction Timing and Operations: (12 periods) [0.8 credits]**
Introduction to machine cycle, machine cycles, timing diagram, 8085 wait, hold and halt states, 8085 transition state diagram
- 2. Stack and Subroutine: (15 periods) [1.0 credits]**
Stack, use of stack for programmer, advanced stack related instructions, use of stack by microprocessor subroutines, Call address and RET instructions, parameter passing techniques, subroutine documentation, conditional call and return instructions
- 3. I / O Data Transfer Techniques: (09 periods) [0.6 credits]**
Microprocessor controlled transfer, hand shake I / O data transfer techniques
- 4. 8085 Interrupts : (09 periods) [0.6credits]**
Interrupt system, types of interrupts, 8085 interrupt structure, interrupt logic control instructions, priority interrupt structures

Books Recommended:

1. 8 - bit Microprocessors System Design – V J Vibhte & P B Borole
[Chapters 1 to 4] Technova Publications, PUNE
2. Microprocessor Architecture, Programming, and Applications with the **8085**
(5th Edition) –Ramesh S. Gaonkar Penram International Publishing
3. Microprocessors –I –A. P. Godse Technical Publications PUNE

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B. SC. FOURTH SEMESTER

Subject: ELECTRONICS

Course: ELE-403

Paper –XIII (Practical) [1.5 credits]

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

VII – A: Experiments

(Marks 30)

1. Built and study astable multivibrator using IC 555.
2. Built and study monostable multivibrator using IC 555.
3. Built and study free running ramp generator.
4. Study of amplitude modulation using transistor.
5. Study of AM detector using diode.
6. Study of F M modulation using IC.
7. Study of F M detector using IC.
8. Study of Balance modulator.

VII – B: Project

(Marks 20)

Every student should construct one project based on the syllabus of Third and Fourth Semester. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

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B. SC. FOURTH SEMESTER

Subject: ELECTRONICS

Course: ELE-404 Paper – XIV [A] [1.5 credits]
(Practicals using 8086)
(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

VIII – A: Experiments

(Marks 30)

1. Interface 8 LED and 8 switches & write ALP to display status of switch using 8255.
2. Write a program for 8 bit binary UP counter and implement it using 8255.
3. Write a program for 8 bit binary DOWN counter and implement it using 8255.
4. Write a program to acquire 8 – bit data from an ADC and implement it using 8255.
5. Interface Hex Key board and seven segment display to display key pressed on seven segment display.
6. Write ALP to generate triangular waveform of frequency 500 HZ using DAC 0800 with 8255 & 8086 microprocessor.
7. Design stepper motor controller and write an ALP to rotate shaft of stepper motor in clockwise direction (5 rotations) & anticlockwise direction (5 rotations).
8. Study of modes '0' of 8253.
9. Study of modes '1' of 8253.
10. Study of modes '2' of 8253.

VIII – B: Project

(Marks 20)

Every student should construct one project based on the syllabus of Third and Fourth Semester. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

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B. SC. FOURTH SEMESTER

Subject: ELECTRONICS

Course: ELE-404 Paper – XIV [B] [1.5 credits]
(Practicals based on 8085)

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

VIII – A: Experiments

(Marks 30)

1. Assembly language program to add first ten even hexadecimal numbers and store the result in D register.
2. Assembly language program to find square of a single digit number.
3. Assembly language program to move a block of data from one location to other location in reverse order.
4. Assembly language program to find positive numbers in an array of ten elements. Store the result at -----.
5. Assembly language program to add two multi byte hex numbers. Each number consists of four bytes.
6. Assembly language program to divide a number by another number. Store the result in one register and remainder in another register.
7. Assembly language program to find first two highest numbers from a given array of 16 numbers.
8. Assembly language program to arrange given array of 8 bit elements in ascending order.
9. Assembly language program to arrange given array of 16 bit elements in descending order.

VIII – B: Project

(Marks 20)

Every student should construct one project based on the syllabus of third and Fourth Semester. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

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Faculty of Science

B. SC. FIRST SEMESTER

Subject: ELECTRONICS

Course: ELE-301

Paper –VII

(Effective from June 2014)

Title: Linear Integrated Circuits

PAPER PATTERN (THEORY)

Time: Three Hours

Max. Marks: 50

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- N.B.: (i) Attempt *All* questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.
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-

Q.1 Attempt any one:

- (a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:

- (a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:

- (a) Chapter No. 3 (10)
(b) Chapter No. 4 (10)

Q.4 Write note on any two:

- (a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No.3 (05)
(d) Chapter No.4 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS SHOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

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Faculty of Science

B. SC. FIRST SEMESTER

Subject: ELECTRONICS

Course: ELE-302 Paper –VIII (A)
(Effective from June 2014)

Title: ~~8086~~ MICROPROCESSOR
Paper pattern (Theory)

Time: Three Hours

Max. Marks: 50

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- N.B.: (i) Attempt *All* questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.
-
-

Q.1 Attempt any one:

- (a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:

- (a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:

- (a) Chapter No. 3 (10)
(b) Chapter No. 1 (10)

Q.4 Write note on any two:

- (a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 1 (05)
(d) Chapter No. 2 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS SHOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science

B. SC. FIRST SEMESTER

Subject: ELECTRONICS

Course: ELE-302 Paper –VIII (B)
(Effective from June 2014)

Title: ~~8085~~ MICROPROCESSOR – I
Paper pattern (Theory)

Time: Three Hours

Max. Marks: 50

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- N.B.: (i) Attempt *All* questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.
-
-

- Q.1 Attempt any one:
- | | |
|-------------------|------|
| (a) Chapter No. 1 | (10) |
| (b) Chapter No. 2 | (10) |

- Q.2 Attempt any one:
- | | |
|-------------------|------|
| (a) Chapter No. 2 | (10) |
| (b) Chapter No. 3 | (10) |

- Q.3 Attempt any one:
- | | |
|-------------------|------|
| (a) Chapter No. 3 | (10) |
| (b) Chapter No. 1 | (10) |

- Q.4 Write note on any two:
- | | |
|-------------------|------|
| (a) Chapter No. 1 | (05) |
| (b) Chapter No. 2 | (05) |
| (c) Chapter No. 1 | (05) |
| (d) Chapter No. 2 | (05) |

- Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS SHOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
Faculty of Science **B. SC. FIRST SEMESTER**
Subject: ELECTRONICS

Course: ELE-401 Paper –XI
(Effective from June 2014)

Title: COMMUNICATION ELECTRONICS
PAPER PATTERN (THEORY)

Time: Three Hours

Max. Marks: 50

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- N.B.: (i) Attempt *All* questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.
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- Q.1 Attempt any one:
- (a) Chapter No. 1 (10)
 - (b) Chapter No. 2 (10)
- Q.2 Attempt any one:
- (a) Chapter No. 2 (10)
 - (b) Chapter No. 3 (10)
- Q.3 Attempt any one:
- (a) Chapter No. 3 (10)
 - (b) Chapter No. 4 (10)
- Q.4 Write note on any two:
- (a) Chapter No. 1 (05)
 - (b) Chapter No. 2 (05)
 - (c) Chapter No. 3 (05)
 - (d) Chapter No. 4 (05)
- Q.5 Attempt the following: (10)
- TEN MULTIPLE CHOICE QUESTIONS SHOULD BE ASKED WITH SINGLE CORRECT ANSWER.
FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science

B. SC. FIRST SEMESTER

Subject: ELECTRONICS

Course: ELE-402 Paper –XII(A)
(Effective from June 2014)

**Title: 8086 MICROPROCESSOR INTERFACING
PAPER PATTERN (THEORY)**

Time: Three Hours

Max. Marks: 50

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- N.B.: (i) Attempt *All* questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.
-
-

Q.1 Attempt any one:

- (a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:

- (a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:

- (a) Chapter No. 3 (10)
(b) Chapter No. 4 (10)

Q.4 Write note on any two:

- (a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No.3 (05)
(d) Chapter No.4 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS SHOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science

B. SC. FIRST SEMESTER

Subject: ELECTRONICS

Course: ELE-402 Paper –XII(B)
(Effective from June 2014)

Title: 8085 MICROPROCESSOR-II
PAPER PATTERN (THEORY)

Time: Three Hours

Max. Marks: 50

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- N.B.: (i) Attempt *All* questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.
-
-

- Q.1 Attempt any one:
- | | |
|-------------------|------|
| (a) Chapter No. 1 | (10) |
| (b) Chapter No. 2 | (10) |
- Q.2 Attempt any one:
- | | |
|-------------------|------|
| (a) Chapter No. 2 | (10) |
| (b) Chapter No. 3 | (10) |
- Q.3 Attempt any one:
- | | |
|-------------------|------|
| (a) Chapter No. 3 | (10) |
| (b) Chapter No. 4 | (10) |
- Q.4 Write note on any two:
- | | |
|-------------------|------|
| (a) Chapter No. 1 | (05) |
| (b) Chapter No. 2 | (05) |
| (c) Chapter No.3 | (05) |
| (d) Chapter No.4 | (05) |
- Q.5 Attempt the following: (10)
- TEN MULTIPLE CHOICE QUESTIONS SHOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

==**==

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद**परिपत्रक क्रमांक/एस.ए./विज्ञान/अभ्यासक्रम/७४/२०१४**

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारित तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

2014-2015 All other regulations from Faculty of Science & Humanities

21:

[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयद्वारे नवीन परिपत्रक पारित करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक याना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करून देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्षा अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्षा अधिकारी, बी.ए. / बी.एससी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
 - ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

**D R. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



**Revised Syllabus of
B.Sc. Second Year
Geology [Optional]
Semester- III & IV
Effective for-2014 - 2015**

B.Sc. IInd Year Geology , Semester IIIrd & IV. Course Structure

Year	Semester	Paper No.	Title	Hours	Marks
IInd	IIIrd	Paper-VII	Physical-Mineralogy & Igneous Petrology	45	50
		Paper –VIII	Crystallography & Optical Mineralogy.	45	50
		Paper –IX	Practical-Physical Mineralogy and Igneous petrology	45	50
		Paper –X	Practical-Crystallography and optical mineralogy	45	50
	IVth	Paper XI	Sedimentary & Metamorphic Petrology	45	50
		Paper XII	Structural Geology & Paleontology	45	50
		Paper XIII	Practical-Sedimentary and Metamorphic Petrology	45	50
		Paper XIV	Practical-Structural Geology and Palaeontology	45	50

Semester III
Paper – VII Physical – Mineralogy and Igneous Petrology

Sr. No.	Syllabus	No. of Lectures
1.	Broad outline of crystalline and non-crystalline minerals	2
2.	Classification of Silicates	2
3.	Study of the following rock forming silicates groups 1. Olivine 2. Pyroxene, 3. Amphibole 4. Mica 5. Garnet 6. Feldspar 7. Silica, Secondary minerals in basalt, Precious & semiprecious stones	18
4.	Physico-chemical constitution of magma Diversity of Igneous rocks. Concept of Primary magma. Crystallization of unicomponent, bicomponent and ternary magma Bowens reaction series.	8
5.	Igneous textures and microstructures a) Definition, factors determinative of textures of rock. b) Study of various textures with respective characters and genesis c) Study of various structures and microstructures with respect to characters and genesis	8
6.	Study of basic and ultra basic rocks fractional crystallization of basaltic and granitic magma, Differentiation & assimilation of magma	7
	Total No. of Lectures	45

Books

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|--|--------------------------|
| 1. Text book of Geology | Mahapatra |
| 2. Ruttey's Elements of Mineralogy | H. H. Read |
| 3. Mineralogy | I. G. Berry and B Mascon |
| 4. Crystal Minerals and rocks | K. G. Cox |
| 5. A Text book of mineralogy | E. S. Dana |
| 6. Rock forming Minerals | Deer, Howie Zussman |
| 7. Mineralogy and Petrography | A. V. Milorsky |
| 8. Principles of Petrology | G. W. Tyrrel |
| 9. Petrology Igneous Sedimentary and Metamorphic | E. G. Ehler |
| 10. Igneous and Metamorphic Petrology | Turner & Verhogen |

Semester III
Paper – VIII Crystallography and optical mineralogy

Sr. No.	Syllabus	No. of Lectures
1.	Definition of crystal. Crystallographic and geometrical symmetry. Imperfections in crystals. Law of constancy of Interfacial angle.	4
2.	Study of elements of symmetry and forms occurring in hemihedral classes a) Cubic System : Pyrite type and Tetrahedrite type b) Hexagonal System : Calcite type, Quartz type and tourmaline type	10
3.	Concept of hemihedrism hemimorphism enantiomorphism, Tetrahedrism, Definition of twinning, Twinning laws in different crystal classes	6
4.	Nature of light Ordinary and plane polarized light Double refraction. Nicol prisms their construction and function. Different parts of petro logical microscope and their function	8
5.	Optical properties of minerals as viewed under plane polarized light and cross nicols isotropism and anisotropism	8
6.	Types of extinction. Extinction positions of minerals in different crystal system	2
7.	Observation of mineral sections under conosopic light study of uniaxial and biaxial interference figures, Use of accessory plates & their application	7
	Total No. of lectures	45

Recommended books

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|----|---|------------------|
| 1. | Optical Crystallography | Wahistrom |
| 2. | A hand book of minerals, Crystals, Rocks and ores | Pramod Alexander |
| 3. | Optical Mineralogy | Winchell |
| 4. | Optical Mineralogy | Royer and Kerr |
| 5. | Crystals, Minerals and Rocks | K. G. Cox |

Semester III
Practical Paper – IX Physical Mineralogy and Igneous petrology.

Sr. No.	Syllabus	No. of Practicals
1.	Physical mineralogy : In addition to B.Sc. Ist year megascopic identification of following minerals with the help of physical properties. Apatite, Topaz, Corundum, Tour maline, Andalusite sillimanite, olivine, staurolite, Chlorite, Asbestos, phlogopite, lepidolite Epidote, Rhodonite, Soda lite serpentine, wavellite hypersthene Thomosnite Natrolite.	6
2.	Igneous petrology In addition to B. Sc. 1 st megascopic study of the following igneous rocks. Diorite, Syenite, Dunite, Peridotite Norite, Pegmatite, Graphic granite dolerite lamprophyre, Trachyte Andesite and varieties of basalt. Study of thin section of following igneous rocks Granite, Porphyritic Granite, Diorite, Syenite, Rhyolite, Andesite, Basalt, Porphyritic basalt, Amygdaloidal basalt, Trachyte, Dolerite, Gabbro	9
	Total Practicals	15

Semester III
Practical Paper – X Crystallography and optical mineralogy.

Sr. No.	Syllabus	No. of Practicals
1.	Crystallography Study of axial characters, elements of symmetry and forms occurring in the crystal models belonging to the five lower symmetry classes pyrite type, Tetrahedrite type calcite type tourmaline type and quartz type	5
2.	Study of models related to twinning laws in the six crystal systems (only common twin models)	2
3.	Identification of following mineral sections with the help of optical properties under petrological microscope Quartz, orthoclase, plagioclase, Microcline calcite Augite, Diopside Hornblende muscovite Biotite sillimanite kyanite Oliveine Garnet chlorite	5
4.	Identification of uniaxial and Biaxial Interference figures under conoscopic light	3
	Total Practicals	15

Semester IV
Paper – XI – Sedimentary and Metamorphic Petrology

Sr. No.	Syllabus	No. of Lectures
1.	Mineral composition of sediments. Concept of interstitial matrix and cementing materials and their effect on porosity and permeability	5
2.	Textures of sedimentary rocks wentworth and udden grade scale, roundness and sphericity kind of transport of sediments	5
3.	Lithification and diagenesis. Brief outline of diagenetic processes. Important mechanical and chemical structures found in sedimentary rocks	8
4.	Study of following secondary deposits with respect to their texture / structure mineral composition and varieties a) Residual Laterite, Bauxite and soil b) Rudaceous conglomerate and Breccia c) Arenaceous – sandstones d) Argillaceous – shales and Mud stone e) Chemical deposits f) Organic deposits	10
5.	Metamorphism, Difference between diagenesis, metamorphism and metasomatism. Metamorphic minerals textures of metamorphic rocks.	2
6	Metamorphism and Metamorphic products a) Regional metamorphism of i) Argillaceous rocks ii) Quartzofelspathic rocks iii) Basic igneous rocks b) Cataclasis, crush breccia, crush conglomerate, cataclasite c) Thermal metamorphism of i) Pure and impure limestones ii) Arenaceous rocks	15
	Total No. of Lectures	45

Semester IV
Paper – XII – Structural Geology and Paleontology

Sr. No.	Syllabus	No. of Lectures
1.	Introduction to structural Geology A) Definition and its relation with other branches of Geology B) Tectonic and non-tectonic structures	2
2.	Planar, Linear Structures outlier and inlier a) Attitude of planar feature strike and dip b) Attitude of linear features; bearing plunge and rake of linear feature in given planar feature. c) Outlier and inlier definition and genesis d) Clinometer compass and its application.	3
3.	Folds : a) Definition, nomenclature of folds. b) Classification of fold geometric, genetic and non tectonic folds	8
4.	Joints a) Definition and nomenclature of joints b) Geometric and genetic classification of joints with examples	3
5.	Faults a) Definition and nomenclature related to faults. b) Geometric and genetic classification of fault. Recognition of faults in the field and geological map.	10
6.	Unconformity Definition, stages in the development of unconformity structural classification of unconformities Recognition of unconformity in the field	6
7.	Determination of top and bottom of a bed with the help of primary structures and interpretation of major structure with which they are associated	3
8.	Palaeontology a) Significance of fossils, index and zonal guide fossils b) Morphological features of trilobites, graptolites & foraminifera. Their geographical distribution and geological history c) Introduction to Gondwana plant fossils. d) Introduction to micropalaeontology & their applications in stratigraphy	10
	Total No of Lectures	45

Books

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|----|--------------------|----------------|
| 1. | Structural Geology | M. P. Billings |
| 2. | Structural Geology | Desitter |
| 3. | Structural Geology | Nevin |

Semester IV
 Practical Paper – XIII – Sedimentary and Metamorphic Petrology

Sr. No.	Syllabus	No. of Practicals
1.	In addition to the syllabus of B. Sc. Ist. year Megascopic study of the following sedimentary rocks and their identification, gragwacke, grit, flagstone, carbonaceous shale Black limestone, Shelly limestone, coral limestone.	4
2.	In addition to the syllabus of Ist year Magascopic study of the following metamorphic rocks and their identification. Pink marble, Serpentine marble, Sachharoidal marble, Mica granet schist, Fuchsite quartzite, Staurotite schist, kyanite schist, Hornblende Biotite gneiss, granite gneiss, Augen gneiss Banded gneiss, Amphibolite schor rock.	5
3.	Microscopic study of the following rocks and their identification. Sandstone, ferruginous sandstone. Limestone, organic limestone, Marble, quartzite, Muscovite schist, chlorite schist, Honblende schist, Hornblende Biotite gneiss, Augen gneiss, staurolite schist, Garnetiferous mica schist.	6
	Total No of Practical	15

Semester IV
 Practical Paper – XIV– Structural Geology and Palaeontology

Sr. No.	Syllabus	No. of Practicals
1.	Study of Geological maps; inclined beds, unconformity igneous intrusions, fold and fault. Structural problem. Attitude of beds or orthographic and stereo graphic problems.	8
2.	Study of the following invertebrate fossils and their identifications Lamellibranchia - Gryphaea, exogyra, ostrea, Alectryonia, Pecten, Inoceramus Gastropoda – Physa Cephalopoda - Nautilus, Perisphinetes, Goniatites, Ceratites, Acanthoceras, Phylloceras, Belemnites Brachiopoda - Products, spirifer, Lingula Echinoidea - Cidaris, Micraster Trilobita - Phacops , Calymene, Paradoxides Gondwana plant fossils Glossopteris, calamities ptillophyllum, Gangamopteris vertebraria	7
3.	Geological excursion of one week in selected area, Report writing and sample collection.	
	Total No. of practicals	15

FACULTY OF SCIENCE
B.Sc. (Third Semester) Examination
GEOLOGY
Practical Paper-IX
Physical Mineralogy and Igneous Petrology

Time-2 Hours

Maximum Marks-50

“Please check whether you have to the right question Paper”

- N.B.:- (i) Question No.1 is Compulsory.
(ii) Solve any two questions from 2,3 & 4 and two questions from 5, 6 & 7
(iii) Use only blue or black pen.
(iv) All questions carry equal marks.

1.	Multiple choice question (All Syllabus)	10
2.	Descriptive	10
3.	Descriptive	10
4.	Short Notes	10
5.	Descriptive	10
6.	Descriptive	10
7.	Short Notes	10

FACULTY OF SCIENCE
B.Sc. (Third Semester) Examination
GEOLOGY
Practical Paper-X
(Crystallography and Optical Mineralogy)

Time-2 Hours

Maximum Marks-50

“Please check whether you have to the right question Paper”

- N.B.:- (i) Question No. 1 is Compulsory.
(ii) Solve any two questions from 2, 3 & 4 and two questions from 5, 6 & 7
(iii) Use only blue or black pen.
(iv) All questions carry equal marks.

1.	Multiple choice question (All Syllabus)	10
2.	Descriptive	10
3.	Descriptive	10
4.	Short Notes	10
5.	Descriptive	10
6.	Descriptive	10
7.	Short Notes	10

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यू./विज्ञान/अभ्यासक्रम/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४,
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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X
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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ,

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करून देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्षा अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्षा अधिकारी, बी.ए. / बी.एससी./ बी.सी.एस./एम.एससी. विभाग, परीक्षा भवन,
 - ८) अमिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.



Revised Syllabus of

B. Sc. Second Year

Fishery Science

[Optional]

(Semester – III & IV)

(Effective for June 2014-2015)

BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
AURANGABAD.
FISHERY SCIENCE.
SYLLABUS
B.Sc.II (Semester III and IV)

(Revised Syllabus effective form June 2014.)

Semester	Course Code	Paper	Title of the paper	Periods	Marks
III	Fish. Sci.107	VII	Capture Fisheries	45	50
III	Fish. Sci.108	VIII	Culture Fisheries- I	45	50
III	Fish. Sci.109	IX	Practical's Based on Paper VII	45	50
III	Fish. Sci.110	X	Practical's Based on PaperVIII	45	50
IV	Fish. Sci.111	XI	Fish Technology and population dynamics	45	50
IV	Fish. Sci.112	XII	Culture Fisheries – II Aquarium Management	45	50
IV	Fish. Sci.113	XIII	Practical's based on paper-XI	45	50
IV	Fish. Sci.114	XIV	Practical's based on paper-XII	45	50

B.Sc. (Fishery Science)

Semester – III

Capture Fisheries

Paper – VII

Unit-A	1) Inland Fisheries resources of India	(8)
	Riverine Fisheries – The Ganga river system, Brahmaputra river system, East coast river system. West coast river system. Reservoir fisheries Cold water fisheries	
	2) Estuarine fisheries resources of India.	(6)
	Principle fisheries of brackish water. Fisheries of Chilka, Pulicat and Kolleru Lake.	
Unit -B	1) Marine capture fisheries resources of India	(20)
	Commercially important fisheries in India (Taxonomy; distribution, food and feeding ,methods of catching and Catch trends of the following fisheries Oil Sardine fishery Mackerel fishery Bombay duck fishery Pomfret fishery Sole fishery Hilsa fishery.	
Unit – C	1) Fisheries of Non fish organisms.	(11)
	Prawn and Shrimp capture fishery Crab capture fishery Molluscan fisheries Chank fisheries.	

Total = 45

B.Sc. (Fishery Science)

Semester – III

Culture Fisheries- I

Paper – VIII

Unit – A	1) Introduction and history of aquaculture	(2)
	2) Purpose, importance and advantages of aquaculture	(2)
	3) Fresh water fish culture	(8)
	Planning, layout and construction of fish farm	
	Procurement of fish seed by induced breeding	
	Technique and hatcheries (Happa, Chinese hatchery, CIFE D- 80 and D-86 model)	
	Characteristics of cultivable species (major carps And Exotic carps)	(5)
Unit – B	1) Preparation and management of nursery,	
	Rearing and stocking ponds	
	Predatory and weed fishes and their control	(2)
	Fertilization of the pond	(2)
	Aquatic weeds and their control	(3)
	Fish food organisms and their production	(2)
	Stocking, artificial feeding and harvesting	(3)
	2) Brackish water fish culture	
	Construction and management of brackish water Fish farm	(3)
	Bhasa- Bhada and Non – Gheri farms.	(2)
	Milk fish, Mullet and Tilapia culture.	(6)
	3) Culture of Air Breathing fishes.	(5)

Total = 45

B.Sc. (Fishery Science)**Semester – III****Practical based on Theory Paper- VII****Paper – IX**

Unit- A	1) Study of Inland Capture Fishes	(06)
	a) Other carps (Any Three)	
	b) Cat fishes (Any Three)	
	c) Clupeids (Any Three)	
	d) Other miscellaneous fishes (Any three)	
	2) Study of Marine and brackish water Fishes	(05)
	<i>Rastrelliger kanagurta, Sardinella.</i>	
	<i>Longiceps, Harpodon nehereus, Pampus –</i>	
	<i>Argenteas, Cynilossus spp. Trichurus sp.</i>	
	<i>Polynemous sp. Chonos, Mugil corsula, Hilsa ilisha</i>	
	3) Study of Non Fish organisms.	(04)
	Prawns, Lobsters, Crabs, Shrimps, Edible oyster,	
	Chank, Sea weed (Gracillaria, Sargassum,	
	Digenia)	
	4) Collection of fish species from different areas.	
	The same should be submitted at time of Practical exam.	
		Total (15)

B.Sc. (Fishery Science)**Semester – III****Practical based on Theory Paper – XIII****Paper No- X****Unit – A 1) Identification, Classification and Culturable
Significance of the following****a) Fresh water fishes- (4)**

Catla catla, Labeo rohita, Cirrhina mrigala

Cyprinus carpio, Channa Sp. Notopterus

Sp., Clarius batrachus, Heteropheustes

Fossilis.

b) Brackish Water Fishes – (1)

Tilapia mossambica, Mugli cephalus,

Chanos chanos.

c) Non Fish organisms – (3)

i) Prawns – *Macrobrachium rosenbergii* And *Penaeus sp.*

ii) Lobsters

iii) Mussels – *Mytilus Sp.*

2) Identification and Mounting of plankton – (3)

i) Phytoplankton (Any Three)

ii) Zooplankton (Any Three)

3) Identification of Aquatic insects – (4)

Dragonfly (Nymph), Anisop, Ranatra, Balostoma,
Dytiscus

4) Submission of Plankton slides and collection of Fish species, fish food and fertilizers. (15)**B.Sc. (Fishery Science)****Semester – IV****Fish Technology and Population Dynamics****Paper – XI****Unit – A 1) Fishing Craft (5)**

- a) Catamaran b) Satpati c) Musula
d) Machwa e) Tuticorin

2) Fishing Gears

- A) a) Spear and harpoon
b) Fish poison
c) Hook and lines d) Fish traps
e) Types of nets- Dip net or lift net, Cast net, Purse Seine net, Trawl or Drag net and Bag net.

B) Preservation of Gears (12)**Unit – B 1) Preservation and Processing of fish**

Methods of Fish Preservation – Chilling,

Freezing, Freeze drying, sun-drying, smoking,

Salting, brining and canning; use of chemical and Radiation. (16)

2) Fish Population

Structure of population

Estimation of fish population

(Direct / Indirect methods)

Population dynamics (fluctuation) (4)

Unit – C 1) Different stages of wooden boat – construction (6)

Lofting, setting up the back bone assembly,

Temple fixation, planking, farming, Deck laying,

Mechanical and electrical installations.

2) Care and maintenance of boats (2)**45**

B.Sc. (Fishery Science)**Semester – IV****Culture Fisheries – II and Aquarium Management****Paper – XII**

Unit – A	1) Mari Culture	
	Cultivable Crustacean resources and their culture	(06)
	i) Prawn	
	ii) Crabs	
	Cultivable Molluscan resources and their culture	(08)
	i)Mussels ii) Edible oyster	
	iii) Pearl oyster iv)Sea weed culture	
	2) Fish Culture Methods –	
	Pen culture	
	Cage culture	
	Sewage fed fish culture	(06)
Unit –B	1) Integrated fish farming practices	
	Paddy cum fish culture	
	Poultry cum fish culture	
	Live stock fish culture	(06)
Unit – C	1) Aquarium Management	
	Setting of aquarium (Gravels/Pebbles, Plants	
	Fishes and Ornamental objects)	(06)
	Selection of aquarium fishes and plants	(05)
	Maintenance of Aquarium – Cleaning, Water	(05)
	Quality, Control of algal growth Common	
	Diseases and treatment of aquarium fishes.	(03)

Total-45

B.Sc. (Fishery Science)

Semester – IV

Practical based on Theory Paper – XI

Paper no – XIII

- 1) **Study of fishing crafts (Models) Catamaran, Machwa, Satpati, Masula, and Tuticorine Type. (2)**
- 2) **Study of fishing gears (Models) Harpoon, Hook and lines, Dip net, cast net Gill net, Drag net. (2)**
- 3) **Preservation of fish by sun drying and salting. (2)**
- 4) **Identification of fishing materials (3)**
 - a) Types of floats and sinkers
 - i) Glass
 - ii) Aluminium, Steel, HDP, Lead, Iron Chain
 - b) Fishing gear accessories –
 - i) Anchor shackle, Iron Sooivel, Marline spike, Thimble, G.link, Hook, Purse ring.
- 5) **Make the following knots, Hitches and Bends in fishing gear. (3)**
 - a) Knot- Overhand knot, Reef knot sheep Shank knot, figure of eight knot.
 - b) Hitches – Rolling hitch, Two half hitch, Marline hitch, Round turn and two half hitch, Clove hitch.
 - c) Bends – Single sheet bend, Double sheet bend, Fishermen bend.

- 6) Survey of Inland fishery resources of local reservoir and student should be submitting a project report at the time of practical exam. (3)**
- 7) Submission of fishing gear.**

Total-15

B.Sc. (Fishery Science)

Semester - IV

Practical based on Theory Paper – XII

Paper No- XIV

i) **Identification of predatory and weed fishes.**

ii) Predatory fishes- Wallago, Anabus, Ophiocephallus, **Mystus** (1)

iii) Weed fishes – Punctius, Aplocheilus, Rosbora (1)

1) Identification of Aquatic Weeds –

i) Floting Weeds _ Pistia, Lemma, Azolla, Wolfia, Eichhornia (Any Two)

ii) Emergent Weeds – Nelumbium, Nymphoides, Nymphaea (Any one)

iii) Submerged Weeds – Vallisneria, Ceratophyllum, Utricularia, Potamogeton, Hydrilla, Nojans (Any two)

iv) Marginal Weeds – Typha, Sagittaria, Lpomea, Cyperus, Colocasia, (Any Two) (4)

2) Removal of fish pituitary gland and preparation of pituitary extract. (2)

3) Preparation of home aquarium. (2)

4) Identification of balanced and unbalanced aquarium. (2)

5) Preparation of artificial fish food. (2)

6) Identification of aquarium fishes. (Any Five) (1)

Note :- 1) Educational tour to fresh water, Coastal water fish Farming and aquarium centre is compulsory, students should submit a study tour report at the time of examination.

B.Sc. – II Year (Fishery Science)**List of Books Recommended for Paper V and VI**

- 1) Jhingran V.G. fish and fisheries of India. Hindustan publication Corpn. (India) Delhi.
- 2) John E.Bardach, John H. Ryther and William O.Mc. Larney Aquaculture.
- 3) Rath R.K Fresh water Aquaculture. Scientific publishers, Jodhapur- 3420001 India.
- 4) M.Srinivaswa Reedy and K.R.S. Sambasiva Rao. Tex book of Aquaculture. Discovery publication House, New Delhi – 110002.
- 5) Venkhede G.N And S.V. Deshmukh. Fresh Water aquaculture Development and Management. Sarup and Sons, New Delhi – 110002.
- 6) R.Santhanam, N. Sukumaran and P. Natrajan Fresh Water Aquaculture. Oxford and IBH publishing Co. Pvt. Ltd. New Delhi – 1122 01.
- 7) Panday, A.K and G.S Sandhu. Encylopaedia of Fishes and Fisheries of India (Vol.III& IV) Anmol Publications, New Delhi – 1100 02.
- 8) Khanna S.S. and H.R Singh A Text book of Fish Biology and Fisheries Narendra Publication House, Delhi – 1110 006.
- 9) Belsar, D.K. Tropical Fish Farming Environmental publications, Karad-415 110.
- 10) Srivastva C.B.L Fishery Science and Indian Fisheries KitabMahal, New Delhi – 110 002.
- 11) Satyanarayan V.A Symposium on Fish Culture, A Practical and Comprehensive guide on Inland Fish Framing complied Narendra publishing house, Delhi – 1100 06.
- 12) Marel Huet. Text book of fish culture Fishing News book. Ltd. Fornham, Surreys England.
- 13) Evira A. Baluyut, Aquaculture System and practices. A selected review. Daya publishing house, Delhi – 110 035.

- 14) Chakroff, M fresh water pond culture and management scientific publishers, Jodhapur 342001.
- 15) Biswas K.P.A Text book of Fish, Fisheries and Technology (2nd Edn.) Narendra Publication House – Delhi – 1100 06.
- 16) BAL, D.V and Rao K.V. Marine Fisheries of India (1st Revised Edition) Tata Mc Graw – Hill Publication Company Ltd. New Delhi – 110 020.
- 17) Moorjani, M.N. Fish processing in India ICAR Publ. New Delhi – 1100 01.
- 18) Panday, A.K and G.S. Fish Farming Hand book. AVI Publ. Company West port, connecticut.
- 19) Santhanam R.Velajutham and G. Jegatheesan. A manual of Fresh water ecology. Daya Publ. House. Delhi – 110006.
- 20) Chakrabarthi N.M Biology Culture and production of Indian Major Carps A review. Narendra publ. House Delhi – 110006.
- 21) Mohekar A.D., Dr. K.R. Reddy and Dr. M.G Babare. A Manual of Fishery Science, Manjusha publ. Naldurg – 413 602
- 22) Hall C.B. Pond and Fish Culture. Agro Botanical Publishers (India) Bikaner -334003.
- 23) Chond S.L Hypohphysation of Indian Major Carps. Satish book Enterprise, Motikatra Agra – 3.
- 24) Benymi. Fishing with light. FAO by Fishing News books Ltd. Surrey, England.
- 25) Winton and Winton Fish and fish Products. Allied Scientific Publisher, Bikaner.
- 26) Francis Cherunilam Fisheries ; Globe perspective and Indian Development Himalaya publication Akola.
- 27) Maloo, R.A. A Practical approach to fresh water fish culture (Vol-I) Bharathi Publication Akola.
- 28) John C. Sainsburry. Commerical Fishing methods, An Introduction to Vessels andgear fishing news (Books) Ltd. Surey, England.

- 29) Reddy A.K Chandra Prakash, R.P Unyal Gaint Freshwater prawn culture CIFE, Versoa, Mumbai- 400061.
- 30) Dutta R. Tropical Fish; Setting up and maintaining Freshwater and Marine Aquaria 1972 Octopus books Ltd.
- 31) Hawkins A.D. (1981) Aquarium System, Academic Press.
- 32) Harnam P. Ward Lock (1981) Living Aquarium.
- 33) Rataj. K. and R. Zukal (1971) Aquarium Fishes and plants. Himalaya publication house.
- 34) Raw L.P (1956) Ornamental Fish for Garden ponds and Home aquariums. Home aquarium.
- 35) Collins Guide to Aquarium Fishes and plants. 1969 Schiolz A Collians.
- 36) Vogl and H. Wermuth. Thames (1963) Complete Aquarium.
- 37) Dawas J.A (1984) Freshwater Aquarium Robert Rovce Ltd.
- 38) Latja Sjempu (1987) Manual on Fishing Technology.
- 39) Latha Shenoy, Y Shreekrishna, S. Kamat (2004), Practical Course manual Fishing craft and Gear Technology.
- 40) CIFNET (1979) Hand book on basic Principles of construction and repairs of fishing nets.
- 41) FAO (1972) Catalogue of Fishing gears design. Fishing /news books, pp 155.

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद**परिपत्रक क्रमांक/एस.यू./विज्ञान/अभ्यासक्रम/७४/२०१४**

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
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[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
 औरंगाबाद-४३१ ००४,
 संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
 ६५९९-७०२
 दिनांक :- २७-०५-२०१४.

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 संचालक,
 महाविद्यालये व विद्यापीठ
 विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
 - ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

**DR. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



SYLLABUS OF

B.SC.

INDUSTRIAL CHEMISTRY - (optional)

SECOND YEAR

SEMESTER-III & IV

[Effective from academic year 2014-15 & onwards]

**Dr. Babasaheb Ambedkar Marathwada
University, Aurangabad**

**Revised Syllabus of B.Sc. II year Industrial Chemistry
(Effective from the Academic Year 2014-2015)**

June 2014 & onward.

**B.Sc. Industrial Chemistry- Semester III & IV
(Three Year Degree Course)**

Year	Paper	Course Name	Hours	Marks
B.Sc. III- Semester	VII	Unit Operations-II	45	50
	VIII	Chemical Reaction Engineering	45	50
	IX	Practical	120	100
B.Sc. IV- Semester	X	Unit Operations-II	45	50
	XI	Chemical Reaction Engineering	45	50
	XII	Practical	120	100

B.Sc. -Industrial Chemistry – Semester III

Hours: 45

Marks : 50

Paper: VII

Unit Operations – II

1. Overview of Mass Transfer Operations - General Overview – Introduction to Mass Transfer operations; Benefits, General Principles of Mass Transfer, Various types of Mass Transfer Operations & their importance. **05 Periods**

2. Equilibrium Stage Operations - Introduction, Typical distillation equipment, Principles of Stage Processes, Terminology for Stage Contact Plants, Material Balances, Enthalpy balances, Graphical method for two component system, Operating line diagram, Ideal contact stages, Determining the number of ideal stages. **05 Periods**

3. Distillation- Introduction, Flash Distillation, Simple Distillation, Steam Distillation, Rectification, Material Balances in Plate Columns, Number of Ideal Plates, McCabe Thiele Method, constant molal overflow, Reflux Ratio, Condenser and Top Plate, Bottom Plate and Reboiler, Feed Plate, Minimum Reflux, Optimum Reflux Ratio, Plate Efficiency, Types, Relations, Factors influencing plate efficiency, Rectification in packed towers, Batch Distillation. **15 Periods**

4. Liquid Extraction- Terminology, Introduction to liquid-liquid extraction, Applications of Liquid-Liquid Extraction, Principles of liquid-liquid equilibria, Triangular diagrams, Types of extraction system, I & II, Temperature effects on systems types, Solvent selection, Commercial extraction system, Typical extraction system, Extraction calculations-Single Stage Operations, Multi Stage Cross Current Operation, Continuous multistage counter current operations, Design considerations for packed beds, Extraction Equipments-Mixer Settlers, Spray & Packed extraction towers, Perforated plate towers, Baffle towers, Agitated Tower extractor, Centrifugal Extractors. **15 Periods**

5. Size Reduction - Introduction, Principles of Comminution, Criteria for comminution, Characteristics of comminuted products, Energy & Power requirements in comminution, Crushing efficiency, Empirical relationship-Rittingers & Kicks Law, Bond Crushing Law & Work Index, Size reduction equipments. **05 Periods**

Reference Books:

1. Unit Operations of Chemical Engineering – W.L.McCabe, J.C. Smith, Pter Harriott
2. Mass Transfer Operations- Robbert E. Treybal

B.Sc. Industrial Chemistry – Semester III

Hours: 45

Marks : 50

Paper: VIII Chemical Reaction EngineeringIntroduction & Notation in Chemical Reaction Engineering

02 Periods

1. Overview of Chemical Reaction EngineeringTypical Chemical Process, Classification of reactions, Variable Affecting the Rate of Reaction, Definition of Reaction Rate. **05 Periods****2. Kinetics of Homogeneous Reactions**The rate equation, Concentration-Dependent Term of a rate equation, Single & multiple Reactions, Elementary & Non elementary reactions, Molecularity & Order of Reaction, Rate Constant(K), Representation of an Elementary Reaction, Representation of Non elementary Reaction, Kinetic Models for Non elementary Reactions-free radicals, ions & polar substances, Molecules, Transition Complex, Non Chain Reactions, Chain Reactions-Free radicals, Chain reaction mechanism, Molecular intermediates, non chain mechanism, Transition Complex, non chain mechanism. Temperature-Dependent Term of a Rate Equation-Temperature Dependency from Arrhenius Law, Comparison of Theories with Arrhenius law, Activation Energy and Temperature Dependency, (Example 2.3). **15 Periods****3. Interpretation of Batch Reactor Data**Introduction of Batch Reactor, Constant-Volume Batch Reactor, Analysis of Total Pressure data obtained in a Constant-Volume System, Integral Method of Analysis of Data, Irreversible Unimolecular-Type First Order Reactions, Irreversible Bimolecular-Type Second Order Reactions, Zero Order Reactions, Overall Order of Irreversible Reactions from the Half-Life $t_{1/2}$, Irreversible reactions in Parallel, Homogeneous Catalyzed Reactions, Autocatalytic Reactions, Irreversible Reactions in Series, First Order Reversible Reactions, Second Order Reversible Reactions, Reactions of Shifting Order, Differential Method of Analysis of Data, Varying- Volume Batch Reactor, Differential Method of Analysis, Integral Method of Analysis, Zero Order Reactions, First Order Reaction, Second Order Reactions, The Search for a Rate Equation. **20 Periods****Reference Books:**

1. Chemical Reaction Engineering - Octave Levenspiel (Wiley India Pvt. Ltd. Third Edn.)
2. Chemical Reaction Engineering - K.A.Gavhane (Nirali Prakashan, Pune)
3. Principles of Reaction Engineering – S.D.Dawande (Central Techno Publication)

B.Sc.Industrial Chemistry- (Semester III & IV)

Paper : IX Marks : 100 Hours:120 (3 Hrs./week)

Practical: Experiments on Unit Operations - II

Experiments to be conduct in the academic year.

Distillation:

1. To Perform a experiment on **Simple Distillation** using binary mixture (*Methanol+Water or Ethanol+Water*) & Verify the Rayleigh's Equation. Calculate the Material Balance for binary mixtures and find the composition of the distillate & the residue.
2. To Perform a experiment on **Steam Distillation** using *Turpentine or Nitrobenzene* and Calculate Material Balance for Steam Distillation..
3. To Perform a experiment on **Distillation with total reflux** using Binary mixture (*Methanol+Water or Ethanol+Water*) and Determine theoretical plates by McCabe-Thiele Method.

Liquid Extraction:

4. To study the experiment on Liquid-Liquid Extraction by using **Mixer Settler** System & Calculate Percentage of Extraction of a given liquid.
5. To study the Liquid-Liquid Equilibria for three component system (**Glacial Acetic Acid +Chloroform+ Distilled Water**) and Calculate the Percentage composition of each component at heterogeneous mixture

Drying:

6. To study the **Rate of Drying of solid** substances (*Saw dust or Card Board*)
7. To study the **Rate of Drying of Liquid** substances.
8. To study the rate of drying in **Tray Dryer**.

Crystillation:

9. To Crystallise the given sample of Phthalic acid from hot water using fluted paper and stemless funnel.
10. To Crystallise the given sample of Benzoic acid from hot water using fluted paper and stemless funnel.
11. To purify the given sample of naphthalene or camphor by simple sublimation method.
12. To purify the given sample of Succinic acid or phthalic acid by vacuum sublimation method.

.....Contd.

Evaporation

13. Determine the rate of evaporation of given liquid Sample (thin solution of Sugar + Water or NaCl + water or Sugar Cane Juice)in a open pan evaporator.

Size Reduction

1. To perform a study experiment on Size Reduction by using *Jaw Crusher*
2. To Calculate the efficiency of Sieves using Sieve Analyzer (use Coal or any nontoxic substance)

Miscellaneous

1. Determination of Copper and Nickel in the given solution (Idometric Method).
2. Estimation of Manganese dioxide in pyrolusite.
3. Determination of NaOH and Na₂CO₃ in the given alkali mixture solution.
4. Determination of iron in a water sample by colorimetry.

Note: 1. 20 % weightage be given to the viva-voce in the practical examination.

2. To Arrange Industrial visit for giving demo experiments on Drying, Mechanical Separation, Size Reduction and various unit operations carried out in the industries.

Reference Books:

1. Unit Operations-II - K.A.Gavhane
2. Systematic Experimental Physical Chemistry – S.W.Rajbhoj & T.K.Chondhekar
3. Practical Chemistry – S. Umar, J. Sardar & A. Muley
4. University Practical Chemistry, Vishal Publishing Co, Jalandhar-P.C.Kamboj
5. Experiments and Calculations in Engineering Chemistry- S.S.Dara.

B.Sc. -Industrial Chemistry- Semester- IV

Hours: 45

Marks : 50

Paper: X

Unit Operations – II

1. Gas Absorption

7 Periods

Introduction, Design of Packed Towers, Contact between Liquid & Gas, Pressure drop & limiting flow rates, Principles of absorption material balances, Limiting gas-liquid ratio, Temperature variations in packed towers, Rate of absorption, Calculation of tower height, Number of Transfer units.

2. Evaporation

8 Periods

Introduction, Liquid Characteristics, Types of Evaporators, Performance of Tubular Evaporators, Evaporator Capacity, Boiling Point Elevation and Duhring Rule, Effect of liquid head & friction on temperature drop, Heat Transfer Coefficient, Overall Coefficient, Evaporator economy, Enthalpy balance for single effect evaporator, Enthalpy balance with negligible heat of dilution, Single effect calculations, Multiple effect evaporators, Methods of feeding, Capacity and economy of multiple effect evaporator, Effect of liquid head and boiling point elevation.

3. Crystallization

10 Periods

Importance of Crystal Size, Crystal Geography, Crystallographic systems, Invariant Crystals, Principles of Crystallization, Purity of Product, Equilibria & its yields, Enthalpy Balances, Super Saturation, Units of Super Saturation, Temperature differential as a potential, Nucleation-Origins of Crystals in crystallizers, Primary nucleation, Homogeneous nucleation, Equilibrium, Kelvin Equation, Rate of nucleation, Heterogeneous nucleation, Secondary nucleation, Contact nucleation, Crystal Growth-Individual & overall Growth Coefficients, Growth Rate, Mass Transfer Coefficient, Surface Growth Coefficient, ΔL law of crystal growth, Crystallization Equipment-variations in crystallizers, Vacuum Crystallizers, Draft Tube Baffle Crystallizer, Yield of Vacuum Crystallizer.

4. Drying of Solids

10 Periods

Introduction, Classification of Dryers, Solid handling in dryers, Principles of Drying- Temperature Pattern in dryers, Heat Transfer in dryers, Heat duty, Heat Transfer Coefficient, Heat Transfer Units, Mass Transfer in Dryers, Phase Equilibria-equilibrium moisture and free moisture, Bound & unbound water, Cross circulating drying-constant drying conditions, Rate of drying, Constant rate period, Critical Moisture Content & Falling Rate Period, Calculation of Drying Time under constant drying conditions, Drying Equipments- Dryers for Solids & Pastes, Dryers for Solutions & Slurries.

5. Mechanical Separations

10 Periods

Screening, Screening Equipment, Comparison of Ideal & Actual Screens, Material Balances over Screens, Screen Effectiveness, Capacity & Effectiveness of Screens, Effect of Mesh Size on capacity of Screen, Capacities of Actual Screens. Filtration, Cake Filters, Filter Media, Filter aids, Principles of Cake Filtration, Pressure drop through filter cake, Principles of Centrifugal Filtration.

Reference Books:

3. Unit Operations of Chemical Engineering – W.L.McCabe, J.C. Smith, Pter Harriott
4. Mass Transfer Operations- Robbert E. Treybal
5. Chemical Engineering Vol.2 – J.M.Coulson & J.F.Richardson
6. Principles of Mass Transfer Operations- Kiran D. Patil
(Nirali Prakashan, Pune)
5. Unit Operations-II – K.A.Gavhane
(Nirali Prakashan, Pune)

B.Sc.Industrial Chemistry-Semester- IV

Hours: 45

Marks : 50

Paper: XI

Chemical Reaction Engineering

1. Introduction to Reactor Design 5 Periods

Broad Classification of Reactor Types, Material balance for an element of Volume of the reactor, Energy balance for an element of Volume.

2. Ideal Reactors for a Single Reaction 10 Periods

Three types of Ideal Reactors, Ideal Batch Reactor, Space Time & Space Velocity, Steady State Mixed Flow Reactor, (Example 5.1, Example 5.3), Steady State Plug Flow Reactor, (Example 5.5), Holding Time & Space Time for flow reactors.

3. Design for Single Reactions 20 Periods

Size Comparison of Single Reactors, Batch Reactor, Mixed versus Plug Flow Reactors, First & Second Order Reactions, Multiple-Reactor Systems-Plug flow reactors in series and or in parallel, (Example 6.1), Equal size Mixed Flow Reactors in Series, First Order Reaction, Mixed Flow Reactors of Different sizes in Series, finding the conversion in a given system, Determining the Best System for a given conversion, Maximization of Rectangles, Reactors of types in series, Recycle Reactor & its performance equation.

4. Design for Parallel Reactions 05 Periods

Introduction to Multiple Reactions-Qualitative Discussions about Product Distribution.

5. Basics of Non-Ideal Flow 05 Periods

The Residence Time Distribution(RTD), E,The Age Distribution of Fluid, Relation among F, C and E curve and 'mean time' for closed vessel.

Reference Books:

4. Chemical Reaction Engineering - Octave Levenspiel (Wiley India Pvt. Ltd. Third Edn.)
5. Chemical Reaction Engineering - K.A.Gavhane (Nirali Prakashan, Pune)
6. Principles of Reaction Engineering – S.D.Dawande (Central Techno Publication)

B.Sc.Industrial Chemistry (Semester III & IV)

Paper : XII Marks : 100 Hours : 120 (3 Hrs./week)

Practical: Experiments on Chemical Reaction Engineering

Experiments to be conduct in the academic year.

1. To Study the Performance of **Batch Reactor** : To study the Saponification of Ethyl acetate with NaOH in order to determine Order of reaction (n) & Rate constant (K) using Batch reactor.
2. To study the residence time distribution in **Mixed Flow Reactor (MFR)**.
3. To Study the Performance of **Plug Flow Reactor (PFR)**: To study the Performance of plug flow reactor used and to calculate theoretical & practical conversion for a second order reaction between Ethyl acetate & NaOH.
4. To find out Residence time distribution in **Plug Flow Reactor or Tubular reactor**.
5. To Study the Performance equation of **Coil Tube Reactor (CTR)**: To study the Performance of plug flow reactor used and to calculate theoretical & practical conversion for a second order reaction between Ethyl acetate & NaOH.
6. To Study the **First Order Reaction**: Hydrolysis of an Ester (Methyl Acetate in presence of HCL).
7. To Study the **Zero Order Reaction**: Investigate the kinetics of Iodination of Acetone.
8. To Study the **Autocatalytic reaction**: Reaction between Potassium Permanganate & Oxalic acid.
9. To Study the Rate of reaction (r_A) between Ethyl bromo acetate & Sodium thiosulphate kinetically using **Batch Reactor**.
10. To determine the Order of reaction (n) of given reaction Kinetics by using **Substitution method, Fractional change method and Differential method**.
11. To determine the Rate Constant (K) of the reaction between Potassium Persulphate & Potassium Iodide having equal concentration of reacting species (a=b) by using **Mixed Reactor**.
12. To determine the Rate Constant (K) of the reaction between Potassium Persulphate & Potassium Iodide having un equal concentration of reacting species (a**≠**b) by using **Mixed Reactor**.
13. To determine rate constant (K) of the reaction between Bromic acid and Hydroiodic acid having equal concentration of reacting species (a=b) using **Batch reactor**.
14. To determine the **Energy of Activation (E_a)** of hydrolysis of Ethyl acetate in presence of NaOH.
15. To determine the **Energy of Activation (E_a)** of the reaction between Potassium Persulphate & Potassium Iodide.

Note: 20 % weightage be given to the viva-voce in the practical examination.

Reference Books: 1.Chemical Reaction Engineering - K.A.Gavhane 2.Systematic Experimental Physical Chemistry – S.W.Rajbhoj & T.K.Chondhekar

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद**परिपत्रक क्रमांक/एस.यू./विज्ञान/अभ्यासक्रम/७४/२०१४**

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

- 42 -

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परीक्षा नियंत्रक, परीक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
 - ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

B.Sc. II year Revised Syllabus 2014-15 onwards

**D.R. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



Revised Syllabus of B.Sc. Second Year

[Microbiology] *(Optional)*

Semester- III & IV

(Effective from June 2014 onwards)

B. Sc. II year Revised Syllabus 2014-15 onwards

DR BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Course Structure

Year	Semester	Paper number	Paper Title	Periods	Marks	
B. Sc. Second	III	Paper-VII	Environmental Microbiology	45	50	
		Paper-VIII	Immunology	45	50	
		Paper-IX	Practical	45	50	
		Paper-X	Practical	45	50	
	IV	Paper-XI	Applied Microbiology	45	50	
		Paper-XII	Clinical Microbiology	45	50	
		Paper-XIII	Practical	45	50	
		Paper-XIV	Practical	45	50	
	Total				360	400

**B.Sc. Second Year [Microbiology]
Semester III Paper VII
Environmental Microbiology**

Unit 1: Microbiology of air:

- Composition of air.
- Number and kinds of microorganisms in air (indoor, outdoor)
- Distribution and sources of air borne microorganisms.
- Air as a carrier of microorganisms.
- Droplet, droplet nuclei, Dispersal of Microorganisms in air.
- Techniques for microbiological analysis of air.
- Significance of air flora in human health, hospitals, industries.
- Air sanitation – dust control, UV radiation, bactericidal vapors, filtration, Laminar air flow system (HEPA filters)

Unit 2. Microbiology of Water and Waste water:

- Types of waters, sources of microbes in water.
- Determining sanitary quality of water indicators of fecal pollution: Fecal and non-fecal coliforms (IMVIC & elevated temperature tests).
- Bacteriological examination of water: Presumptive, confirmed, completed test, SPC, MPN and Membrane filter technique.
- Water purification methods: Disinfection of potable water supplies.
- Definition of sewage and chemical composition.
- Microbiology of sewage treatment: septic tank, evapotranspiration, Imhoff's tank
- Municipal sewage treatment process: Primary, Secondary, (aerobic and anaerobic process), chemical treatment: chlorination.
- Disposal of treated sewage. (Sludge as fertilizer, irrigation and dilution)

Unit 3. Microbiology of Soil:

- Soil as an environment, as a culture medium.
- Brief account and definition of microbial interactions with examples.
- Symbiosis, mutualism, commensalism, competition, synergism, satellitism, predation, parasitism with example:
 - I. Microbe-microbe interactions (any one example)
 - II. Plant-microbe interactions (Phyllosphere; legu. plant-Rhizobium)
 - III. Animal-microbe interactions (Rumen; Bioluminescence)
- Major biogeochemical cycles: Carbon nitrogen, phosphorus, sulphur (cyclic turnover with microbiology).
- General account of microbes used as biofertilizers, phosphate solubilizers. (Definition, Types, advantages, disadvantages)
- Rhizosphere: definition, rhizosphere and non rhizospheric microflora and R: S ratio, significance for fertility.

Unit 4. Environmental Pollution

- Air pollution : sources, causes, health hazards, airborne diseases any 5 (list of causative agents)
- Water pollution : sources, causes, health hazards, waterborne diseases any 5 (list of causative agents).
- Waste water pollution : sources, causes, health hazards.
- Soil : sources, causes, health hazards,

**B.Sc. Second Year Semester III
Paper VIII Immunology**

Unit 1. Gnotobiology

- Normal flora of human body.
- Defensive mechanism of the host
- Nonspecific factors: physiological barriers, natural cellular & humoral factors.
- Aggressive factors and mechanisms.
- Infection;
- Definitions with one example: (primary infection, secondary infection, cross infection)
- Sources of infection.
- Determining factors in infection
- Modes of transmission of infectious diseases.
- Process of infection : entry and spread of infection in host body

Unit 2. Immune system and Immune responses:

- Immune system : organs and cells involved, functions, types of cells functions of immune system.
- Production of antibodies: organs & cells involved, monoclonal Antibodies, Regulation of antibody production (genetic control).
- Factors influencing antibody production:
- Introduction to stem cells and stem cell therapy.

Unit 3. Immunity:

- Definition and classification: Innate / Acquired, Active/Passive, Cellular/Humoral, specific / non - specific humoral factors of immunity: complement, interferon.

Antigen:

- Definition, determinant's of antigenicity, a) size, b) chemical, c) nature, d) susceptibility to tissue enzymes, foreignness, specificity of antigens,
- Types of antigens: species specific antigen, Isoantigen, autoantigen, organ-specific antigen, MHC antigen, Heterogenetic (Heterophile)antigen, antigens in relation to bacterial cell.

Antibody:

- Immunoglobulins: structure & classes,
- Types of antibodies: antitoxin, precipitin, agglutinin, bacteriolysin, bacteriocidin, bacteriotropin, complement fixing, neutralizing.

Unit 4. Antigen – Antibody reactions:

- General features of Antigen- Antibody reactions
- Mechanisms , methods & applications of:
 - Agglutination:
 - Precipitation
 - Complement fixation
 - Neutralization
 - Immunofluorescence
 - ELISA
- General methods of prophylaxis.
 - Toxoid & immune sera, Principle involved in preparation, use of adjuvants.
 - Vaccines : types, principles of methods of BCG, TAB, OPV, T.T., DPT, vaccines production, administration of vaccines, Immunization schedule.

B. Sc. II year Revised Syllabus 2014-15 onwards

- Hypersensitivity (Four types with one disease in brief)

**B.Sc. Second Year Semester IV
Paper XI Applied Microbiology.**

Unit 1. Dairy Microbiology:

- Definition of and composition of milk
- Sources of microorganisms in milk
- Desirable and undesirable changes carried out by microorganism in milk
- Types of microorganisms: Biochemical types, temperature characteristic and pathogens (bovine and human origin).
- Changes in the flora of raw milk stored at room temp.
- Microbiological examination of milk: SPC, DMC, Reductase and Phosphatase test.
- Sterilization of milk: Pasteurization

Unit 2. Food Microbiology:

- Food as a substrate for microorganisms.
- Major groups of bacteria, fungi, yeasts important in food microbiology.
- Sources of contamination of food, factors affecting kind and number of microorganisms in food.
- Principles of food preservation:
- Microbiostatic and microbicidal methods : Asepsis, removal of microorganisms, anaerobic conditions, high temp, low temp, drying, chemical preservatives, high osmotic pressure, radiation, smoking.
- Microbial spoilage of foods.
- Classification of foods by ease of spoilage, chemical changes caused by microorganisms in food.
- Types of spoilage of canned and non-canned foods with organisms involved. (Tabular form).

Unit 3. Foodborne diseases and intoxication

- Food borne diseases: Food infections, indicators of food pathogens associated with food.
- Food intoxication: Staphylococcal, Clostridial, Mycotoxins, Enteropathogenic *E. coli*, Salmonellosis and Shigellosis.

Unit 4. Fermented Food and Probiotics

- Cheese: Classification and production
- Butter
- Idli
- Criterion for probiotics: Yoghurt and Curd
- Mushroom as SCP

B.Sc. II year Revised Syllabus 2014-15 onwards

**B.Sc. Second Year Semester IV
Paper XII Clinical Microbiology**

Unit 1.Study of Human Diseases caused by bacteria

Classification, habitat, morphology, staining reactions, cultural characters, biochemical characters, antigenic structure, pathogenesis.Laboratory diagnosis, epidemiology, prophylaxis, chemotherapy w. r. t.

- *Staphylococcus aureus*
- *Pneumococcus (Str.pneumoniae)*
- *Mycobacterium tuberculosis*

Unit 2.Study of Human Diseases caused by Enteric bacteria and spirochete

Classification, habitat, morphology, staining reactions, cultural characters, biochemical characters, antigenic structure, pathogenesis.Laboratory diagnosis, epidemiology, prophylaxis, chemotherapy w. r. t.

- *Salmonella typhi*
- *Vibrio cholera*
- *Treponema pallidum*

Unit 3 Viruses

- HIV: Morphology, types, Life cycle, pathogenesis, Laboratory diagnosis, epidemiology Prophylaxis, treatment.
- Hepatitis virus : Morphology, types, Life cycle, pathogenesis, Laboratory diagnosis, epidemiology, Prophylaxis, treatment.
- Oncogenic viruses: Morphology, types, Life cycle, pathogenesis, Laboratory diagnosis, epidemiology, Prophylaxis, treatment.

Unit 4.

- Protozoa:*Plasmodium spp* (morphology, life cycle, clinical signs and symptoms, lab. Diagnosis prophylaxis / prevention and chemotherapy.
- Fungi: *Candida albicans* (morphology, clinical signs and symptoms, lab. Diagnosis prophylaxis / prevention and chemotherapy.
- Typhus fever : (morphology of causative agent, clinical signs and symptoms, lab. Diagnosis prophylaxis / prevention and chemotherapy.

B. Sc. II year Revised Syllabus 2014-15 onwards

**B.Sc. Second year Semester III
Paper IX. Practical**

1. Enumeration of microbes from: Indoor and outdoor environment
2. Bacteriological examination of drinking water:
 - I. MPN
 - II. SPC
3. Qualitative analysis of water:
 - I. Presumptive
 - II. Confirmed
 - III. Completed test
4. Testing of (water & domestic sewage) for physicochemical parameters like chlorine, phosphate, nitrate and BOD.
5. Isolation of *E. coli* and identification by IMVIC
6. Isolation of coliphages from sewage.
7. Isolation enteric pathogens from domestic sewage (*salmonella* and *shigella* spp)

Paper X Practical

1. Demonstration of media for cultivation of pathogenic bacteria
 - I. Mannitol salt agar.
 - II. Wilson and Blair's medium
 - III. Lowenstein- Jenson's medium
 - IV. Corn- meal agar.
2. Staining techniques
 - I. Acid fast staining (Demonstration)
 - II. Blood staining (differential WBC count)
3. Hemoglobin examination
4. Isolation & study of normal flora of skin/ nose/ throat.
5. Agglutination tests: (Slide tests)
 - I. Blood grouping
 - II. Widal test
 - III. RPR test.
6. Precipitation test: Demonstration.
 - I. Single radial immunodiffusion
 - II. Immuno electrophoresis.

B. Sc. II year Revised Syllabus 2014-15 onwards

**B. Sc. Second year Semester IV
Paper XIII Practical**

1. Determination of R: S ratio.
2. Demonstration of:
 - I. Ammonification
 - II. Nitrification
 - III. Denitrification
 - IV. Nitrate reduction
 - V. Sulfate reduction.
3. Isolation & study of *Rhizobium* sp. from root nodules of leguminous plants.
4. Isolation & study of *Azotobacter* sp. from soil.
5. Bacteriological analysis of milk:
 - I. DMC
 - II. MBRT
6. Isolation of microorganisms from common food items; curd/ bread/ pickles/ spoiled food.
7. Visit to waste treatment plants, dairies, food industries, agricultural universities.

Paper XIV Practical

1. Study bacterial pathogens:
 - I. *Staphylococcus aureus*
 - II. *Salmonella typhi*
 - III. *Vibrio cholerae*
2. Isolation & Identification of *Candida albicans*
3. Demonstration of haemolysin & coagulase tests.
4. Determination of antibiotic resistance of bacteria.
5. Detection of specific antigen by ELISA (demonstration – Viral Disease)
6. Visits to related labs, hospitals & institutes.

Shr
(Chairman BOS)
20/04/2014
(Dr. Mahal Shaker)

3:29 Nov., 2013 AC/ after Circulars from Circular No.55 & onwards

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यू./विज्ञान/अभ्यासक्रम/७३/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षांच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षांच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारित तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

25-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक थांगा विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करून देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्ष अधिकारी, बी.ए. / बी.एससी. / बी.सी.एस./एम.एससी. विभाग, परीक्षा भवन,
 - ८) अगिलेख विभाग, मुख्य प्रशासकीय इमारती मागे.
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

Revised Syllabus of
B.Sc. Second Year
Sem. III & IV
Statistics [Optional]
effect for the academic year 2014-2015

Proposed in the meeting of 21/3/11
Submitted on 4/3/11.

Dr. Babasaheb Ambedkar
Marathwada University, Aurangabad

Syllabus at the
S.Y. B.Sc. in Statistics *-(optional)*
With effect from the academic year 2014-2015

SYLLABUS OF B.Sc. II-YEAR
STATISTICS
Semester III & IV

Semester	Paper No.	Title Of The Paper	No. of Lectures per week	Marks Univ.
III Theory	201	Statistical Methods- I	03	50
	202	Sampling Techniques	03	50
IV Theory	203	Statistical Methods- II	03	50
	204	Applied Statistics	03	50
Annual Practical	205	Practicals based on 201 & 203	03	100
Annual Practical	206	Practicals based on 202 & 204	03	100

For Theory paper: = 45 Lectures per paper, per semester

For Practical Papers: = 45 Lectures per paper, per semester

STATISTICAL METHODS- I

PAPER 201

- Unit I: Standard Univariate Continuous Distributions. (15 Lectures)**
- Uniform Distribution :-**
- 1.1 Definition, mean, variance.
 - 1.2 Symmetry, c.d.f.
 - 1.3 Sketch of p.d.f. Distribution of $\frac{x-a}{b-a}$ & $\frac{y-a}{b-a}$
- Normal Distribution :-**
- 1.4 Definition, mean, variance.
 - 1.5 Chief characteristics
 - 1.6 M.G.F, C.G.F, central moments, Cumulants $\beta_1, \beta_2, \gamma_1, \gamma_2$.
 - 1.7 median, mode.
 - 1.8 Additive property, probability distribution of Standard normal Variate.
 - 1.9 probability distribution of \bar{x} the mean of i.i.d. $N(\mu, \sigma^2)$ random variables.
 - 1.10 Area property, Central limit theorem (Statement only).
- Unit II: Standard Continuous Distributions (Continued) (15 Lectures)**
- Exponential Distribution :-**
- 2.1 Definition
 - 2.2 Nature of p.d.f. & curve.
 - 2.3 Mean, variance, M.G.F, C.G.F.
 - 2.4 Lack of memory property, median.
 - 2.5 Distribution of min (X,Y) with X, Y i.i.d. exponential random variables.
- Gamma distribution :-**
- 2.6 Definition, M.G.F, C.G.F.
 - 2.7 Moments, cumulants, $\beta_1, \beta_2, \gamma_1, \gamma_2$.
 - 2.8 Mode, additive property.
 - 2.9 Distribution of sum of n i.i.d. exponential variables.
 - 2.10 Relation between distribution function of Poisson and gamma variates.
 - 2.11 Recurrence relation between moments
- Unit III: Point Estimation. (15 Lectures)**
- 3.1 Characteristics of a good estimator: VU - Consistency, Unbiasedness, Efficiency, and Sufficiency.
 - 3.2 Standard results on the above Characteristics.
 - 3.3 Problems on the above Characteristics.
 - 3.4 Likelihood function, Cramer Rao Inequality (Statement) maximum Likelihood estimator and it's properties.
 - 3.5 Methods of Estimation: Method of Maximum Likelihood and Method of Moments.
 - 3.6 Large Sample test for Single mean, difference of means.
 - 3.7 Large Sample test for Single proportion and difference of proportions.

SAMPLING TECHNIQUES PAPER 202

Unit I

Basics of Sampling :

(15 Lectures)

- 1.1 Introduction to theory of sampling
- 1.2 Fundamental Definitions : Sample (n), population(N), Sample mean, sample variance, sample size, sample mean square.
- 1.3 Some more definitions : Sampling unit, sampling frame, parameter, statistic, sampling distribution, standard error; utility of standard error, estimator, unbiased estimator.
- 1.4 principal steps in simple survey.
- 1.5 Principles of sample survey, Principle of statistical regularity, principle of validity & principle of optimization.
- 1.6 Sampling & complete enumeration, and their merits & demerits.
- 1.7 Probability and Non probability sampling.
- 1.8 Sampling and non sampling errors.
- 1.9 Estimation of sample size.

Unit II

Basic sampling Methods, Simple random sampling.

(15 Lectures)

- 1.10 Introduction to SRS & SRSWOR Proof of $p(\bar{E}_x) = \frac{1}{N} = p(\bar{E}_x)$
Where \bar{E}_x is the event that the specified unit is not selected in any one of the previous (i-1) draws and then selected at the x^{th} draw. Proof of, in SRS each of $N C_n$ samples have equal probability of being selected & it is $\frac{1}{N C_n}$
- 2.2 Methods of selection of simple random sample, Lottery method, Mechanical randomization or Random numbers method.
- 2.3 Theorems on unbiasedness of sample mean and sample mean square.
- 2.4 Variance of sample mean in SRSWOR, standard error of mean & its Estimator, sampling fraction $\frac{n}{N}$ & finite population correction (fpc) (1-1)
- 2.5 Merits & limitations of SRS
- 2.6 Variance of sample mean in SRSWR & comparison with variance of sample mean in SRSWOR.
- 2.7 Simple random sampling of Attributes Notations & terminology
- 2.8 Theorems on unbiasedness and variance of sample proportion
- 2.9 Size of simple random sample for specified precision.

Unit III

Basic sampling methods (continued)

(15 Lectures)

- 3.1 Introduction and need of stratified sampling, Advantages of stratified random sampling.
- 3.2 Notations & terminology in stratified random sampling, Mean of stratified random sample \bar{Y}_s
- 3.3 Theorems on unbiasedness of \bar{Y}_s and variance of \bar{Y}_s
- 3.4 Proportional allocation of sample size & variance of \bar{Y}_s in proportional allocation.
- 3.5 Optimum allocation of sample size, Linear cost function.
Proof of ~ Variance of \bar{Y}_s is minimum for fixed total size of the sample (n) if n_i are proportional to $N_i S_i$, where n_i are stratum sample size, N_i stratum population size & S_i are population mean square
Square for i_k stratum, $i = 1, 2, \dots, k$ is number of strata.
- 3.6 Variance of \bar{Y}_s for optimum allocation.
- 3.7 Comparison of precisions of simple random sampling, proportional & optimum allocation.
- 3.8 Systematic random sampling, introduction, Linear & circular systematic sampling, merits limitations of systematic sampling.
- 3.9 \bar{Y}_{sys} , mean of systematic sample unbiasedness of \bar{Y}_{sys} & Variance of \bar{Y}_{sys} .

SEMESTER - IV
STATISTICAL METHODS – II
PAPER 203

Unit I- Chi-Square Distribution

(15 Lectures)

- 1.1. Definition and p.d.f. of Chi-Square distribution.
- 1.2. M.g.f. and e.g.f. mean, variance and other moments of Chi-Square distribution.
- 1.3. Additive property of Chi-Square distribution.
- 1.4. Theorems on independent Chi-Square variates.
- 1.5. Limiting form of Chi-Square distribution.
- 1.6. Applications of Chi-Square distribution.
- 1.7. Testing independence of attributes (2X2 and rXs contingency tables)
- 1.8. Chi-Square test for population variance and its confidence interval.
- 1.9. Chi-Square test for testing goodness of fit.

Unit –II , Student's 't' distribution

(15 Lectures)

- 2.1. Definition and p.d.f. of 't' distribution.
- 2.2. M.g.f. of 't' distribution.
- 2.3. Mean, variance and other moments of 't' distribution.
- 2.4. Limiting form of 't' distribution.
- 2.5. 't' test for single mean and confidence interval for mean.
- 2.6. 't' test for difference between means (independent samples).
- 2.7. Paired 't' test (dependent samples).

Unit -III , F,Z, and Sampling distribution of statistic

(15 Lectures)

- 3.1. Definition of F- statistic, its p.d.f., mean and variance.
 - 3.2. Distribution of 1/F. Relation between t & F & chi square
 - 3.3. F-test for testing difference between population variances.
 - 3.4. Fisher's Z Distribution
 - 3.5. M.G.F of Z distribution
 - 3.6. Fisher's Z transformations.
 - 3.7. Applications of Fisher's Z transformations
-

APPLIED STATISTICS

PAPER 204

Unit I

Multiple & partial correlations & multiple regression. (trivariate only) 15 Lectures

- 1.1. Concept of multiple & partial correlation; Multiple regression.
- 1.2. Yule's notations. Plane of regression. Fitting of plane of regression by using principle of least squares. Estimation of regression coefficients
- 1.3. Residuals and properties of residuals. Variance of residual
- 1.4. Derivation of formula for multiple correlation.
- 1.5. Properties of multiple correlation.
- 1.6. Derivation of formula for partial correlation & properties of partial correlation
- 1.7. Multiple correlation in terms of total & partial correlations
- 1.8. Coefficient of multiple & partial determination.

Unit II

Time series analysis.

15 Lectures

- 2.1. Definition & introduction to time series data.
- 2.2. Components of time series data.
- 2.3. Analysis of time series. Mathematical models for the analysis. Additive, multiplicative & mixed models.
- 2.4. Uses of time series analysis
- 2.5. Measurement of trend. Graphical method. Method of semi averages & method of moving averages procedure, merits & limitations of all methods.
- 2.6. Curve fitting by principle of least squares-Straight line, Second degree parabola, Power & exponential curves.
- 2.7. Estimation of trend by method of least squares. Merits & limitations of the method.
- 2.8. Measurement of seasonal variation by method of simple averages, procedure, merits & limitations.

Unit III

Index numbers.

15 Lectures

- 3.1. Introduction to Index numbers & their uses.
- 3.2. Problems involved in the construction of index numbers.
- 3.3. Notations, Unweighted indices & weighted indices.
- 3.4. Laspeyre's, Paasche's, Fisher's & Marshall Edgeworth index number for Prices & quantities, Value index number.
- 3.5. Upward & downward bias.
- 3.6. Unweighted & weighted averages of price relatives based on arithmetic & geometric mean.
- 3.7. Chain base index number(CBI) conversion of CBI into fixed base index number (FBI) & vice versa.
- 3.8. Criteria of a good index number. Mathematical tests: Unit test, Time reversal test, (TRT), Factor reversal test (FRT), Circular test.
- 3.9. Problems on index numbers. Relationship among index numbers.
- 3.10. Construction of Cost of living index number and it's uses

PRACTICALS BASED ON PAPER 202 and 204

PAPER 206

- 1) SRSWOR: Drawing samples of size 'n' from a population of size 'N' and verification of results (a) $E(\bar{Y}_n) = \bar{Y}_N$, (b) $E(s^2) = S^2$ and
 - 2) Verify $V(\bar{Y}_n) = (1 - f) \frac{S^2}{n}$ for SRSWOR.
 - 3) SRSWR: Drawing samples of size 'n' from a population of size 'N' and verification of Results (a) $E(\bar{Y}_n) = \bar{Y}_N$, (b) $E(s^2) = \sigma^2$ and
 - 4) Verify $V(\bar{Y}_n) = \left(\frac{N-1}{Nn}\right) S^2$ for SRSWR.
 - 5) Estimation of Sample size in SRS
 - 6) Sampling proportions: Verification of results (a) $E(p) = P$, (b) $V(p) = PQ/n$.
 - 7) Using stratum data, estimation of $V(\bar{Y}_n)$ and quantify gain due to stratification.
 - 8) Determination of stratum sample sizes under Proportional and Optimum allocations and Comparison of precision with SRSWOR.
 - 9) Systematic Sampling: Drawing systematic samples of size 'n' and comparison of precision with SRS.
 - 10) Computation of partial and multiple correlation coefficients. (Tri-variate case only).
 - 11) Obtaining plane of regression.
 - 12) Measurement of trend by Method of 3-yearly and 4-yearly moving averages.
 - 13) Measurement of trend by Least Squares Method (St. line, Power curve and Exponential curve).
 - 14) Measurement of Seasonal variations by Simple averages method.
 - 15) Computation of unweighted indices by Simple Aggregative method and Average of Link relatives method.
 - 16) Computation of weighted indices by Laspeyre's, Paasche's and Fisher's formulae.
 - 17) Verification of tests of adequacy for index numbers given by Laspeyre, Paasche, Fisher, & Marshall-Edgeworth's formulae.
 - 18) Construction of Cost of living index number.
 - 19) Construction of Chain Base index numbers, Conversion between C.B.I. and F.I.I.
-

Books recommended

1. Goon A.M, Gupta M.K, Das Gupta, B. (1991): Fundamentals of Statistics, Vol World Press, Calcutta.
 2. Hodges J.K and Lehman E.L (1964): Basic Concept of Probability and Statistics, Hidden Day.
 3. Mood A.M, Graybill F.A, and Boes D.C (1974): Introduction to the Theory of Statistics, McGraw Hill
 4. Gupta and Kapoor : Fundamentals of Mathematical Statistics. Sultan and chand pub.
 5. Bhat B.K, Srivastaranam T, and Rao Madava K.S (1997): Statistics A Beginner's Text. Vol II New International(P) Ltd.
 6. Rohatgi V.K (1967): An introduction to Probability Theory and Mathematical Statistics, John Wiley and Sons.
 7. Snedecor G.W. and Cochran W.G., (1967): Statistical Iowa State University.
 8. Murthy M.N (1967) sampling Theory and Methods, Statistical Publishing Society, Calcutta.
 9. Sampath S. (2000): Sampling Theory and Methods, Narma Publishing House.
 10. Sathahne B.V (1964): Sample Survey methods and its Applications, Indian Society of Agricultural Statistics.
 11. Gupta and Kapoor Fundamentals of Applied Statistics: S.Chand Pub.
 12. Goon A.M., M.K. Gupta and Hides Gupta: Fundamentals of Statistics, Vol II. (World Press Calcutta).
 13. Des Raj (2000) Sample Survey Theory, Narma Publishing House.
 14. Cronon F.H and Condon D.J (1969): Applied General Statistics Practice Hall of India.
 15. Goon A.M, Gupta M.K, Das Gupta B. (1986): Fundamentals of Statistics, Vol.II World Press, Calcutta.
 16. Gupta and Kapoor
 17. Fundamentals of Applied Statistics, S.Chand, Gupta S.P, Statistical method, S.Chand
 18. S.C. Shrivastava, Sangya Shrivastava, Anmol Prakashan Pvt.ltd, New Delhi
 19. Ashtana and Shrivastava: Applied Statistics of India (Ujantary Pub)
 20. Gupta and Mukhopadhyay, P.P.L. Applied Statistics, Central Book Agency.
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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद**परिपत्रक क्रमांक/एस.यु./कला/अभ्यासक्रमा/७५/२०१४**

या परिपत्रकाद्वारे सर्व संबंधितांना सूचित करण्यात येते की, कला विद्याशाखेने शिफारस केल्यानुसार बी.ए., बी. एस्सी., बी.कॉम., बी.एस.डब्ल्यू., बी.एफ.ए., या मधील अनिवार्य, द्वितीय भाषा व ऐच्छिक तसेच एम. ए. हिंदी, इंग्रजी व संस्कृत द्वितीय वर्ष, तृतीय व चतुर्थ सत्र पध्दतीचे सुधारित अभ्यासक्रमास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेला विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाच्या आकृतीबंधाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

अ.क्र.	सुधारीत अभ्यासक्रम	विषय	सत्र
१.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	मराठी	तृतीय व चतुर्थ
२.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	हिंदी	तृतीय व चतुर्थ
३.	एम.ए.	हिंदी	तृतीय व चतुर्थ
४.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	इंग्रजी	तृतीय व चतुर्थ
५.	एम.ए.	इंग्रजी	तृतीय व चतुर्थ
६.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	उर्दू, अरेबिक आणि पारसियन	तृतीय व चतुर्थ
७.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य द्वितीय भाषा आणि ऐच्छिक	पाली आणि बुद्धीज्ञान	तृतीय व चतुर्थ
८.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	संस्कृत	तृतीय व चतुर्थ
९.	एम.ए.	संस्कृत	तृतीय व चतुर्थ

उपरोक्त सुधारीत केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाच्या आराखडाचा प्रत विद्यापीठाच्या [1] www.bamu.net, [2] www.affiliation.oasiasbamu.org या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४,
संदर्भ क्र.एस.यु./कला/जे.एल.के./२०१३-१४/
७२९९-७६९०
दिनांक :- ०२-०६-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
- २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
- ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
- ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
- ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
- ६) कक्षा अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
- ७) कक्षा अधिकारी, बी.ए., एम.ए. विभाग, परीक्षा भवन,
- ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

**DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
AURANGABAD**



**REVISED SYLLABUS
OF
COMPULSORY ENGLISH, OPTIONAL ENGLISH AND
ADDITIONAL ENGLISH (SL) COURSE
FOR
B.A./ B.SC./B.S.W./B.F.A.SECOND YEAR
SEMESTER THREE AND FOUR
EFFECTIVE FROM JUNE 2014**

SYLLABUS
COMPULSORY ENGLISH COURSE
B.A./B.SC. /B.S.W. /B.F.A. SECOND YEAR

THE COURSE OF S.Y.COMPULSORY ENGLISH CONSISTS OF ONE PAPER TO BE STUDIED IN TWO SEMESTERS.

TITLE OF THE PAPER: **LEARNING LANGUAGE SKILLS-II**

CODE OF THE PAPER: **CLE- 2**

AIM OF THE COURSE:

*To strengthen students' ability in listening, speaking, reading and writing both at practical and theoretical level.

OBJECTIVES OF THE COURSE:

*To introduce students to the grammatical properties in order to enable them to write and speak English consciously.

*To train them both in precision and in appropriate use of language through prose reading.

*To acquaint students with a keen and subtle way in which the English language is used.

COURSE CONTENT (SEMWISE)

SEMESTER THREE

PAPER TITLE &NO.: **LEARNING LANGUAGE SKILLS-II: PAPER-III**

UNIT ONE: PROSE

- 1) *The Importance of English*-Mulk Raj Anand
- 2) *How to Make a Speech*-Edgar I. Baker
- 3) *The Night Train at Deoli*-Ruskin Bond
- 4) *The Conjuror's Revenge*-Stephen Leacock
- 5) *The Luncheon*-W.Somerset Maugham

UNIT TWO: POETRY

- 1) *First Love*-John Clare
- 2) *All the World's a Stage*-William Shakespeare
- 3) *Next, Please*-Philip Larkin
- 4) *Father Returning Home*-Dilip Chitre
- 5) *Dover Beach*-Matthew Arnold

UNIT THREE: GRAMMAR

- 1) The Sentence and its Classes.
- 2) The Sentence Kinds: Simple Sentence, Compound Sentence, Complex Sentence and Compound- Complex Sentence.
- 3) Simple Sentences: Subject and Predicate.
- 4) Clauses and its Kinds.
- 5) Complex Sentences: Principal Clause and Subordinate Clause.
- 6) Compound Sentences and Compound-Complex Sentences.

UNIT FOUR: WRITING SKILLS

- 1) Use of Punctuations and Capital Letters

SEMESTER FOUR

PAPER TITLE&NO.: **LEARNING LANGUAGE SKILLS-II: PAPER-IV**

UNIT ONE: PROSE

- 1) *How to Avoid an Argument*-Sam Horn
- 2) *The Avenger*-Anton Chekhov
- 3) *On Not Answering the Telephone*-W.Plomer
- 4) *The Sporting Spirit*- George Orwell
- 5) *The Old Man at the Bridge*-Ernest Hemingway

UNIT TWO: POETRY

- 1) *Gather Ye Rosebuds*-Robert Herrick
- 2) *Mirror*-Sylvia Plath
- 3) *Sonnet 43*-Elizabeth Barrett Browning
- 4) *Nobody Loves Me*-Albert J. Nimeth
- 5) *Night of the Scorpion*-Nissim Ezekiel

UNIT THREE: GRAMMAR

- 1) Sentence Synthesis: Combining two or more Simple Sentences into one Simple Sentence, Combining two or more Simple Sentences into one Compound Sentence, Combining two or more Simple Sentences into one Complex Sentence.
- 2) Sentence Transformation/Conversion-I: Changing Exclamatory Sentence

into Assertive Sentence and vice versa, Changing an Interrogative Sentence into an Assertive Sentence and vice versa, Changing an Imperative Sentence into an Interrogative Sentence and vice versa, Interchange of the Degrees of Comparison, Changing Active into Passive voice and vice versa, Changing Negative Sentences into Affirmative Sentences and vice versa.

- 3) Sentence Transformation/Conversion-II: Conversion of Simple Sentences to Compound Sentences, Conversion of Compound Sentences to Simple Sentences, Conversion of Simple Sentences to Complex Sentences, Conversion of Complex Sentences to Simple Sentence.
- 4) Sentence Patterns/Structures:
 - a) Subject + Intransitive Verb
 - b) Subject+ Transitive Verb + Direct Object
 - c) Subject +Verb + Object + Adverb Particle
 - d) Subject + Verb + Indirect Object + Direct Object
 - e) Subject + Verb +Direct Object +Preposition + Indirect Object
 - f) Subject + Verb + Object + Complements
 - g) Subject + to be + Complement

UNIT FOUR: BUILDING VOCABULORY

- 1) Word-Formation: Use of Prefixes and Suffixes
- 2) Prepositional Verbs
- 3) Synonyms and Antonyms

PRESCRIBED TEXTS:

- 1) **LANGUAGE THROUGH WRITINGS: AN ANTHOLOGY OF PROSE AND POETRY**, Board of Studies in English, Cambridge University Press, 2014.
2. **ENGLISH GRAMMAR:- A BOOK OF SENTENCE STRUCTURE AND VOCABULORY**, Board of Studies in English, Cambridge University Press, 2014.
3. Recommended Reading: *Contemporary English Grammar Structures and Composition*, Rev.Edition, by David Green, MacmillanPublishers India Ltd., 2010.

SYLLABUS OPTIONAL ENGLISH COURSE

B.A. SECOND YEAR

THE COURSE OF OPTIONAL ENGLISH CONSISTS OF TWO PAPERS TO BE STUDIED IN TWO SEMESTERS SIMULTANEOUSLY.

LITERATURE IN ENGLISH 1550-1750

LITERATURE IN ENGLISH 1750-1900

AIM OF THE COURSE

*To enable students to read and appreciate various forms of literature and critically interact with them from different perspectives.

OBJECTIVES OF THE COURSE

*To introduce students to appropriate literary strategies to read literature.

*To pinpoint how far literary language deviates from ordinary language.

*To unravel many meanings in a literary text

COURSE CONTENT (SEMWISE)

SEMESTER THREE

PAPER-V: LITERATURE IN ENGLISH 1550-1750

PAPER CODE: OPE-3

UNIT ONE: BACKGROUND STUDY

- 1) The Essay-Its Definition, Origin and Kinds
- 2) The Epic- Its Definition, Conventions, and Kinds-Epic of Growth, Epic of Art and Mock Epic

UNIT TWO: FRANCIS BACON'S ESSAYS

- 1) ***Of Friendship***
- 2) ***Of Love***
- 3) ***Of Studies***
- 4) ***Of Revenge***
- 5) ***Of Parents and Children***

UNIT THREE: ALEXANDER POPE'S POEM

The Rape of the Lock

PAPER-VI: LITERATURE IN ENGLISH 1750-1900

PAPER CODE: OPE-4

UNIT ONE: BACKGROUND STUDY

- 1) The Ballad- Its Origin, Features, and Kinds
- 2) Features of Romantic Literature (all genres)

UNIT TWO: SAMUEL TAYLOR COLERIDGE'S POEM

Rime of the Ancient Mariner

UNIT THREE: THOMAS HARDY'S NOVEL

Far from the Madding Crowd

SEMESTER FOUR

PAPER-VII: LITERATURE IN ENGLISH 1550-1750

PAPER CODE: OPE-3

UNIT ONE: BACKGROUND STUDY

- 1) Shakespearean Tragedy- Its Characterization and Plot
- 2) Features of Restoration Literature (all genres)

UNIT TWO: WILLIAM SHAKESPEARE'S PLAY

Julius Caesar

UNIT THREE: DANIEL DEFOE'S NOVEL

Robinson Crusoe

PAPER-VIII: LITERATURE IN ENGLISH 1750-1900

UNIT ONE: BACKGROUND STUDY

- 1) The Dramatic Monologue-Its Characteristics, and Nature
- 2) Features of Victorian Literature (all genre)

UNIT TWO: ROBERT BROWNING'S POEM

Last Ride Together

UNIT THREE: OSCAR WILDE'S PLAY

Importance of Being Ernest

PRESCRIBED TEXT/S (For Background Study)

- 1) ***A Background to the Study of English Literature***, Rev. Edi., B.Prasad, Macmillan Publisher India Ltd.,2013.
- 2) ***A Short History of English Literature***, Pramod K. Nayar, Foundation Books, Cambridge University Press, 2009.

SYLLABUS

ADDITIONAL ENGLISH (S.L.) COURSE

B.A./B.SC. /B.S.W./ B.F.A. SECOND YEAR

THE ADDITIONAL ENGLISH COURSE CONSISTS OF ONE PAPER TO BE STUDIED IN TWO SEMESTERS

TITLE OF THE PAPER: **ADDITIONAL ENGLISH- PAPER-III, IV**

CODE OF THE PAPER: **SLE -2**

CONTENT OF THE COURSE (SEMWISE)

SEMESTER THREE

PAPER-III: ADDITIONAL ENGLISH (S.L.ENGLISH)

UNIT ONE: SHORT STORIES BY JAMES JOYCE

- 1) *The Sisters*
- 2) *Araby*
- 3) *Eveline*
- 4) *Clay*

UNIT TWO: WRITING STORY FROM OUTLINES

UNIT THREE: WRITING JOB APPLICATION

SEMESTER FOUR

PAPER-IV: ADDITIONAL ENGLISH (S.L.ENGLISH)

UNIT ONE: ONE ACT PLAY BY J.M.SYNGE

Riders to the Sea

UNIT TWO: DIALOGUES WRITING (ON IMAGINARY SITUATION)

UNIT THREE: ANSWERING QUESTIONS FROM AN UNSEEN PASSAGE

PRESCRIBED TEXT/S:

- 1) *Dubliners* by James Joyce.
- 2) *English Grammar:- A Book of Sentence Structure and Vocabulary*, Board of Studies in English, Cambridge University Press, 2014.

SCHEME OF MARKING

B.A./B.SC. /B.S.W. /B.F.A. SECOND YEAR

COMPULSORY ENGLISH

PAPER TITLE &NO.: **LEARNING LANGUAGE SKILLS-II: PAPER-III**
SEMESTER THREE

Time: Two Hours

Marks: 50

- 1) Question one will be on five prescribed prose pieces 15 Marks.
- 2) Question two will be on five prescribed poems 15 Marks.
- 3) Question three will be on grammar and writing skills 20 Marks.

Note: Model question paper will be incorporated.

B.A./B.COM. /B.SC. /B.S.W. /B.F.A. SECOND YEAR

COMPULSORY ENGLISH

PAPER TITLE &NO.: **LEARNING LANGUAGE SKILLS-II: PAPER-IV**
SEMESTER FOUR

Time: Two Hours

Marks: 50

- 1) Question one will be on five prescribed prose pieces 15 Marks.
- 2) Question two will be on five prescribed poems 15 Marks.
- 3) Question three will be on grammar and vocabulary 20 Marks.

Note: Model question paper will be incorporated.

B.A. SECOND YEAR

OPTIONAL ENGLISH

PAPER TITLE: **LITERATURE IN ENGLISH 1550-1750**

PAPER NO.: **PAPER-V**

SEMESTER THREE

Time: Two Hours

Marks: 50

- 1) Question one will be on background study with internal choice
10 Marks.
- 2) Question two will be on Bacon's essays with internal choice
20 Marks.
- 3) Question three will be on Pope's poem with internal choice
20 Marks.

Note: Model question paper will be incorporated.

PAPER TITLE: **LITERATURE IN ENGLISH 1750-1900**

PAPER NO.: **PAPER-VI**

SEMESTER THREE

Time: Two Hours

Marks: 50

- 1) Question one will be on background study with internal choice

10 Marks.

2) Question two will be on Coleridge's poem with internal choice

20 Marks.

4) Question three will be on Hardy's novel with internal choice

20 Marks.

Note: Model question paper will be incorporated.

PAPER TITLE: **LITERATURE IN ENGLISH 1550-1750**

PAPER NO.: **PAPER-VII**

SEMESTER FOUR

Time: Two Hours

Marks: 50

1) Question one will be on background study with internal choice

10Marks.

2) Question two will be on Shakespeare's play with internal choice

20 Marks.

3) Question three will be on Crusoe's novel with internal choice

20 Marks.

Note: Model question paper will be incorporated.

PAPER TITLE: **LITERATURE IN ENGLISH 1750-1900**

PAPER NO.: **PAPER-VIII**

SEMESTER FOUR

Time: Two Hours

Marks: 50

1) Question one will be on background study with internal choice

10 Marks.

2) Question two will be on Browning's poem with internal choice

20 Marks.

3) Question three will be on Wilde's play with internal choice

20 Marks.

Note: Model question paper will be incorporated.

ADDITIONAL ENGLISH (S.L.) COURSE

B.A./B.SC. /B.S.W./B.F.A. SECOND YEAR

TITLE OF THE PAPER: **ADDITIONAL ENGLISH**

PAPER NO.: PAPER-III

SEMESTER THREE

Time: Two Hours

Marks: 50

1) Question one will be on stories with internal choice-30 Marks

2) Question two will be on Unit Two-10 Marks

3) Question three will be on Unit Three-10 Marks

Note: Model question paper will be incorporated.

SEMESTER FOUR

TITLE OF THE PAPER: **ADDITIONAL ENGLISH**

PAPER NO.: PAPER-IV

Time: Two Hours

Marks: 50

1) Question one will be on one act play with internal choice-30 Marks

2) Question two will be on Unit Two-10 Marks

3) Question three will be on Unit Three-10 Marks

Note: Model question paper will be incorporated.

ACKNOWLEDGEMENT

The Board of Studies in English gratefully acknowledges the valuable suggestions from teachers of colleges regarding the content of the course. The Board also acknowledges supports from the University in this matter.

14, March 2014
University Campus

Sd/-
Chairman
Board of Studies in English
Dr. B. A. M. University Aurangabad.

**DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
AURANGABAD**



**Revised SYLLABUS
OF
COMPULSORY ENGLISH
FOR
B.COM.SECOND YEAR
SEMESTER THREE AND FOUR**

EFFECTIVE FROM JUNE 2014 AND ONWARDS

SYLLABUS
COMPULSORY ENGLISH COURSE
FOR
B.COM. SECOND YEAR

THE COURSE OF B.COM. S.Y.COMPULSORY ENGLISH CONSISTS OF ONE PAPER TO BE STUDIED IN TWO SEMESTERS.

TITLE OF THE PAPER: **ENGLISH FOR ENTREPRENEURS**

CODE OF THE PAPER: **BCOMCLE- 2**

AIM OF THE COURSE:

*To help students achieve excellent business communication skills for better employment.

OBJECTIVES OF THE COURSE:

*To introduce students to multi business communication skills.

*To inspire students for enterprise through prose reading.

*To strengthen students' writing skill through grammar.

COURSE CONTENT (SEMWISE)

SEMESTER THREE

PAPER TITLE &NO.: **ENGLISH FOR ENTREPRENEURS, PAPER-III**

UNIT ONE: BUSINESS COMMUNICATION

(A) TRASACTIONAL WRITING:

1. *Standard Business Letters*
2. *Handling Letters of Complaint*

(B)DISCUSSIONS/MEETINGS/TEAM SKILLS

1. *Preparing Agenda for Meetings*
2. *Writing Minutes for Meetings*

(C)JOBS AND CAREERS

1. *Applying for Jobs*
2. *Writing Cover Letters for Resumes*

UNIT TWO: PROSE FOR BUSINESS INSPIRATION

- 1) *On the Education of a Man of Business*-Arthur Helps
- 2) *In the Office*-A.S.Hornby
- 3) *When Ideas Make Money*-Shamila Ganeshan
- 4) *Appro JRD*-Sudha Murthy
- 5) *The Man Who E-Mailed the World*-Po Bronson

UNIT THREE: GRAMMAR: WRITING SKILL

1) THE SENTENCES:

- i) *Simple Sentences.*
- ii) *Clauses and its Kinds.*
- iii) *Complex Sentences.*
- iv) *Compound Sentences.*

2) USE OF PUNCTUATIONS AND CAPITAL LETTERS

SEMESTER FOUR

PAPER TITLE&NO.: **ENGLISH FOR ENTREPRENEURS, PAPER-IV**

UNIT ONE: BUSINESS COMMUNICATION

(A) TRANSACTIONAL WRITING:

1. *Drafting E-Mail for Business Correspondence*
2. *Writing Short Reports*

(B) DISCUSSIONS/MEETINGS/TEAM SKILLS

1. *Making Notes of Business Conversations*
2. *Business Promotions and Language for Advertising*

(C) JOBS AND CAREERS

1. *Preparing for Interviews*
2. *Taking Interviews*

UNIT TWO: PROSE FOR BUSINESS INSPIRATION

- 1) *India's Tech King*-From www.wipro.com
- 2) *A Speech by N.R. Narayana Murthy*-----
- 3) *Saving Money*-M.Leafe
- 4) *The Beauty Industry*-Aldous Huxley
- 5) *Face Book is making us Miserable*-Daniel Gulati

UNIT THREE: GRAMMAR: WRITING SKILL

1. SENTENCE PATTERNS/STRUCTURES

- a) *Subject + Intransitive Verb*
- b) *Subject+ Transitive Verb + Direct Object*
- c) *Subject +Verb + Object + Adverb Particle*
- d) *Subject + Verb + Indirect Object + Direct Object*
- e) *Subject + Verb +Direct Object +Preposition + Indirect Object*
- f) *Subject + Verb + Object + Complements*
- g) *Subject + to be + Complement*

2) WORD FORMATION

- a) Use of Prefixes
- b) Use of Suffixes

PRESCRIBED TEXTS:

1. **ENGLISH FOR ENTREPRENEURS,**

Board of Studies in English, Cambridge University Press, 2014.

2. **ENGLISH GRAMMAR: A BOOK OF SENTENCE STRUCTURE AND VOCABULORY,**

Board of Studies in English, Cambridge University Press, 2014.

3. Recommended Reading:

Contemporary English Grammar Structures and Composition,

Rev.Edition, by David Green, Macmillan Publishers India Ltd., 2010.

SCHEME OF MARKING

SEMESTER THREE

PAPER TITLE &NO.: ENGLISH FOR ENTREPRENEURS, PAPER-III

Time: Two Hours

Marks: 50

- 1) Question one will be on Unit One Business Communication consisting A, B, C with internal choice. 18 Marks.
- 2) Question two will be on Unit Two Prose for Business Inspiration consisting five questions out of which three have to be answered. 18 Marks.
- 3) Question three will be on Unit Three Grammar: Writing Skill. 14 Marks.

Note: Model question paper will be incorporated.

SEMESTER FOUR

PAPER TITLE &NO.: ENGLISH FOR ENTREPRENEURS, PAPER-IV

Time: Two Hours

Marks: 50

- 1) Question one will be on Unit One Business Communication consisting A, B, C with internal choice. 18 Marks.
- 2) Question two will be on Unit Two Prose for Business Inspiration consisting five questions out of which three have to be answered. 18 Marks.
- 3) Question three will be on Unit Three Grammar: Writing Skill.s 14 Marks.

Note: Model question paper will be incorporated.

ACKNOWLEDGEMENT

The Board of Studies in English gratefully acknowledges the valuable suggestions from the Dean and all the Chairmen, Faculty of Commerce, in selecting and finalizing the content of the course. The Board also acknowledges support from the University.

Sd/-

4, April 2014

Chairman

University Campus

Board of Studies in English

Dr. B. A. M. University Aurangabad.

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद**परिपत्रक क्रमांक/एस.यु./कला/अभ्यासक्रम/७५/२०१४**

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, कला विद्याशाखेने शिफारस केल्यानुसार बी.ए., बी. एस्सी., बी.कॉम., बी.एस.डब्ल्यू., बी.एफ.ए., या मधील अनिवार्य, द्वितीय भाषा व ऐच्छिक तसेच एम. ए. हिंदी, इंग्रजी व संस्कृत द्वितीय वर्ष, तृतीय व चतुर्थ सत्र पध्दतीचे सुधारित अभ्यासक्रमास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेला विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाच्या आकृतीबंधाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

अ.क्र.	सुधारीत अभ्यासक्रम	विषय	सत्र
१.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	मराठी	तृतीय व चतुर्थ
२.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	हिंदी	तृतीय व चतुर्थ
३.	एम.ए.	हिंदी	तृतीय व चतुर्थ
४.	बी.ए. बी. एस्सी. बी.कॉम., बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	इंग्रजी	तृतीय व चतुर्थ
५.	एम.ए.	इंग्रजी	तृतीय व चतुर्थ
६.	बी.ए. बी. एस्सी. बी.कॉम., बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	उर्दू, अरेबिक आणि पार्शियन	तृतीय व चतुर्थ
७.	बी.ए. बी. एस्सी. बी.कॉम., बी.एस.डब्ल्यू., अनिवार्य द्वितीय भाषा आणि ऐच्छिक	पाली आणि बुद्धीश्रम	तृतीय व चतुर्थ
८.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	संस्कृत	तृतीय व चतुर्थ
९.	एम.ए.	संस्कृत	तृतीय व चतुर्थ

उपरोक्त सुधारीत केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाच्या आराखड्याची प्रत विद्यापीठाच्या [1] www.bamu.net, [2] www.affiliation.osasishamu.org या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./कला/जे.एल.के. /२०१३-१४/
७२९१-७६९०
दिनांक :- ०२-०६-२०१४..

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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-2-

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
- २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
- ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
- ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
- ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
- ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
- ७) कक्ष अधिकारी, बी.ए.,एम.ए. विभाग, परीक्षा भवन,
- ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

**DR. BABASAHEB AMBEDKAR MARATHWADA
UNIVERSITY, AURANGABAD.**



**Syllabus of
B.Com.Second Year [First Language]**

MARATHI

Semester- III & IV

(Effective from June 2014 & onwards)



डॉ.सरकटे सदाशिव हरिभाऊ

अध्यक्ष

मराठी अभ्यास मंडळ,

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,

औरंगाबाद .

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.कॉम द्वितीय वर्ष - मराठी (प्रथम भाषा)

सत्र पध्दतीनुसार अभ्यासक्रम

जून २०१४ पासून लागू

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

सत्र पध्दतीनुसार अभ्यासक्रम

बी.कॉम.द्वितीय वर्ष प्रथम भाषा मराठी अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१४ पासून लागू

वाणिज्य व्यवहार, व्यवसाय आणि मराठी भाषा

अभ्यासक्रमाची उद्दिष्टे :

- १) बी.कॉम. द्वितीय वर्षाच्या मराठी विषयाचे अध्ययन करण्याच्या विद्यार्थ्यांना वाणिज्य व्यवसायात मराठी भाषेचे आकलन करून देणे.
- २) मराठी भाषेचा कार्यालयीन, व्यावसायिक कामकाजात होणारा वापर, गरज व स्वरूप विशेषांची माहिती करून देणे.
- ३) वाचन संस्कृतीच्या माध्यमातून व्यवसायाला पूरक आणि मूलभूत सहाय्य करणे
- ४) कार्यालयीन / व्यावसायिक भाषा व्यवहारासाठी आवश्यक लेखन कौशल्याचे उपयोजन करणे.
- ५) व्यावसायाच्या माध्यमातून मराठी भाषेला स्थान मिळवून देणे.

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

सत्र पध्दतीनुसार अभ्यासक्रम

बी.कॉम.द्वितीय वर्ष प्रथम भाषा मराठी अभ्यासक्रमाकरिता

अभ्यासपत्रिकेचे नाव : मराठी भाषा आणि वाणिज्य व्यवहार

सत्र - पहिले

तासिका : ६०

कोड नं. MAR - C-०१

गुण ५०

घटक विश्लेषण :

घटक क्र.०१ : भाषा आणि भाषा शिक्षण

भाषा म्हणजे काय ?

भाषेचे स्वरूप

भाषेचे कार्य

भाषेची विविध रूपे

घटक क्र.०२ : व्यापार व्यवहारात वाचन संस्कृतीचे महत्व

ग्रंथ निर्मिती

ग्रंथालय चळवळ

प्रकाशन संस्था

सार्वजनिक वाचनालये

घटक क्र.०३ : पत्रलेखन : तंत्र, स्वरूप व मायने

व्यावसायिक पत्रव्यवहार

कार्यालयीन पत्रव्यवहार

वाणिज्यविषयक पत्रव्यवहार

घटक क्र.०४ : जागतिकीकरणात मराठी भाषेचे महत्व

मराठी भाषा आणि हिंदी भाषा

मराठी भाषा आणि इंग्रजी भाषा

मराठी भाषा आणि इतर भाषा

घटक क्र.०५ : निबंध लेखन

निबंध : अर्थ व स्वरूप

निबंध : व्यावसायिक , आर्थिक विषयावर निबंधलेखन

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

सत्र पध्दतीनुसार अभ्यासक्रम

बी.कॉम.द्वितीय वर्ष प्रथम भाषा मराठी अभ्यासक्रमाकरिता

अभ्यासपत्रिकेचे नाव : व्यावसायिक मराठी आणि वाणिज्य व्यापार

सत्र - दुसरे

कोड नं.MAR - C- ०२

गुण ५०

घटक विश्लेषण :

तासिका : ६०

घटक क्र.०१ : कार्यालयीन लेखन तंत्र

कार्यालयीन लेखन तंत्र

कार्यालयीन लेखन तंत्र : स्वरूप व उपयोजन

सभेच्या कामकाजा संबंधीचे लेखन

अर्जलेखन, इतिवृत्त, निविदा, माहितीपत्रक, टिपणी लेखन

घटक क्र.०२ : अनुवाद तंत्र स्वरूप, प्रकार आणि उपयोजन

अनुवाद : व्याख्या व स्वरूप

कार्यालयीन अनुवाद

वाणिज्यीक अनुवाद

कायदेविषयक अनुवाद

पारिभाषिक शब्दांचा अनुवाद

* घटक क्र.०३ : वाणिज्य व्यवसाय व माध्यम

जनसंपर्क माध्यम : व्याख्या व स्वरूप

जनसंपर्क माध्यमाची विविध रूपे

वाणिज्य व्यवसायात प्रसार माध्यमाची भूमिका

जाहिरात मसुदा लेखन

जाहिरातीचे विविध घटक

आकाशवाणी व दूरचित्रवाणीवरील जाहिरात

घटक क्र.०४ : वाणिज्य व व्यापाराची सहाय्यभूत साधने

व्यापाराची व्याख्या व स्वरूप

व्यापार व्यवहारातील कार्यपध्दती

घटक क्र. ०५ : व्यापाराला मदत करणारी साधने

बँका, विमा, याहतूक, बाजारपेठ, जाहिरात, व्यापार व्यवहारातील कार्यालये


डॉ.सरकटे सदाशिव हरिभाऊ
अध्यक्ष

मराठी अभ्यास मंडळ,
डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद .

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,औरंगाबाद

बी. कॉम. प्रथम वर्ष मराठी अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१४ पासून लागू

वाणिज्य व्यवहार, व्यवसाय आणि मराठी भाषा (सत्र पहिले)

व्यावसायिक मराठी आणि वाणिज्य व्यापार (सत्र दुसरे)

प्रश्नपत्रिकेचे स्वरूप

प्र.१ ला	दीर्घोत्तरी (दोन पैकी एक)	- १५ गुण
प्र.२ रा.	दीर्घोत्तरी (दोन पैकी एक)	- १५ गुण
प्र.२ रा	लघुत्तरी (चार पैकी दोन)	- १० गुण
प्र.५ वा	टीपा द्या (चार पैकी दोन)	- १० गुण
	एकूण	- ५० गुण


डॉ.सरकटे सदाशिव हरिभाऊ
अध्यक्ष

मराठी अभ्यास मंडळ,
 डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
 औरंगाबाद .

DR. BABASAHEB AMBEDKAR MARATHWADA
UNIVERSITY, AURANGABAD.



Syllabus of

B.A./B.SC./B.F.A/B.S.W. Second Year Marathi (First Language)

Semester- III & IV

(Effective from June 2014 & onwards)


डॉ. सरकटे सदाशिव हरिभाऊ
अध्यक्ष
मराठी अभ्यास मंडळ,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद .

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.ए./ बी.एस्सी./बी.एस.डब्ल्यू

द्वितीय वर्ष मराठी (प्रथम भाषा) (सत्र तिसरे व सत्र चौथे)

कौड नं. MAR ००३ व MAR ००४

अभ्यासपत्रिका गद्य - पद्य व उपयोजित मराठी

संपादक मंडळ

मराठी अभ्यास मंडळ

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

अ.क्र.	नांव	पद
०१	डॉ.सरकटे सदाशिव हरिभाऊ	अध्यक्ष
०२	डॉ.हंडीबाग भारत सोपानराव	सदस्य
०३	डॉ. बडवे सतिश	सदस्य
०४	डॉ. धोंडगे मुंजा बाबूराव	सदस्य
०५	डॉ. पाटगणकर विद्यासागर जनादर्ण	सदस्य
०६	डॉ. शिंदे संजय दासू	सदस्य
०७	डॉ. सोलापूरे सिंधू	सदस्य
०८	डॉ. नळगे राजशेखर शरणप्पा	सदस्य
०९	ग्राचार्य डॉ. बिरादार वसंत माणिकराव	सदस्य
१०	डॉ. सावंकर कैलास नारायण	सदस्य

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.ए./बी.एस.सी./बी.एस.डब्ल्यू.

द्वितीय वर्ष प्रथम भाषा अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१४ पासून लागू

गद्य - पद्य व उपयोजित मराठी

अभ्यासक्रमाची उद्दिष्टे :

- १) बी.ए. द्वितीय वर्षाच्या विद्यार्थ्यांना मराठी विषयाचे अध्ययन करण्यासाठी मराठी साहित्यातील विविध प्रवाह आणि प्रकार लक्षात आणून देणे, लेखक कवीचे व्यक्तिमत्त्व त्यांच्या साहित्यातील आशय अभिव्यक्तीचा परिचय करून देणे.
- २) एकूणच मराठी साहित्याची आवड निर्माण करणे व आस्वाद घेण्याची क्षमता विकसित करणे.
- ३) साहित्याभ्यासातून जीवन जगण्याची कला विकसित करणे, समाजाकडे डोळसपणे पाहता येण्याची क्षमता विकसित करणे.
- ४) व्यवहार, विज्ञान, कार्यालयीन व वाङ्मयीन परिभाषेचे आकलन करता येणे.
- ५) विविध प्रसार माध्यमांची ओळख करून देणे.
- ६) माहिती तंत्रज्ञानाचा परिचय करून देणे.

घटक विश्लेषण (गद्य -पद्य व उपयोजित मराठी) :

- १) अभ्यासक्रमात समाविष्ट करण्यात आलेल्या पाठाचे लेखक व कवीचा परिचय करून देणे.
- २) पाठातील आशय समजावून घेणे.
- ३) पाठ आणि कवितेतील समाजिक मूल्ये, लोकशाही मूल्ये, औद्योगिक अनुभव, साहित्यिक मूल्ये, सांस्कृतिक मूल्ये यांचे आकलन करून घेणे.
- ४) विद्यार्थ्यांना व्यवहार ज्ञानाचे आकलन व्हावे व उपयोग करता यावा, नैसर्गिक संपत्तीचे संरक्षण करता यावे व तंत्रज्ञानाचा व्यवहारात उपयोग करता यावा यासाठी उपयोजित मराठी या घटकातील मुद्द्यांचा अभ्यास करणे.
- ५) वाचन संस्कृती वृद्धिंगत होण्यासाठी विविध वाङ्मय प्रकारातील ग्रंथांचा परिचय करून देणे.

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.ए./बी.एससी./बी.एस.डब्ल्यू

द्वितीय वर्ष प्रथम भाषा अभ्यासक्रमाकरिता

संपादक

मराठी अभ्यास मंडळ

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

शैक्षणिक वर्ष जून २०१४ पासून लागू

सत्र पहिले

कोड नं. MAR - ०३

गुण : ५०

अभ्यासपत्रिका ३ री गद्य - पद्य उपयोजित मराठी

घटक क्र. १

गद्य विभाग

तासिका - २०

पाठाचे नाव

लेखक

- | | |
|--|-----------------------|
| १) छत्रपती शिवाजी महाराजांच्या कार्याचे स्वरूप | प्र.न. देशपांडे |
| २) लोकसंस्कृती आणि जागतिकीकरण | डॉ.व.ता. भोसले |
| ३) मरणानं डाव साधला, नशिवानं हात दिला ! | सौ. सिंधूताई सपकाळ |
| ४) लोकराजे मा.खा. पवार साहेब | प्रा. लक्ष्मण डोबळे |
| ५) वही | सुरेश पाटील (इर्लेकर) |

घटक क्र. २

पद्य विभाग

तासिका - २०

कविता

कवी

- | | |
|-------------------------------|------------------|
| १) निष्कर्ष | सुहासिनी इर्लेकर |
| २) आकाशाएवढा | सदानंद सिनगारे |
| ३) सान्या घरालाच लागली वाळवी | प्रदीप पाटील |
| ४) कुणबी माझा ! | अनिल गव्हाणे |
| ५) बीरसा | बाबाराव मडावी |
| ६) अरुंद दारातून बाहेर पडताना | संजीवनी तडेगावकर |

उपयोजित मराठी

तासिका - २०

घटक क्र. ३

१) परिभाषा : तंत्र , स्वरूप व उपयोजन

परिभाषेचे स्वरूप व वैशिष्ट्ये, परिभाषेची आवश्यकता, शासन व्यवहारातील परिभाषा, विज्ञानाची परिभाषा, कार्यालयीन परिभाषा, वाङ्मयीन परिभाषा इ. चा परिचय व उपयोजन

२) आकाशवाणी प्रसार माध्यम : लेखनतंत्र व उपयोजन

आकाशवाणी श्राव्य प्रसार माध्यम - स्वरूप, आकाशवाणी या प्रसार माध्यमाचे घटक, परिचय(कार्यक्रम) बातमी, श्रुतिका, नभोनाट्य, संवाद, भाषण, मुलाखत इ.

आकाशवाणीचा प्रभाव - ज्ञान व विज्ञानाद्वारे संसंस्कार, लोकप्रबोधन, बातम्यांचा प्रसार, मनोरंजन, नैसर्गिक संकटाची पूर्वकल्पना , विविध सूचना

३) पुस्तक परिचय : तंत्र व स्वरूप

वाङ्मयलेखन प्रकारांचा परिचय

उदा. कथा, कादंबरी, कविता, चरित्र, आत्मचरित्र , निबंध इ.

वाङ्मयेत्तर लेखन प्रकारांचा परिचय

उदा. सामाजिकशास्त्रे, विज्ञान, वाणिज्य विषयक, विधीविषयक

४) जलनियोजन : तंत्र व स्वरूप

जलनियोजनाचे महत्त्व, जलनियोजन धरणे आणि शेती, धरणातील जलनियोजन , शेतीसाठी जलनियोजन.(झीप), पिण्यासाठी जलनियोजन

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.ए./बी.एस्सी./बी.एस. डब्ल्यू.

द्वितीय वर्ष मराठी (प्रथम भाषा) अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१४ पासून लागू

सत्र दुसरे

कोड नं. MAR - ०४

गुण : ५०

अभ्यासपत्रिका ४ थी - गद्य - पद्य व उपयोजित मराठी तासिका - २०

घटक क्र. १ गद्य विभाग

पाठाचे नाव	लेखक
१) चिपाड	अंबादास केदार
२) मिरगीपेर	विजय जावळे
३) काहूर	अंजली भयवाल, धानोरकर
४) गायरान	एकनाथ खिल्लारे
५) भूक	उमेश मोहिते

घटक २

तासिका २०

कविता	कवी
१) गर्भाशयात असताना	म.मो. जोशी
२) आबा	शिवाजी मारुती पाटील
३) पाचटाच्या मुलुखाले	कल्पना दुधाळ
४) जागलं	शिवाजी मरगीळ
५) कळसूत्री बाहूली	भारती रेवडकर
६) हशोब चुकता करा	वि.सो. वराट

उपयोजित मराठी

घटक क्र. ३

तासिका - २०

१) संगणक क्षेत्रातील संकल्पना : स्थूल परिचय

सॉफ्टवेअर , हार्डवेअर, विंडोज, फाईल, फोल्डर, डाटा, संगणकाची कौशल्य, भारतीय समाजावरील संगणकाचा प्रभाव

२) संगणकाची वैशिष्ट्ये -

अचूक काम , प्रचंड वेग, कामाची सलगता, माहितीचे संक्रमण व सादरीकरण, कामाची विविधता, स्वविचारक्षमता नाही

३) मराठी समाजावरील संगणकाचा प्रभाव

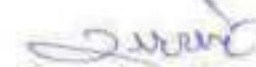
सामाजिक धोरणाचे मार्गदर्शन, नैसर्गिक आपत्तीचे पूर्वकथन, लोकसंख्याबद्दलचे मार्गदर्शन, निवडणूक व मतदान क्षेत्र, हवामानाचा अंदाज, वैज्ञानिक संशोधन, साहित्य क्षेत्रातील उपयोग, अंतराळ संशोधनाचे नियोजन

४) इंटरनेट : स्वरूप आणि कार्यप्रणाली

इंटरनेट : अर्थ आणि व्याख्या, वेबसाईट, ई- मेल, चॅट, सर्चिंग, ब्राऊझिंग, अकाऊंट, इंटरनेटचा भारतीय समाजावरील प्रभाव - सामाजिक परिवर्तन, हवामानाचा अंदाज, सेवा उद्योग, संपर्क साधने , संदेशाची सुलभता, व्यापारातील वाढ.

उपयोजित मराठी या विभागासाठी संदर्भ ग्रंथ

१) रेडिओवरील भाषणे आणि श्रुतिका	पु.ल. देशपांडे
२) संगणक परिचय	नंदकिशोर दायमा
३) संगणक संकल्पना	नंदकिशोर दायमा (विद्या प्रकाशन पुणे)
४) माहिती व तंत्रज्ञान मराठी	शिक्षक हस्तपुस्तिका , म.रा.मा.व उ.मा.मं. नाशिक
५) संगणक	विवेक म्हेत्रे
६) इंटरनेट तुमचा दोस्त	विवेक म्हेत्रे
७) संगणक तुम्हा आम्हा साठी	पद्मा पाटील



डॉ. सरफटे सदाशिव हरिभाऊ
अध्यक्ष

मराठी अभ्यास मंडळ,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद .

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी. ए. / बी. कॉम. / बी. एस्सी./बी.एस.डब्ल्यू.

द्वितीय वर्ष मराठी अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१४ पासून लागू

गद्य-पद्य व उपयोजित मराठीसाठी

प्रश्नपत्रिकेचे स्वरूप

वेळ : २.०० तास

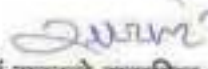
प्र.१ ला	दीर्घोत्तरी-गद्य (दोन पैकी एक)	- १५ गुण
प्र.२ रा	दीर्घोत्तरी-पद्य (दोन पैकी एक)	- १५ गुण
प्र.३ रा	लघुत्तरी-गद्य व पद्य (चार पैकी दोन)	- १० गुण
प्र.४ था	उपयोजित विभागावर-दीर्घोत्तरी (दोन पैकी एक)	- १० गुण
	एकूण	- ५० गुण

**DR. BABASAHEB AMBEDKAR MARATHWADA
UNIVERSITY, AURANGABAD.**



**Syllabus of
Marathi (Optional)
B.A. Second Year
Semester- V to VIII**

(Effective from June 2014 & onwards)


**डॉ. सरकटे सदाशिव हरिभाऊ
अध्यक्ष
मराठी अभ्यास मंडळ,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद .**

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

सत्र पध्दतीनुसार अभ्यासक्रम

शैक्षणिक वर्ष जून २०१४ पासून लागू

अभ्यास पत्रिका पाचवी

आधुनिक मराठी वाङ्मयाचा इतिहास

(इ.स. १८०० ते इ.स.१९२०)

अभ्यासक्रमाची उद्दिष्टे :

- १) इ.स. १८०० नंतरच्या वाङ्मयाचा इतिहासाचा सर्वांगीन अभ्यास करणे.
- २) इ.स.१८०० ते इ.स. १८७४ या कालखंडाची सामाजिक व सांस्कृतिक पार्श्वभूमी,विचार प्रणाली, सामाजिक चळवळी यांचा वाङ्मयावरील प्रभावाचा अभ्यास करणे.
- ३) इ.स.१८०० ते इ.स. १९२० या कालखंडातील वाङ्मय निर्मितीची पार्श्वभूमी,तिच्या प्रेरणा,प्रवृत्ती प्रवाह, महत्वाचे ग्रंथकार व त्यांच्या साहित्यकृती या अनुषंगाने अभ्यास करणे.
- ४) भाषांतरित वाङ्मय,नियतकालिके,निबंधमाला,वैचारिक व ललित निबंध,कथा, कादंबरी,नाटक, काव्य, चरित्र आणि आत्मचरित्र या वाङ्मय प्रकारातील ठळक ग्रंथकार व त्यांच्या वाङ्मयकृतींचा स्थूल अभ्यास करणे इत्यादी.

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ औरंगाबाद

शैक्षणिक वर्ष जून - २०१४ पासून लागू

विषय - बी.ए.मराठी द्वितीय वर्ष (ऐच्छिक) कोड.नं. MAR -१०५

आधुनिक मराठी वाङ्मयाचा इतिहास (इ.स. १८०० ते इ.स.१९२०)

अभ्यास पत्रिका पाचवी

सत्र पहिले

घटक: १ - इ.स. १८०० ते इ.स. १८७४ या कालखंडाची सामाजिक व सांस्कृतिक पार्श्वभूमी

- १.१ संस्कृतीची संकल्पना व स्वरूप
- १.२ संस्कृती आणि इतिहास
- १.३ संस्कृती आणि साहित्य अंतःसंबंध
- १.४ साहित्य आणि सामाजिक दृष्टी
- १.५ मुद्रणकलेचा उदय
- १.६ शाळा पुस्तक मंडळी व ख्रिस्ती मिशनऱ्यांची पुस्तके
- १.७ धार्मिक प्रबोधनाच्या चळवळी
- १.८ नियतकालिकांचा उदय

घटक : २ - निबंध,स्वरूप,विशेष

- २.१ लोकहितवादीची 'शतपत्रे' १८०० ते १८७४
- २.२ महात्मा फुलेंचे लेखन
- २.३ 'निकंधमाला' - इ.स.१८७४ ते इ.स.१९२०

घटक : ३ - कथा - वाङ्मयाचे स्वरूप , विशेष

- ३.१ कथा वाङ्मयाच्या प्रारंभाचे स्वरूप
- ३.२ अव्यल इंग्रजी कालखंड
- ३.३ 'करमणूक' कालखंड

घटक : ४ - कादंबरी वाङ्मयाचे स्वरूप, विशेष

४.१ इ.स. १८५७ ते इ.स.१८८५ या काळातील कादंबरी

४.२ इ.स. १८८५ ते इ.स. १९२० या काळातील कादंबरी

संदर्भ ग्रंथ -

- १) मराठी साहित्याची सांस्कृतिक पार्श्वभूमी - गो.म.कुलकर्णी
- २) महाराष्ट्राचा सांस्कृतिक इतिहास - शं.दा.पेंडसे
- ३) साहित्य, समाज, आणि संस्कृती - दिगंबर पाध्ये
- ४) आधुनिक मराठी वाङ्मयाचा इतिहास (भाग पहिला व दुसरा) - डॉ.अ.ना.देशपांडे
- ५) मराठी वाङ्मयाचा इतिहास (खंड ४ व ५) - रा.श्री. जोग
- ६) मराठी वाङ्मयाचा इतिहास (खंड १ ते ४) - साहित्य परिषद पुणे
- ७) प्रदक्षिणा (भाग पहिला व दुसरा) - कॉन्टिनेंटल प्रकाशन
- ८) अर्वाचीन मराठी गद्याची पूर्वपीठिका - गं. वा. सरदार
- ९) मराठी कथा उगम आणि विकास - इंदूमती शेवडे
- १०) मराठी कादंबरीचे पहिले शतक - कुसुमायती देशपांडे
- ११) भारतीय संस्कृती - साने गुरुजी
- १२) मराठी निबंध : उद्गम आणि विकास - गिरीश मोरे
- १३) मराठी कादंबरीचा इतिहास - चंद्रकांत बांदिवडेकर
- १४) घर आणि काठ - नरहर कुरुंदकर
- १५) साहित्य आणि संदर्भ - अंजली सोमन
- १६) मराठी वृत्तपत्राचा इतिहास - वा.के. लेले
- १७) आधुनिक मराठी वाङ्मयाचा इतिहास (संपादक) डॉ.भारत हंडीबाग.

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापिठ,औरंगाबाद.

शैक्षणिक वर्ष जून २०१४ पासून लागू

विषय- मराठी बी.ए.द्वितीय वर्ष (ऐच्छिक)

कोड नं MAR-१०६

अभ्यास पत्रिकेचे नाव - दृक-श्राव्य माध्यमांसाठी लेखन कौशल्ये

अभ्यासपत्रिका-सहावी

गुण :५०

तासिका-६०

अभ्यासक्रमाची उद्दिष्ट्ये :

- १) दृक-श्राव्य माध्यमांसाठी लेखन कौशल्याचा अभ्यास करणे.
- २) इलेक्ट्रॉनिक मिडीयाने अवघे विश्वच पादाक्रांत केले आहे.संपूर्ण जगातील माहिती नभोवाणी,दूरचित्रवाहिन्या आणि संगणकाद्वारे आपल्या घरा-दारात पोहचत आहेत.त्या विषयीचा अभ्यास करणे.
- ३) बातम्या,मुलाखती,रुपक,विविध मालिका,फॅशन शो, सिनेमा यांमुळे नवनवीन गोष्टीचे अकलन अभ्यासाद्वारे करणे.
- ४) नभोवाणिविषयक लेखन कौशल्यांचा अभ्यास करणे.
- ५) दूरचित्रवाणिविषयक लेखन कौशल्यांचा अभ्यास करणे.
- ६) संप्रेषणाची प्रगती,बोलीभाषेचे महत्व काय आहे हे अभ्यासाद्वारे सांगता येईल.
- ७) नभोवाणिवरील भाषण व सभेतील भाषण यांतील फरकाचा अभ्यास करणे.
- ८) नभोवाणी चर्चेतील सहभागी व्यक्ती व सूत्रधार यांच्या जबाबदाऱ्या कोणत्या त्यांचा अभ्यास करणे.
- ९) नभोवाणिवरील बातम्यांचे स्वरूप व त्यांची वैशिष्ट्ये स्पष्ट करता येणे.
- १०) नभोवाणिवरील बातम्या व वृत्तपत्रातील बातम्या यांतील फरकाचा अभ्यास करणे.
- ११) रुपकामध्ये नाटक,भाषण,मुलाखत,चर्चा,कविता,गीत,संगीत,निवेदन वा आकाशवाणि-वरून प्रसारीत होणाऱ्या इतर कार्यक्रम समावेशाचा अभ्यास करणे.

- १२) रूपक आणि नाटक यातील फरकाचा अभ्यास करणे.
- १३) नमोनाट्याची बांधणीकरताना मध्यदली कल्पना, कथा, पात्रांचे संवाद, स्वभाव रेखाटन, ध्वनिसंकेत आणि संगीत यांचा विचार कसा करावा हे सांगण्याचा अभ्यास करणे.
- १४) नमोनाट्य आणि श्रुतिका यांतील फरक स्पष्ट करता येईल.
- १५) नमोवाणीवरील जाहिरात लेखनाचा हेतू व त्यांचे तंत्र अभ्यासणे.
- १६) परिसंवाद स्वरूप, वेगळेपण आणि त्यांचे तंत्र अभ्यासणे.
- १७) दूरचित्रवाणी लेखनाची उद्दीष्टे व प्रकार कसे निश्चित करावे याची माहिती सांगण्याचा अभ्यास करणे.
- १८) दूरचित्रवाणी संहितेची भाषा कशी असायला हवी व संहितालेखनाचे तंत्र कोणते हे स्पष्ट सांगणे.
- १९) दृक्-श्राव्य रूपात कार्यक्रमाची निर्मिती कशी होते, याची माहिती देणे.
- २०) दूरचित्रवाणीवरील बातमीपत्रांचे स्वरूप स्पष्ट करून सांगण्याचा अभ्यास करणे.
- २१) दूरचित्रवाणीवरील बातमीपत्रांचे संपादन व लेखन कसे करावे हे स्पष्ट करण्याचा अभ्यास करणे.
- २२) दृक्-श्राव्य रूपात कार्यक्रमाची निर्मिती कशी होते, याची कल्पना स्पष्ट करण्याचा अभ्यास करणे.

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापिठ,औरंगाबाद.

शैक्षणिक वर्ष जून २०१४ पासून

विषय- मराठी बी.ए.द्वितीय वर्ष (ऐच्छिक)

कोड नं MAR-१०६

गुण : ५०

अभ्यास पत्रिकेचे नाव - दृक-श्राव्य माध्यमांसाठी लेखन कौशल्ये

अभ्यासपत्रिका-सहावी

तासिका-६०

सत्र पहिले

घटक- १ नभोवाणी

- १.१ नभोवाणी स्वरूप आणि कार्य.
- १.२ नभोवाणी संप्रषण.
- १.३ नभोवाणिवरील भाषण,घर्चा व मुलाखत
- १.४ नभोवाणिवरील बातमीपत्रे
- १.५ रूपक,श्रुतिका आणि नभोनाट्य
- १.६ नभोवाणीच्या जाहिराती

घटक- २ दूरचित्रवाणी

- २.१ दूरचित्रवाणी स्वरूप कार्य व विस्तार
- २.२ दूरचित्रवाणी लेखन व निर्मिती
- २.३ दूरचित्रवाणी कार्यक्रमांचे प्रकार
- २.४ दूरचित्रवाणिवरील बातम्या

घटक- ३ संकेत स्थळ

- ३.१ संकेत स्थळ संकल्पना आणि उपयोजन
- ३.२ संकेतस्थळाचा परीचय
- ३.३ संकेत स्थळावर साहित्यविषयक घडामोडी
- ३.४ ई-डिक्सनरी,विश्वकोष

संदर्भ ग्रंथ :

- १) बोलू ऐसे बोल - लिलावती भागवत
- २) नभोवाणी कार्यक्रम तंत्र आणि मंत्र - पुष्पा काणे (इंडिया युक्त कंपनी,पुणे- ३०)
- ३) विसावे शतक आणि विज्ञान - निरंजन घाटे
- ४) आकाशवाणी आणि मार्कोनी संदंवीची नोंद पहायी - विश्वकोश खंड -१
- ५) संगणक परिचय नंदकिशोर दायमा
- ६) संगणक संकल्पना नंदकिशोर दायमा
(विद्या प्रकाशन पुणे)
- ७) माहिती व तंत्रज्ञान मराठी शिक्षक हस्तपुस्तिका
म.शा.मा.व उ.मा.मं. नाशिक
- ८) संगणक विवेक म्हेत्रे
- ९) इंअरनेट तुमचा दोस्त विवेक म्हेत्रे
- १०) संगणक तुम्हा आम्हा साठी पद्मा पाटील

डॉ.वाबासाहेब आंबेडकर मराठवाडा विद्यापीठ औरंगाबाद

शैक्षणिक वर्ष जून - २०१४ पासून

विषय - मराठी, बी.ए.द्वितीय वर्ष (ऐच्छिक) कोड.नं. MAR -१०७

आधुनिक मराठी वाङ्मयाचा इतिहास (इ.स. १८०० ते इ.स.१९२०)

अभ्यास पत्रिका सातवी

सत्र दुसरे

घटक १ : नाट्य वाङ्मयाचे स्वरूप , विशेष

- १.१ नाटकाची भारतीय परंपरा व विकास
- १.२ मराठी रंगभूमीचा उदय
- १.३ संगीत नाटकांचा मानदंड : अण्णासाहेब किर्लोस्कर
- १.४ इ.स.१८८५ ते इ.स.१९२० या कालखंडातील नाट्यवाङ्मय

घटक २ : काव्य वाङ्मयाचे स्वरूप, विशेष

- २.१ प्रारंभीची भाषांतरित कविता
- २.२ केशवसुत व सगकातीन कवी

घटक ३ : चरित्र - आत्मचरित्र वाङ्मयाचे स्वरूप विशेष

- ३.१ इ.स. १८०० ते इ.स. १९२० या कालखंडातील चरित्र
- ३.२ इ.स. १८०० ते इ.स. १९२० या कालखंडातील आत्मचरित्र

संदर्भ ग्रंथ :

- | | |
|---|----------------------------|
| १) स्त्री सुधारणा विषयक मराठी नाट्यलेखन | - मृणालिनी शहा. |
| २) मराठी कविता | - निशिकांत ठकार |
| ३) आधुनिक मराठी कविता | - रा.श्री.जोग |
| ४) आधुनिक मराठी कविता | - म.श्री. पंडित |
| ५) मराठी फार्स | - भीमराव कुलकर्णी |
| ६) आधुनिक मराठी काव्याचे अंतःप्रवाह | - वा.भा. पाटक |
| ७) मराठी रंगभूमीचा इतिहास भाग एक | - प्रा. श्री.ना.बनहट्टी |
| ८) नाट्याचार्य देवल | - प्रा. श्री. ना. बनहट्टी |
| ९) मराठी नाट्यसंसार | - वि.स. खांडेकर |
| १०) चरित्र - आत्मचरित्र (तंत्र आणि इतिहास) | - अ.म.जोशी. |
| ११) चरित्र - आत्मचरित्र (साहित्य रूप) | - डॉ.सदा कऱ्हाडे |
| १२) आधुनिक मराठी वाङ्मयाचा इतिहास | - डॉ.भारत हंडीबाग (संपादक) |

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.ए.मराठी सत्रनिहाय अभ्यासक्रम

सत्र दुसरे

अभ्यासपत्रिका आठवी (ऐच्छिक) (MAR- १०८)

साहित्य प्रकारांतर आणि साहित्याचे माध्यमांतर

अभ्यासक्रमाची उद्दिष्ट्ये :-

- १) साहित्य प्रकारांतराची संकल्पना स्पष्ट करणे.
- २) माध्यमांचे महत्त्व स्पष्ट करून त्याचा साहित्याशी असणारा अनुबंध उलगडून दाखविणे
- ३) माध्यमांसाठीच्या विविध लेखन प्रकारांचा परिचय करून देणे.
- ४) माध्यमांसाठीच्या लेखनप्रकाराचे महत्त्व व आवश्यकता याविषयी स्थूल परिचय घडविणे.
- ५) माध्यम लेखनात असणारे साहित्याचे महत्त्व विशद करणे.

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

शैक्षणिक वर्ष जून - २०१४ पासून लागू

बी.ए.मराठी द्वितीय वर्ष (ऐच्छिक) सत्रनिहाय अभ्यासक्रम

अभ्यासपत्रिका आठवी (MAR १०८)

सत्र दुसरे

गुण : ५०

साहित्य प्रकारांतर आणि साहित्याचे माध्यमांतर

तासिका : ६०

घटक १. साहित्य प्रकारांतराची संकल्पना व स्वरूप

- १.१) साहित्य प्रकारांतर म्हणजे काय ?
- १.२) साहित्य प्रकारांतर : मूल रचनाबंध मोडून नवा रचनाबंधाची निर्मिती.
- १.३) वाङ्मय प्रकारांतराची लेखकाला घाटणारी आवश्यकता.
(उदा. एकांकिकेचे नाटक,कादंबरीचे नाटक करणे)
- १.४) साहित्य प्रकारांतराची काही उदाहर्णे.

घटक २. 'माध्यम' संकल्पना: प्रकार व वैशिष्ट्ये

- २.१) महत्त्वाची माध्यमे : मुद्रित, श्राव्य व दृक-श्राव्य माध्यम
- २.२) माध्यमे व साहित्य यांचा अनुबंध
- २.३) माध्यमांसाठी साहित्याची आवश्यकता
- २.४) माध्यम : आधुनिक काळाची गरज

घटक ३. माध्यमासाठीचे लेखन

- ३.१) मुद्रित माध्यमासाठीचे लेखन (स्थूल परिचय)
(सदर लेखन,स्फुटलेखन,अग्रलेख,ग्रंथपरीक्षण इ.)
- ३.२) श्राव्य माध्यमासाठीचे लेखन
(श्रुतिका व नभोनाट्य लेखन
- ३.३) दृक-श्राव्य माध्यमासाठीचे लेखन
(पटकथा लेखन (मालिकेसाठी), साहित्यविषयक अन्य कार्यक्रम उदा.वाचाल तर वचाल, साहित्यविषयक गप्पा,मुलाखती इ.)

३.४) माध्यम लेखनाची वैशिष्ट्ये

(उदा. संवाद लेखन, चित्रिकरणाचे भान असणे, ध्वनी संयोजन, पार्श्वसंगीताचा वापर, कथेच्या गुंफणीतील रहस्यमयता इ.)

घटक ४. साहित्याचे माध्यमांतर (चित्रपटाच्या विशेष संदर्भात)

- ४.१) चित्रपट,पटकथा लेखनाचे स्वरूप.
- ४.२) कथा वा कादंबरीवरून चित्रपटकथा लेखनाचे वेगळेपण.
- ४.३) लघुपट व लघुपटाचे कथालेखन
- ४.४) मराठी साहित्य व चित्रपट : एक अनुबंध.

साहित्यकृती : १) नटरंग - आनंद यादव

पूरक संदर्भ पुस्तके:-

- १) अंतरीचा दिवा: वि.स.खांडेकर,मेहता पब्लिशिंग हाऊस,पुणे
(प्रस्तुत ग्रंथ वि.स.खांडेकर यांच्या पटकथांचा संग्रह आहे.)
- २) सर्जनशील लेखन : आनंद पाटील
- ३) साहित्य :आस्वाद,अध्यापन आणि समीक्षा (डॉ.वा.मु.गिडें यांच्या निवडक लेखांचा संग्रह) संपादन: सतीश वडवे,
(या पुस्तकातील वाङ्मय प्रकारांतराचे स्वरूप : काही विचार हा लेख)
- ४) व्यावहारिक व उपयोजित मराठी (भाग १ व २) डॉ. प्रकाश भेदकर, विद्या
भुक्स,औरंगाबाद.
- ५) निवडक भाषा आणि जीवन, संपादक: कल्याण काळे, मेहता पब्लिशिंग हाऊस,पुणे.


डॉ.सरकटे सदाशिव हरिभाऊ

अध्यक्ष

मराठी अभ्यास मंडळ,

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद .

डॉ.वाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद
 शैक्षणिक वर्ष जून - २०१४ पासून लागू
 बी.ए.मराठी द्वितीय वर्ष (ऐच्छिक) सत्रनिहाय अभ्यासक्रम
 (अभ्यासपत्रिका क्र.५,६,७ व ८ साठी प्रश्नपत्रिकेचे स्वरूप)

प्र.१ ला	दीर्घोत्तरी (दोन पैकी एक)	- १५ गुण
प्र.२ रा	दीर्घोत्तरी (दोन पैकी एक)	- १५ गुण
प्र.३ रा	लघुत्तरी (चार पैकी दोन)	- १० गुण
प्र.४ वा	टीपा लिहा (चार पैकी दोन)	- १० गुण
	एकूण	- ५० गुण

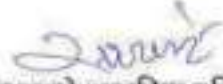
डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

मराठी विषयाच्या अभ्यासक्रमाचा आराखडा

बी.ए./बी.एस्सी./बी.कॉम/बी.एस.डब्ल्यू प्रथम भाषा व बी.ए.द्वितीय वर्ष ऐच्छिक

शैक्षणिक वर्ष जून - २०१४ पासून लागू

पेपर कोड नं.	पेपर नं.	पेपर शीर्षक	क्रेडीट	सत्र परीक्षा गुण	सत्र
MAR-००३	अभ्यास पत्रिका तिसरी	गद्य-पद्य व उपयोजित मराठी	०४	५०	सत्र पहिले
MAR-००४	अभ्यास पत्रिका चौथी	गद्य-पद्य व उपयोजित मराठी	०४	५०	सत्र दुसरे
MAR-१०५	अभ्यास पत्रिका पाचवी	आधुनिक मराठी वाङ्मयाचा इतिहास	०४	५०	सत्र पहिले
MAR-१०६	अभ्यास पत्रिका सहावी	दृक-श्राव्य माध्यमांसाठी लेखन कौशल्य	०४	५०	सत्र पहिले
MAR-१०७	अभ्यास पत्रिका सातवी	आधुनिक मराठी वाङ्मयाचा इतिहास	०४	५०	सत्र दुसरे
MAR-१०८	अभ्यास पत्रिका आठवी	साहित्य प्रकारांतर आणि साहित्याचे माध्यमांतर	०४	५०	सत्र दुसरे


डॉ.सरकटे सदाशिव हरिभाऊ
अध्यक्ष

मराठी अभ्यास मंडळ,
डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद .

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यु./कला/अभ्यासक्रम/७५/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सूचित करण्यात येते की, कला विद्याशाखेने शिफारस केल्यानुसार बी.ए. बी. एस्सी., बी.कॉम., बी.एस.डब्ल्यू., बी.एफ.ए., या मधील अनिवार्य, द्वितीय भाषा व ऐच्छिक तसेच एम. ए. हिंदी, इंग्रजी व संस्कृत द्वितीय वर्ष, तृतीय व चतुर्थ सत्र पध्दतीचे सुधारित अभ्यासक्रमास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेला विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाच्या आकृतीबंधाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

अ.क्र.	सुधारीत अभ्यासक्रम	विषय	सत्र
१.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	मराठी	तृतीय व चतुर्थ
२.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	हिंदी	तृतीय व चतुर्थ
३.	एम.ए.	हिंदी	तृतीय व चतुर्थ
४.	बी.ए. बी. एस्सी. बी.कॉम., बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	इंग्रजी	तृतीय व चतुर्थ
५.	एम.ए.	इंग्रजी	तृतीय व चतुर्थ
६.	बी.ए. बी. एस्सी. बी.कॉम., बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	उर्दू, अरेबिक आणि पार्शियन	तृतीय व चतुर्थ
७.	बी.ए. बी. एस्सी. बी.कॉम., बी.एस.डब्ल्यू., अनिवार्य द्वितीय भाषा आणि ऐच्छिक	पाली आणि बुद्धीयम	तृतीय व चतुर्थ
८.	बी.ए. बी. एस्सी. बी.कॉम. बी.एस.डब्ल्यू., अनिवार्य, द्वितीय भाषा व ऐच्छिक	संस्कृत	तृतीय व चतुर्थ
९.	एम.ए.	संस्कृत	तृतीय व चतुर्थ

उपरोक्त सुधारीत केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाच्या आराखड्याची प्रत विद्यापीठाच्या [1] www.bamu.net, [2] www.affiliation.oasiasbamu.org या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./कला/जे.एल.के. /२०१३-१४/
७२९१-७६९०
दिनांक :- ०२-०६-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

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-2-

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
- २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
- ३) संचालक, मुनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
- ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
- ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
- ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
- ७) कक्ष अधिकारी, बी.ए.,एम.ए. विभाग, परीक्षा भवन,
- ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मार्गे,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

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† Öî , Óü ÖÖ² ÖÖ¤ ü -
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(Effect from June - 2014 &
onwards)

प्रश्नपत्र -III	बी.ए.: सामान्य हिंदी -३
प्रश्नपत्र -V	: थेत्तर ाघ साहिाय
प्रश्नपत्र-VI	:प्रयोजनमूल हिंदी- १
प्रश्नपत्र -IV	:बी.ए.: सामान्य हिंदी -४

प्रश्नपत्र -VII :आधुनि हिंदी वि० II

प्रश्नपत्र -VIII :प्रयोजनमूल हिंदी -2

2. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें :
3. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें :

1. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें : 3

2. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें : (Semester - III)

3. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें : 2014

4. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें :

- 1) साहित्य आस्वादन अभिरुची का परिसंस्कार
- 2) जीवन मूल्यों के प्रति आस्था
- 3) अर्थ याधुनि इलेक्ट्रानि माध्यमों का परिचय

5. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें :

- 1) व्यायान पद्धति
- 2) लेखन एवं पठन शैली वृद्धि के लिए अभ्यास
- 3) दूर-श्रव्य माध्यम का प्रयोग

6. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें :

7. निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें : संपा.-
प्रो.जयमोहन एम.एस., वाणी प्रकाशन, नई दिल्ली

- निम्नलिखित में से एक प्रश्न चुनिए और उत्तर दें :
, उक्त प्रश्नों में से एक चुनिए

- १) आँ मवृत्त : मेरा जीवन
- २) रे ाचित्र- नील ं ठ मोर
- ३) संस्मर ा - मला
- ४) निबंध- शिरीष ` फुल
- ५) यात्रावृत्त - चीडो पर चाँदनी

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- १) प्रयोजनमूल भाषा
अ) भाषा ा स्वरूप एवं महत्त्व
आ) भाषा ि परिभाषा, विशेषाँ एवं प्र ार्य
इ) वैश्वी र ा ` परिप्रे य में हिदी भाषा ा महत्त्व
- २) भाषा शि ा ा : स्वरूप एवं प्र ि या
अ) भाषा शि ा ा ि प्र ि या,
आ) भाषा ौशल
१. श्रव ा ौशल २. भाष ा ौशल
३. वाचन ौशल ४. ले ान ौशन
- ३) व्यावसायि हिन्दी
अ) वािज्य व्यापार : ाापर्य एवं स्वरूप
आ) वािज्य व्यापार ` साधन
इ) वािज्य व्यापार और भाषि ा प्र ार्य
ई) वािज्य-व्यावसायि भाषा : संरचनाँ म ि विशेषाँ
उ) व्यावसायि पत्र ले ान
- ४) निबंध ले ान :
अ) निबंध : ँ ाँ पर्य एवं स्वरूप
आ) निबंध ले ान : साहिँय / सामाजि / समसामायि समस्या /
वैज्ञानि विषय

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- १) साहिँय विधाओं ि प्र ि ा : देवी शं र अवस्थी

- २) हिंदी ाद्य : विन्यास और वि ास : डॉ. रामस्वरूप चर्ुर्वेदी
- ३) हिंदी ा ाद्य पर्व : डॉ. नामवर सिंह
- ४) हिंदी ँ अद्ययँ ान अनुप्रयो ा : डॉ. माधव सोनटक्
- ५) प्रयोजनमूल ँ यँ ाथा व्यावहारि हिंदी : डॉ. सुुमार भंडारे

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- प्र.१ ' ाद्य ँ विविध आयाम' पर ससंदर्भ व्या या वि ल्य सहियँ ा १०
- प्र.२ ' ाद्य ँ विविध आयाम' पर वि ल्य सहिँ ा दीर्घोत्तरी प्रश्न १५
- प्र.३ प्रयोजनमूल हिन्दी ँ पाठ्यांश पर वि ल्य सहिँ ा दीर्घोँ ारी प्रश्न १५
- प्र.४ टिप्प णी लि ािए
- अ) प्रयोजन मूल हिन्दी ँ पाठ्यांश पर वि ल्य सहिँ ा ०५
- आ) प्रयोजनूल हिन्दी ँ पाठ्यांश पर वि ल्य सहियँ ा ०५

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- १) साहिŸ य आस्वादन अभिरूची ा परिसंस् ार
- २) जीवन मूल्यों ँ प्रीŸ ा आस्था
- ३) भाषा प्राद्योिी - विज्ञापन ाला व ज्ञान
- ४) अŸ याधुनि ं इलेक्ट्रानि ं माध्यमों ा परिचय

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- १) व्या यान पद्धीŸ ा
- २) ले ान व पठन ौशल वृद्धि ँ लिए अभ्यास
- ३) दृ -श्रव्य माध्यमों ा प्रयो ा

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- १) डायरी- स्त्री घर
- २) व्यं य - र मल हो ाये
- ३) रिपोर्ाज - जहाँ आ ाश नहीं दि ाई देँ ा।
- ४) निबंध- ुरीँ ाँ ाँ ाँ, परिवार नहीं
- ५) जीवनी - स्वामी दयानंद

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- १) मीडिया ले ान -
अ.जनसंचार माध्यम : विविध रूप
आ. समाचार ले ान
इ. रेडिओ वाँ ाँ ले ान
ई. फीचर ले ान

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अ. वैज्ञानि , ि ा नी ि ले ान ा सरूप एवं विशेषाँ ाँ
आ. वैज्ञानि ले ान में पारिभाषि शब्दावली ि भूमि ा

- १) पारिभाषि शब्दावली ा निर्मा ा : सिद्धानँ ा एवं प्रयो ा
- २) वैज्ञानि ि ा नी ि शब्दावली (परिशिष्ट -अ)
- ३) वैज्ञानि ि ा नी ि अनुवाद ा स्वरूप
- ४) वैज्ञानि ि ा नी ि अनुवाद व्यवहार

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अ.शब्द अशुद्धि

आ. वाक्य अशुद्धि

इ. मुद्रिका शोधन

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अ) बैँि ा अनुवाद

आ) मीडिया अनुवाद

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- १) साहिँय विधाओं ि प्रुँिः देवी शं र अवस्थी
- २) हिंदी ाद्य : विन्यास और वि ास : डॉ. रामस्वरूप चँुर्वेदी
- ३) हिंदी ा ाद्य पर्व : डॉ. नामवर सिंह
- ४) हिंदी ँ अद्यँन अनुप्रयो ा : डॉ. माधव सोनटक्
- ५) प्रयोजनमूल ँथा व्यावहारि हिंदी : डॉ. सुुमार भंडारे

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- प्र.१ ' ाद्य ँ विविध आयाम' पर ससंदर्भ व्या या वि ल्य सहिँि १०
- प्र.२ ' ाद्य ँ विविध आयाम' पर वि ल्य सहिँि दीर्घोत्तरी प्रश्न १५
- प्र.३ प्रयोजनमूल हिन्दी ँ पाठ्यांश पर वि ल्य सहिँि दीर्घोँरी प्रश्न १५
- प्र.४ टिप्प ि लिाँिए :

अ) प्रयोजनमूलक हिन्दी के पाठ्यांश पर विवेक सहित लिखिए।

०५

आ) प्रयोजनमूलक हिन्दी के पाठ्यांश पर विवेक सहित लिखिए।

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$\text{Ä} \text{Ö}_i \text{Ö} \text{Ö} \ddot{u} \times \ddot{Y} \text{Ö} 2014 \gg \text{Ö}\text{Ö} \text{Ö}\text{æ}$

$\hat{\text{^}} \text{§} \hat{e} \ddot{u} \text{ç} \mu \text{Ö} :$

- १) साहित्य आस्वादन अभिरुची में वृद्धि
- २) जीवन मूल्यों ` प्रीति आस्था
- ३) हिन्दी क्षेत्र का संवेदना की परम्परा का परिचय

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- १) व्यायान पद्धति
- २) लेखन पठन शैली वृद्धि ` लिए अभ्यास
- ३) दृश्य-श्रव्य माध्यमों का प्रयोग

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- १) Ö ã - Ö İ ã Ö Ö - संपा. आलोचना, राज्यपाल एड सन्स, नयी दिल्ली
- २) Ö ã Ö Ö î , ü ¼ Ö - संपा. डॉ.ई.रा. स्वामी, राज मल प्रकाशन, नयी दिल्ली

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- १) हिन्दी का परिचय - डॉ. सत्येंद्र
- २) हिन्दी ` प्रातिनिधि निबंध का - डॉ. विनोद
- ३) यात्रा साहित्य का उद्भव और विकास - डॉ. सुरेंद्र माथुर
- ४) हिन्दी का साहित्य - डॉ. रामचंद्र
- ५) हिन्दी आत्मता : स्वरूप एवं साहित्य - मलेश सिंह

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- प्र.१ ' इद्य प्रभा' ी रचनाओं से ससंदर्भ व्या या वि ल्य ` साथ १०
- प्र.२ ' इद्य प्रभा' पर दीर्घोत्तरी प्रश्न वि ल्य ` साथ १५
- प्र.३ ' इद्य गौरव' पर दीर्घोत्तरी प्रश्न वि ल्य ` साथ १५
- प्र.४ टिप्पणियाँ लिािए
- अ) ' इद्य प्रभा' पर वि ल्य ` साथ ०५
- आ) ' इद्य गौरव' पर वि ल्य ` साथ १५

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- १) हिन्दी भाषा ` विविध रूपों ा परिचय
- २) राजभाषा हिन्दी ` विभिन्न पहलुओं ा परिचय
- ३) प्रयोजनमूल भाषा ÿ तथा अनुवाद ी भूमि ा ा परिचय

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- १) व्या यान पद्धिँ ा
- २) ार्यशाला
- ३) सर्वे ा ा / निरी ा ा
- ४) दृ -श्रव्य साधनों ा प्रयो ा

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- १) हिंदी भाषा : स्वरूप एवं वि ास
अ. हिन्दी नाम र ा एवं विभिन्न रूप
आ.भारÿ तीय आर्यभाषा : वि ासाÿ म सामान्य परिचय
इ. हिन्दी भाषा : ा मि वि ास
ई. हिन्दी ा अंÿ ारराष्ट्रीय परिदृश्य
- २) हिन्दी भाषा ा मान ी र ा
अ.मान ि भाषा : सं ल्पना एवं स्वरूप
आ. भाषा मान ी र ा ी प्र ि या एवं पद्धिँ ा
इ.मान ि भाषा ` ल ा ा एवं विशेषÿ ाएँ
ई.मान ि हिंदी : स्वरूप ाÿ ा ल ा ा एवं विशेषÿ ाएँ
उ. मान ि हिन्दी : संरचनाÿ म ल ा ा एवं विशेषÿ ाएँ
ऊ. मान ि हिन्दी ी वि ास यात्रा

- ३) देवनागरी लिपि : उद्भव और विकास
अ.भाषा और लिपि
आ.लिपि : \square पर्य और विकास
इ. देवनागरी लिपि : उद्भव और विकास
ई. देवनागरी लिपि की वैज्ञानिकी व्याख्या
उ. इलेक्ट्रॉनिक माध्यम और देवनागरी लिपि
- ४) प्रयोजनमूलक हिंदी : स्वरूप एवं विशेषताएँ
अ.प्रयोजनमूलक हिंदी : \square पर्य एवं विशेषताएँ
आ.प्रयोजनमूलक हिंदी : परिभाषा एवं स्वरूप तथा विशेषताएँ
इ. प्रयोजनमूलक हिंदी का प्रयोग क्षेत्र एवं प्रयुक्तियाँ

प्रश्न सूची :

१. प्रयोजनमूलक हिंदी के विविध आयाम : महेन्द्रसिंह राणा
२. प्रयोजनमूलक हिंदी : विनोद गोदरे
३. प्रयोजनमूलक हिंदी : डॉ. माधव सोनटके
४. प्रयोजनमूलक हिंदी के अधुनागत आयाम - डॉ. अंबादास देशमुख
५. प्रयोजनमूलक भाषा और कार्यालयी हिंदी - सुशुमार गोस्वामी
६. हिंदी के प्रयोजनमूलक भाषारूप - डॉ. माधव सोनटके
७. प्रयोजनमूलक हिंथा व्यवहारि हिंदी - डॉ. सुशुमार भंडारे

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प्र.१	वि ल्य ँ साथ लघुत्तरी प्रश्न	१०
प्र.२	वि ल्य ँ साथ दोर्घोत्तरी प्रश्न	१५
प्र.३	वि ल्य ँ साथ दोर्घोत्तरी प्रश्न	१५
प्र.४	टिप्पणियाँ लिािए	
	अ) वि ल्य ँ साथ टिप्प णी	०५
	आ) वि ल्य ँ साथ टिप्प णी	०५

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“ $\text{Ö} \ddot{Y} \text{Ö} \hat{\text{a}} \text{£} \text{Ö} \hat{\text{O}} \hat{\text{A}} \text{Ö} \hat{\text{I}} \text{Ö} (\text{Semester} - \text{I V})$

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^ $\text{§} \hat{e} \hat{u} \hat{z} \mu \text{Ö} :$

- 1) साहित्य आस्वादन अभिरूची का परिचय
- 2) जीवन मूल्यों के प्रयोग आस्था
- 3) हिन्दी पद्य संवेदना की परम्परा से परिचय

$\text{†} \text{Ö} \mu \text{Ö} \mu \text{Ö} - \text{Ö} - \text{†} \text{Ö} \mu \text{Ö} \text{Ö} \text{Ö} - \text{Ö} \text{Ö} \text{Ö} \hat{\text{I}} \times \hat{u} \mu \text{Ö} \hat{\text{O}}$

- 1) व्यायाम पद्धति का
- 2) लेखन व पठन शैली वृद्धि के लिए अभ्यास
- 3) दृश्य-श्रव्य माध्यमों का प्रयोग

$\text{Ö} \hat{\text{O}} \hat{s} \hat{u} \text{¶} - \text{Ö} \hat{\text{a}} \hat{\text{A}} \ddot{Y} \text{Ö} \hat{e} \hat{u} :$

- 1) “ $\text{Ö} \hat{\text{a}} - \text{Ö} \text{ß} \text{Æ} \hat{\text{a}} \hat{u} \text{‡} \hat{\text{O}} \gg \text{Ö} \hat{\text{O}}^2 \text{Ö} \text{ß} \hat{u} \times \frac{3}{4} \text{Ö} \ddot{Y} \text{Ö} \hat{\text{O}} \langle \hat{\text{N}}$
- संपा. गोविन्द प्रसाद, वाणी प्रकाशन, दिल्ली
- 2) $\text{³} \text{Ö} \hat{\text{æ}} \times \text{’} \text{Ö} \cdot \text{Ö} \hat{\text{O}} (\text{Ö} \text{Ö} \hat{u} \hat{u} \text{Ö} \frac{3}{4} \mu \text{Ö})$ नागार्जुन,
राधाकृष्ण प्रकाशन, नई दिल्ली

$\hat{\text{A}} \text{Ö} \hat{\text{O}} \hat{\text{æ}} \hat{u} \text{³} \text{Ö} \hat{\text{O}} \text{Ö} \hat{\text{I}} \hat{\text{O}} \text{£} \text{Ö} :$

- 1) नये प्रयोग विधि : डॉ. हरिचरन शर्मा
- 2) लंबी विधि का रचना विधान - सं. नरेंद्र मोहन
- 3) लंबी विधि का वैचारिक सरोकार : डॉ. बलदेव बंशी
- 4) समकालीन हिन्दी विधि की संवेदना : डॉ. गोविंद रजनीश
- 5) नागार्जुन का व्यंग्य : एन. नव मूल्यांन - जे.बी. ओझा

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- प्र. १. 'चुनी हुई लंबी विँ पाओं' से ससंदर्भ व्या या वि ल्य ` साथ १०
- प्र. २. 'चुनी हुई लंबी विँ पा' पर दीर्घोत्तरी प्रश्न वि ल्य ` साथ १५
- प्र. ३. 'भूमिजा' पर दोर्घोत्तरी प्रश्न वि ल्य ` साथ १५
- प्र. ४. टिप्पियाँ लिाए।
- अ. 'चुनी हुई लंबी विँ पा' पर वि ल्य ` साथ ०५
- आ. 'भूमिजा' पर वि ल्य ` साथ ०५

५. प्रयोजनमूल भाषा और आर्यालयी हिंदी - सु. सु. मार गोस्वामी
६. हिंदी के प्रयोजनमूल भाषारूप - डॉ. माधव सोनटके
७. प्रयोजनमूल यथा व्यवहारि हिंदी - डॉ. सु. सु. मार भंडारे

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| प्र. १. वि ल्य के साथ लघुत्तरी प्रश्न | १० |
| प्र. २. वि ल्य के साथ दीर्घोत्तर की प्रश्न, | १५ |
| प्र. ३. वि ल्य के साथ दीर्घोत्तर की प्रश्न | १५ |
| प्र. ४. टिप्पणियाँ लिखिए। | |
| अ. वि ल्य के साथ टिप्पणी | ०५ |
| आ. वि ल्य के साथ टिप्पणी | ०५ |

	अंग्रेजी	हिंदी
1	Acknowledgement	- पावयँ गी, अभिस्वीकृतियँ ग
2	Action	- कार्यवाही, ररररररर
3	Advance	- अग्रिय पेश गी
4	Agreement	- ररर, अनुबंध
5	Allowance	- भत्ता
6	Allotment	- अबंटन
7	Aproval	- अनुमोदन
8	Budget	- आय-व्यय, बजट
9	Charge	- रररभार, आरोप
10	Circular	- परिपत्र
11	Clarification	- स्पष्टी र ग
12	Confidential	- गोपनीय
13	Compensation	- रररर ररररररर, मुआवजा
14	Consumer	- उपभोक्तरर
15	Declaration	- घोष रर
16	Despatch	- प्रेष ग
17	Document	- प्रले ग, दस्तरर ररवेज
18	Enclosure	- संल न , अनुल न
19	Establishment	- स्थापना, संस्थान, प्ररररररररर
20	Formal	- औपचारि
21	Gazatte	- राजपत्र, रजट
22	Honorary	- अवैतरर ररर , मानद

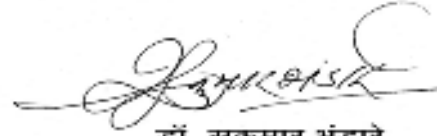
२३	Instruction	-	अनुदेश
२४	Invoice	-	बीज
२५	Manual	-	नियमपुस्तिका
२६	Marginal	-	सीमांतिका, उपनिर्णयिका
२७	Memorandum	-	ज्ञापन, स्मरण-पत्र
२८	Motion	-	प्रस्ताव
२९	Notification	-	अधिसूचना
३०	Ordinance	-	अध्यादेश
३१	Overdraft	-	अधिविर्ष, ओवरड्राफ्ट
३२	Planing	-	योजना
३३	Press Communiqu	-	प्रेस विज्ञापिका
३४	Privilege	-	विशेषाधिकार
३५	Probation	-	परिवर्ण, परीक्षा
३६	Quarum	-	आपूर्णा, रोम अभिलेख, रिपोर्ट
३७	Record	-	पंजीकरण
३८	Registration	-	अभ्युक्ति, पंजीकरण
३९	Reminder	-	अनुस्मारक
४०	Renewal	-	नवीकरण
४१	Resoulation	-	संलप
४२	Sanction	-	मंजूरी
४३	Surety	-	प्रमाण, जमानिका
४४	Tender	-	निविदा
४५	Terms and Conditions	-	निबंधन और शर्तिका
४६	Unit	-	एक
४७	Verification	-	संस्थापन
४८	Warning	-	चेतावनी
४९	Write-up	-	आलेख
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५१	Accountancy	-	लेखाशास्त्र
५२	Acqualtance	-	परिचय
५३	Along	-	हुंडीपत्र
५४	Arbitrator	-	मध्यस्थिका
५५	Assets	-	परिसंपत्ति
५६	Assay	-	परीक्षा
५७	Basic Price	-	मूल निर्णयिका
५८	Bill	-	हुंडीपत्र
५९	Bond	-	बंधपत्र
६०	Bonus	-	लाभांश
६१	Cargo	-	जहाजी माल
६२	Claimant	-	दावेदार
६३	Clearance	-	निर्णयिका
६४	Closing Balance	-	रोड

६५	Commission	-	छुट, दस्खुरी
६६	Commuted Value	-	रुपानकारि मूल्य
६७	Credit	-	सा ा
६८	Damages	-	हर्जाना
६९	Day Book	-	रोजनामचा
७०	Dead Account	-	बंद ाँ ा
७१	Costms	-	सीमा शुल्
७२	Nomination	-	मनोनयन
७३	Octroi	-	चुं ि
७४	Operating Profit	-	प्रचलिा लाभ
७५	Order Cost	-	ए शः लाभ
७६	Out put	-	उँ पादन
७७	Out Standing	-	ब ाया
७८	Over Charging	-	अर्थमूल्याधान
७९	Over Valuation	-	अधिमूल्यन
८०	Pawn	-	िरवी
८१	Payable to Bearer	-	वाह देय
८२	Promissory Note	-	बीमा ि सँ ा
८३	Provisional Bond	-	प्रिाज्ञा पत्र, प्रिाश्रुिा पत्र
८४	Qualitative	-	अनन्िा म बॉड
८५	Quantum	-	ु ाँ म
८६	Quotation	-	मात्राँ म
८७	Quotation	-	प्रमात्रा
८८	Recurring	-	नि ि
८९	Satisfy Price	-	आवँ नि
९०	Satisfy Price	-	संपृिा मूल्य
९१	Secular Value	-	दीर्घ ालीन मूल्य
९२	Sinking Fund	-	नि ोय निधि
९३	Standard Cost	-	मान ला ाँ ा
९४	Validity	-	प्रामाि ि ा
९५	Ware	-	बि ाड माल
९६	Waiting list	-	प्रँ ि ा सूची
९७	Year book	-	वार्षि ि
९८	Zone	-	ोत्र
९९	Zonal	-	आँचलि
१००	Zero Cost	-	शून्य ला ाँ ा
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१०१	Ace News man	-	विशिष्ट प्र ार
१०२	Alignment	-	संरे ान
१०३	Audit Bureau of Circulation (ABC)	-	प्रसार सं या ानन संस्थान

१०४	Blow up	-	विस्फार, प्रस्फार
१०५	By line	-	सूत्रोल्लेख, नामोल्लेख
१०६	Caption	-	चित्र शीर्ष
१०७	Case Rome	-	मुद्रांतर
१०८	Centre Spared	-	मध्यपृष्ठीय सज्जा
१०९	City Representative	-	नगर संवाददाता
११०	Copy Manuscript	-	पांडुलिपि
१११	Copy Right (C)	-	कृषि-स्वाम्य
११२	Demy	-	डिमाई, आंतर
११३	Desk man	-	उपसम्पादक
११४	Format	-	आरूप, प्रारूप
११५	Free Lancer	-	स्वतंत्र, पत्रांतर
११६	Eye Brow	-	सहशीर्ष
११७	Hard news	-	दुर्लभ समाचार
११८	Imposition	-	पृष्ठ योजना
११९	Late News	-	छपकी-छपकी
१२०	News Source	-	समाचार स्रोत
१२१	Opinion Press	-	विचारपत्र
१२२	Please Turn Over (P.T.O.)	-	कृपया पृष्ठउपटिए (कृ.प.उ.)
१२३	Put to bed	-	मुद्रांतर प्रस्फुटित
१२४	Teleprinter	-	दूरमुद्र
१२५	Telex	-	दूरमुद्र एक्सचेंज
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१२६	Adder	-	मिटर
१२७	Arial	-	आशी, एरियल
१२८	Antenna	-	अन्टेना
१२९	Audio	-	श्राव्य ध्वनि
१३०	Bet-Frequency	-	स्पंदन लहरी
१३१	Broad Costing	-	प्रयोग
१३२	Chorominance signal	-	रंगीन लहरी
१३३	Circuit	-	मंडल
१३४	Compatibility	-	सूसंतीयता
१३५	Detector	-	शोध
१३६	Frequency	-	गणना
१३७	Fringe Area	-	बिटल क्षेत्र
१३८	Luminance Signal	-	प्रकाश लहरी
१३९	Mass production	-	सामूहिक निर्माण
१४०	Microphone	-	सूत्र श्रवण
१४१	Motion Picture	-	चलचित्र
१४२	Oscillation	-	आंदोलन लहरें
१४३	picture Element	-	चित्रांश

१४४	Pick-Up	- ध्वनि उद्गाह
१४५	Range	- श्रेणी, स्तर
१४६	Rectifier	- विशोध
१४७	Scanning	- चित्र लेना
१४८	Transmission	- प्रेषण
१४९	Tuning	- समस्वरण
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१५०	Application	- अनुप्रयोग, मादेश
१५१	Binary - Number	- द्विआधारी अंक
१५२	Control Unit	- नियंत्रण इकाई
१५३	Cursor Control	- कर्सर नियंत्रण
१५४	Calculator	- अभिलेख
१५५	Digital	- अंकी ऑडिओ संचरण
	Data Transmission	
१५६	Dynamic Memory	- गतिशील स्मृति
१५७	Decimal Number	- दशमलव अंक
१५८	Hot Stand by	- आपातस्थिति उपयोग
१५९	High level integration	- उच्चस्तरिय समाकलन
१६०	Input	- निवेश
१६१	Instruction	- अनुदेश
१६२	Internal storage	- आंतरिक भंडारण
१६३	Monitor	- दृश्य पटल
१६४	Module	- प्रारूप
१६५	Output	- निष्पत्ति
१६६	Operation System	- प्रचालन प्रणाली
१६७	Processing Unit	- संसाधन इकाई
१६८	Program	- मादेश
१६९	Read only memory (ROM)	- पठन मात्र स्मृति
१७०	Random Accesses memory (RAM)	- यादृच्छिक अभिगम स्मृति
१७१	System design	- प्रणाली अभिलेखन
१७२	Updating	- अद्यतनकरण
१७३	User	- उपयोक्ता
१७४	Virtual Computing System	- आभासी अभिलेखन प्रणाली
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१७५	Accused	- अभियुक्त
१७६	Accusation	- अभियोग
१७७	Act of grace	- कृपादान
१७८	Boilable offence	- जमानगीय अपराध
१७९	By-laws	- उपनियम
१८०	Custody	- अभिरक्षण
१८१	Criminal trail	- न्यायिक विचारण
१८२	Defendant	- प्रारोपितवादी

१८३	Defamation	-	मानहानी
१८४	Legal	-	विधि
१८५	Licn	-	धार पाधि र
१८६	Plentiful	-	वादी
१८७	Prosecutor	-	अभियोज
१८८	prosecution	-	अभियाजन
१८९	Record	-	अभिले ।
१९०	Resistance	-	प्रतिरोध
१९१	Representation	-	अभ्यासदर्शन
१९२	Section	-	धारा
१९३	Sub-Section	-	उप-धारा
१९४	Sub-Clause	-	उप । ड
१९५	Session Court	-	सत्र न्यायालय
१९६	Supreme Court	-	उच्चमं । न्यायालय
१९७	Surrender	-	अभिअर्पन
१९८	Show cause	-	र ।-पृच्छा
१९९	Warning	-	चे ।ावनी
२००	Withdraw From a suit	-	बाद से प्रं याहुन रना



डॉ. सुकुमार भंडारे
अध्यक्ष, हिंदी पाठ्यक्रम समिति
डॉ. बाबासाहेब आंबेडकर मराठवाडा
विद्यापीठ, औरंगाबाद

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद -

४३१००४



पाठ्यक्रम

बी.कॉम. द्वितीय वर्ष
प्रथम (द्वितीय भाषा हिन्दी)
तृतीय एवं चतुर्थ सत्र
(Semester -III-IV)

पाठ्यपुस्तक : सम्प्रेषणमूलक व्यावसायिक हिन्दी

संपादक : हिन्दी पाठ्यक्रम समिति

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

प्रकाशन : ओरियंटल लॉगमन प्रा.लि. नई दिल्ली.

जून २०१४ से क्रियान्वित

तृतीय सत्र
द्वितीय भाषा - हिंदी

प्रश्नपत्र -III	: बी.कॉम: संप्रेषणमूलक व्यावहारिक हिंदी-१
	चतुर्थ सत्र द्वितीय भाषा- हिंदी
प्रश्नपत्र -IV	: बी.कॉम संप्रेषणमूलक व्यावहारिक हिंदी- २

बी.कॉम. द्वितीय वर्ष : द्वितीय भाषा हिंदी (SL. Hindi)
संप्रेषणमूलक व्यावसायिक हिंदी
तृतीय सत्र - (Semister -III)
सत्र पद्धति २०१४ से लागू

● उद्देश्य :

- १) प्रयोजनमूलक भाषा अध्ययन
- २) वाणिज्य व्यवसाय के भाषा - कौशल्य
- ३) व्यावसायिक लेखन - कौशल्य

● अध्ययन -अध्यापन पद्धति

- १) व्याख्यान पद्धति
- २) लेखन एवं पठन कौशल पृद्धि के लिए अभ्यास
- ३) दृक-श्रव्य माध्यमों का प्रयोग

● पाठ्यपुस्तक

- १) संप्रेषणमूलक व्यावसायिक हिंदी -१ सं. हिंदी पाठ्य समिति ओरिएंटल
ब्लैक स्वान लिंगमन प्रा.लि., हिमायतनगर, हैद्राबाद -५००४२९

पाठ्यक्रम

१) भाषा और भाषा शिक्षण

- १) भाषा : तात्पर्य एवं स्वरूप
- २) भाषा के प्रकार्य
- ३) भाषा के विविध रूप
- ४) भाषा शिक्षण की प्रक्रिया
- ५) भाषा कौशल्य : श्रवण, वाचन, भाषण, लेखन,

२) प्रयोजनमूलक भाषा और हिंदी

- १) प्रयोजनमूलक भाषा : तात्पर्य एवं स्वरूप
- २) प्रयोजनमूलक भाषा की विशेषताएँ
- ३) प्रयोजनमूलक हिंदी के विभिन्न रूप
- ४) वैश्वीकरण के परिप्रेक्ष्य में हिंदी भाषा का महत्त्व

3) वाणिज्य - व्यवसाय और हिंदी

- 1) वाणिज्य- व्यापार से तात्पर्य एवं स्वरूप
- 2) वाणिज्य- व्यापार के साधन
- 3) वाणिज्य- व्यापार और भाषिक प्रकार्य
- 4) वाणिज्य- व्यावसायिक भाषा : संरचनात्मक विशेषताएँ

4) व्यावसायिक - संप्रेषण

- 1) संप्रेषण से तात्पर्य एवं स्वरूप
- 2) संप्रेषण के प्रमुख प्रकार : भाषिक तथा भाषेत्तर
- 3) व्यावसायिक पत्राचार
 - (क) व्यापारिक- व्यावहारिक सामान्यपत्र
आवेदन पत्र, प्रत्यय या साखपत्र, संदर्भ तथा साख के जीव पत्र, मूल्यज्ञापन पत्र, आदेशों के निरसन सम्बन्धी पत्र, शिकायत पत्र, समायोजन पत्र, तगादा या बसूली पत्र, विक्रय प्रतिनिधित्व संबंधी पत्र
 - (ख) विशेष व्यावहारिक पत्र
-बीमा तथा बीमा पत्र
-रेल तथा जहाज द्वारा माल परिवहन से संबंधित पत्र

5) निबंध- लेखन

- 1) निबंध : तात्पर्य एवं स्वरूप
- 2) निबंध लेखन : व्यावसायिक / आर्थिक विषय पर निबंध - लेखन

प्रश्न पत्र का प्रारूप

	कुल अंक -40
प्र.1 पाठ्यक्रम पर दीर्घोत्तरी प्रश्न	15
प्र.2 पाठ्यक्रम पर दीर्घोत्तरी प्रश्न	15
प्र.3 निबंध लिखिए (व्यावसायिक / आर्थिक विषय पर निबंध)	10
प्र.4 पाठ्यक्रम पर टिप्पणियाँ	
अ) विकल्प सहित टिप्पणी	05
आ) विकल्प सहित टिप्पणी	05

बी.कॉम. द्वितीय वर्ष : द्वितीय भाषा हिंदी (SL. Hindi)
संप्रेषणमूलक व्यावसायिक हिंदी
चतुर्थ सत्र - (Semister -IV)
सत्र पद्धति २०१४ से लागू

• उद्देश्य :

- १) प्रयोजनमूलक भाषा अध्ययन
- २) वाणिज्य व्यवसाय के भाषा - कौशल्य
- ३) व्यावसायिक लेखन - कौशल्य

• अध्ययन-अध्यापन पद्धति

- १) व्याख्यान पद्धति
- २) लेखन एवं पठन कौशल वृद्धि के लिए अभ्यास
- ३) दृक-श्राव्य माध्यमों का प्रयोग

• पाठ्यपुस्तक

- १) संप्रेषणमूलक व्यावसायिक हिंदी -२ सं. हिंदी पाठ्य समिति ओरिएंटल ब्लैक स्वान लॉगमन प्रा.लि., नई दिल्ली.

पाठ्यक्रम

१) वाणिज्य - व्यापार : लेखन पक्ष

- १) प्रारूपण
- २) टिप्पण
- ३) संक्षेपण
- ४) प्रतिवेदन

२) बैंकिंग और हिंदी भाषा

- १) बैंकिंग : सामान्य परिचय
- २) बैंको में हिंदी का प्रयोग
- ३) व्यावसायिक तथा बैंकिंग - पारिभाषिक शब्दावली (परिशिष्ट - अ)

३) लेखाकर्म और बही खाता लेखन

- १) बही खाता और लेखाकर्म : उद्देश्य और प्रकार
- २) बही खाता लेखन - प्रक्रिया
- ३) रोजनामचा या दैनिक पूंजी

४) खाता बही या प्रपञ्जी

५) वलपट का स्वरूप

६) लेखा कर्म- बही खाता संबंधी पारिभाषिक शब्दावली (परिशिष्ट - अ)

४) वाणिज्य - व्यवसाय और मीडिया

१) जनसंचार : तात्पर्य एवं भेद

२) जनसंचार माध्यम : विविध रूप

३) वाणिज्य - व्यापार में मीडिया की भूमिका

४) मीडिया - व्यवसाय में लेखन

५) मीडिया लेखन के प्रकार

५) व्यावसायिक अनुवाद

१) अनुवाद : स्वरूप एवं भेद

२) अनुवाद : प्रक्रिया

३) बैकिंग अनुवाद

४) मीडिया अनुवाद

साहायक ग्रंथ सूची :

१) व्यावसायिक संप्रेषण : डॉ. अनूपचंद्र माथानी, राजपाल एण्ड सन्ज, नई दिल्ली

२) बैंकों में अनुवाद की समस्याएँ : डॉ. भोलानाथ तिवारी, शब्दाकार प्रकाशन ,
१५९ गुरु अंगदनगर (वेस्ट) दिल्ली-११००९२

३) अनुवाद एवं भाषान्तर - डॉ. रणवीर मरेश, डॉ. कृष्णकुमार गोस्वामी, ओरियंट
लिंगमैन, नयी दिल्ली.

४) प्रयोजनमूलक हिंदी - डॉ. माधव सोनटक्के, लोकभारती, इलाहाबाद

५) हिंदी के अधुनात्तन अनुप्रयोग- डॉ.माधव सोनटक्के, छाया पब्लिकेशन हाऊस ,
औरंगाबाद

६) प्रयोजनमूल तथा व्यावहारिक हिंदी - डॉ. सुकुमार भंडारे विकास प्रकाशन,
कानपुर

७) भाषा शिक्षण : सिद्धान्त और प्रक्रिया - मनोरमा गुप्त, केंद्रीय हिंदी संस्थान,
आगरा

८) बैकिंग उन्मुख हिंदी : भारतीय रिजर्व बैंक (प्र.सं.१९८९)

९) मीडिया लेखन : सिद्धान्त और व्यवहार - डॉ. चंद्रप्रकाश

१०) व्यावसायिक हिंदी - डॉ. दिलीप सिंह

११) संप्रेषण मूलक व्यावसायिक हिंदी - डॉ. माधव सोनटक्के

प्रश्नपत्र का प्रारूप तथा अंक विभाजन

	कुल अंक - ५०
प्र.१ पाठ्यक्रम पर दीर्घोत्तरी प्रश्न	१५
प्र.२ पाठ्यक्रम पर दीर्घोत्तरी प्रश्न	१५
प्र.३ अंग्रेजी से हिंदी में अनुवाद (परिच्छेद)	१०
प्र.४ पाठ्यक्रम पर टिप्पणियाँ	
अ) विकल्प सहित टिप्पणी	०५
आ) विकल्प सहित टिप्पणी	०५

परिशिष्ट -अ

अ) व्यापारिक - व्यावासायिक

Allonge	- हुंडी पत्र
Assets	- पावने, संपत्ति, लेनदारी
Agreement	- करार, अनुबंध, समझौता, सहमति
Bill of Sight	- दर्शन हुंडी
Balance	- बाकी, शेष
Book- Keeping	- पुस्तपालन, बहीखाता, हिसाब-किताब
Call - Letter	- मांग पत्र
Capital	- पूंजी
Cash transaction	- लेन-देन, रोकड़ व्यवहार
Caution Money	- जमानती रुपया
Custom-duty	- आयात निर्यात शुल्क
Capital - asset	- मूल संपत्ति
Capital Expenditure	- संपत्ति व्यय
Damages	- हर्जाना
Damage-claim	- क्षतिपूर्ती दावा
Demand Bill	- मांग की हुंडी
Endorsement	- पृष्ठांकन
Folio	- पृष्ठ, पत्रांक
Face -Value	- अंकित मूल्य
Goods	- माल
Good will	- नेकनामी (पगड़ी)
Import	- आयात
Import -duty	- आयात कर
Index number	- सूची संख्या
Industrial -crisis	- औद्योगिक संकट
License	- अनुज्ञापति
Liability	- दाय-घन
Licensee	- अनुज्ञाधारी
Named - policy	- नामांकित बीमा पालीसी
Octroi	- चुंगी
One -man-company	- व्यक्ति - विशेष की कंपनी
Pay-in slip	- जमा पर्ची
Policy	- बीमा पत्र
Referencing	- पत्र का संदर्भ
Record - keeping	- रिकार्ड रखना
Relative -value	- सापेक्ष मूल्य
Soft-Currency	- सुलभ मुद्रा

Till - Money	- रोकड़
Trial balance	- आय-व्यय की तुलना
Urgent	- आवश्यक
Vacary	- रिक्ता, रिक्त स्थान
Un- expired - income	- अनुपाजित आय
Unexpired expenses	- अनुवसित व्यय
Standing -expenses	- स्थायी व्यय
Valuation of assests	- संपत्तियों का मूल्य निर्धारण
Wages	- मजदूरी
Wasting -assests	- क्षयी संपत्ति, क्षयशील संपत्ति
Working -capital	- कार्यशील पूँजी
Out- Standing expenses	- अदत्त व्यय
promissory- Note	- प्रतिज्ञा पत्र
Tenor	- अवधि
आ) बैंक व्यवहार :	
Accession rate	- लेखाशीर्ष
Account head	- सक्रिय ऋण
Active Loans	- समायोजन
Adjustments	- अशिम, पेशगी
Advance	- जमा रकम
Amount-deposited	- दावे की राशि
Amount-claimed	- निर्गम राशि
Amount of issue	- अनुबन्धन
Appropriation	- विनियोजन
Arrears	- बकाया
Audit	- लेखा-परीक्षा
Bail-Bond	- जमानत राशि
Balance Sheet	- ऑकडा, पक्का धिट्टा, तुलन पत्र
Borrower	- ऋणकता
Compound interest	- चक्रवृद्धि व्याज
Cross-Cheque	- रेखांकित चैक
Current	- घालु
Debit	- नामे
Demand-draft	- मांग ड्राफ्ट
Disallow	- अस्वीकार करना
Discount	- बट्टा
Dishonoured cheque	- नकारा गया चैक
Drawee	- अदाकर्ता
Earnest-money	- बयाना
Emergence credit	- आपत्ती ऋण

Excise-duty	- उत्पादन-शुल्क
Floating-currency	- मुक्त मुद्रा
Forwarding	- अग्रोधण
Hard-currency	- दुर्लभ मुद्रा
Issue	- निर्गम
Jo int-book-account	- संयुक्त बैंक खाता
Land-mortagage	- भूमि बंधक
Lead-bank	- अग्रणी बैंक
Mortagage	- गिरवी
No-dues-certificate	- देवाकी पत्र
Out-goig	- जायक
Post-dated	- उत्तर दिनांकित
Recurring-Deposit	- आवर्ती जमा
Remittance	- प्रेषित धन
Settelment of claim	- दावे का निपटान
Short-loan	- अल्पावधि ऋण
Specimen signature	- नमूना हस्ताक्षर
Surcharge	- अधिभार
Standing-Instruction	- स्थायी अनुदेश
Sucession-Certificate	- उत्तराधिकार प्रमाण-पत्र
Traveller's cheque	- यात्री चेक
Transfer	- अंतरण
Un-paid	- अदत्त
Voucher	- प्रमाणक
Write off	- बट्टे खाते डालना

परिशिष्ट-आ

लेखा कर्म - वही खाता संबंधी पारिभाषिक शब्दावली

	(A)	
Acceptance	-	स्वीकृति
Acceptor	-	स्वीकारकर्ता, स्वीकारक
Accommodation Bills	-	अनुग्रह बिल, अनुग्रह विपत्र, पारस्परिक सहायताके लिये गये बिल
Account	-	खाता, लेखा, हिसाब
Accrued Income	-	उपाजित आय
Active Partner	-	सक्रिय साझेदार
Adjustment Entries	-	सुधार के लेख, समायोजना प्रविष्टियाँ
Adjustment	-	समायोजना
Agent	-	प्रतिनिधि, एजेंट अमिकर्ता
Amount	-	धनराशि, रकम
Anti-Dated (back dated) Cheque	-	पर्व तिथिय चैक, पिछली तिथिवाला चैक
Assets	-	पावने, सम्पत्ति, लेनदारी
	(B)	
Bad Debts	-	अप्राप्य ऋण, आशौध्य ऋण, डूबता ऋण
Balance Sheet	-	बिड्डा, स्थिति विवरण
Balancing of Accounts	-	खातों का शेष निकालना, खातों का संतुलन करना
Bank	-	अधिकोष बैंक
bank Charges	-	बैंक व्यय
Bank Reconciliation Statement	-	बैंक समाधान विवरण
Bearer Cheque	-	धनौजोग, देखनाहार या वाहक चैक
Bills of Exchange	-	विपत्र, विनिमय बिल, विनिमय पत्र
Bills Payable Book	-	देय बिल बही
Bills Receivable	-	प्राप्य बिल बही
Bills Payable	-	देय बिल
Book-Keeping	-	पुस्तपालन, बहीखाता, हिसाब-किताब
Books of Original Entries	-	मुल प्रविष्ट बहियों, प्रारम्भिक लेखों की बहियाँ
Business	-	व्यापार, व्यवसाय
	(C)	
Capital	-	पूंजी
Capital Receipt	-	पूंजी सम्बन्धी आय
Capital Expenditure	-	सम्पत्ति व्यय
Carriage Inward	-	आगत वाहन व्यय, आदक गाड़ी भाड़ा, क्रय पर भाड़ा,
Carriage outward	-	निर्गत वाहन व्यय, जावक गाड़ी भाड़ा
Cash	-	रोकड़, नगदी

Cash Purchases	-	रोकड़ी क्रय-नकद खरीद
Cash Sales	-	रोकड़ी विक्रय-नकद बिक्री
Cashier	-	कोषाध्यक्ष, रोकड़िया
Charity	-	दान, धर्मदाय
Cheque	-	चैक, धनादेश
Classification	-	वर्गीकरण
Closing Entries	-	अंतिम या संवरण प्रविष्टियाँ
Closing Stock	-	अंतिम रहतिया
Compensating Errors	-	क्षतिपूरक अशुद्धियाँ, स्वयंशोध अशुद्धियाँ
Compound Entries	-	मिश्रित प्रविष्टियाँ
Conventional Value	-	परम्परागत मूल्य
Contra Entry	-	विपरित लेखा, विमुख लेखा
Contingent liability	-	संभाव्य दायित्व, संदिग्ध दायित्व सम्पत्ति
Contingent Assets	-	संभाव्य सम्पत्ति
Conditional Acceptance	-	विशेष स्वीकृती
Consideration	-	प्रतिफल
Counter	-	खिड़की
Counterfoil	-	प्रतिलिपि, पूर्वाह्न
Credit Purchases	-	उधार क्रय
Credit Sales	-	उधार विक्रय
Creditor	-	धनी, महाजन, लेनदार, ऋणदाता
Credit Note	-	समाकलन पत्र, जमा की चिट्ठी
Credit Instrument	-	साख पत्र
Credit Side	-	जमा पक्ष, साहू कक्ष, जमा कक्ष
Crossing	-	रेखांकन
Current A/C	-	चालू खाता, अस्थायी खाता, चल खाता
Custom Duty	-	आयात-निर्यात कर
	(D)	
Days of grace	-	अनुग्रह दिवस, रिआयती दिन
Debtor	-	ऋणी, देनदार
Debit Note	-	विकलन पत्र, नामक चिट्ठी
Debit Side Deferred Revenue	-	ऋणी कक्ष, नाम पक्ष
Expenditure	-	विलम्बित आगम व्यय
Deposit	-	निक्षेप रसोद
Depreciation	-	हास, घटौती, अपकर्ष, अवैक्षण
Discounting	-	मुनाना
Direct Expenses	-	प्रत्यक्ष व्यय
Dishonor	-	तिरस्कृत होना, अप्रतिष्ठित
Discount A/C	-	अपहार लेखा या खाता, कटौती खाता
Discount Received	-	प्राप्त कटौती,
Discount	-	कटौती, घूट
Double Entry System	-	दोहरी लेखा प्रणाली, द्वि प्रविष्ट प्रणाली

Drawer	-	देनदार, आदाती
Drawee	-	लेखक, आहर्ता
Drawings	-	आहरण
Drawing A/C	-	आहरण खाता
Due Date	-	अंतिम तारीख, देय तिथि, भुगतान तिथि
Duties	-	सरकारी कर
Entry	-	(E) लेखा, प्रविष्टि, लेखा करना
Endorser	-	बेचानकर्ता, बेचानलेखक
Endorsee	-	बेचान पात्र
Endorsement	-	बेचान, पृष्ठांना
Errors of Commission	-	हिसाब की अशुद्धियाँ
Errors of Omission	-	भूल की अशुद्धियाँ
Errors of principle	-	सैद्धांतिक अशुद्धियाँ
Establishment Charges	-	प्रबन्ध व्यय, स्थापन व्यय
Excise Duty	-	उत्पत्ति कर, उत्पादन कर
Final A/C	-	(F) अंतिम खाते
Fixed Assets	-	स्थायी सम्पत्ति, अचल सम्पत्ति
Fixed Deposit A/C	-	स्थायी जमा खाता
Fixed Deposit Receipt	-	स्थायी जमा रसीद
Fixed or Block Capital	-	स्थायी पूँजी
Fixed liabilities	-	स्थायी दायित्त्व
Floating liabilities	-	अस्थायी दायित्त्व
Fluting of Current Capital	-	चल पूँजी
Floating of Circulating Assets	-	चल सम्पत्ति, अस्थायी सम्पत्ति
Folio	-	पृष्ठ, पन्ना
Full Endorsement	-	पूर्ण बेचान
General Acceptance	-	(G) सामान्य स्वीकृति
General Endorsement	-	सामान्य बेचान
Goods	-	माल, वस्तु
Goods A/C	-	माल खाता
Goods will (Credit)	-	ख्याति राख, प्रगड़ी
Gross loss	-	सकल हानि, कुल हानि
Gross Profit	-	सकल लाभ, कुल लाभ
Holder in due Course	-	(H) यथा विधिधारी
Holder of a Bill	-	बिल का धारक
Impersonal A/C	-	(I) अव्यक्तिगत खाता
Income Tax	-	आय कर

Income Received in Advance (Uncared income)	-	पूर्व प्राप्त आय, अनर्जित आय
Indian System of Accounts	-	भारतीय बही-खाता पद्धति
Indirect Expenses	-	अप्रत्यक्ष व्यय
Insolvent	-	दिवालिया
Intangible (Fictitious) Assets	-	कृत्रिम सम्पत्ति
Investment	-	विनियोग
	(J)	
Journal	-	जर्नल, रोजनामचा, दैनिक पंजी, मकल बही
Journalizing	-	जर्नल में लेखा करना
Journal Proper	-	रोजनामचा
	(L)	
Law of Negotiable Instrument	-	पराक्रम्य, विलेख विधान, बेचान साध्य
Leasehold Property	-	शुद्धा अधिनियम
Ledger	-	पट्टे पर सम्पत्ति
Ledger Folio	-	खाता
Liquid Assets	-	खाता पृष्ठ संख्या
Liquidity Order	-	दायित्व, देयघन
Loan Capital	-	तरलता क्रम
Location of Errors	-	ऋण पूंजी
	-	अशुद्धियों का खोजना
	(M)	
Manufacturing Expenses	-	निर्माण व्यय
Marshalling of Assets	-	सम्पत्तियों को क्रमबद्ध करना
Mutilated Cheque	-	तिरस्कृत चेक
	(N)	
Narration	-	विवरण
Net loss	-	शुद्ध हानि
Net Profit	-	शुद्ध लाभ
Nominal Assets	-	आम व्यय सम्बन्धी सम्पत्तियों
Nominal A/C	-	लाभ हानि खाते
Notary Public	-	विपत्रालोकी
Noting	-	टिप्पणी
Noting a Bill	-	बिल का टिप्पणी करना, अपरिक्राम्य
Not Negotiable	-	अपरिक्राम्य
	(O)	
Octopi duty	-	शुंभी कर
Opening Entries	-	प्रारम्भिक प्रविष्टियाँ
Opening Stock	-	प्रारम्भिक रहतिया
Order	-	आदेश
Order Cheque	-	आदेशित चेक

Original Record	-	मूल लेखा, प्रारम्भिक लेखा
Outstanding Expenses	-	अदत्त व्यय
		(P)
Packing Material	-	समवेस्टन सामग्री
Parties	-	पक्ष
Particulars	-	विवरण
Partnership Agreement	-	साझेदारी संलेख
Patent	-	एकरस्य
Payee	-	प्राप्तकर्ता
Payment	-	भुगतान
Pay in slip	-	जमा की पर्ची
Payment of Bill	-	बिल की भुगतान
Permanence Order	-	स्थायी क्रम में
Personal A/C	-	व्यक्तिगत खाते
Petty Cash Book	-	छोटी रोकड़ी बही
Posting	-	खताना
Post dated Cheque	-	उत्तर तिथिय चैक
Prepaid Expenses	-	पुर्वदत्त व्यय
Principal Book	-	मुख्य पुस्तके
Promissory Note (P/N)	-	प्रतिज्ञा पत्र
Profit and Loss A/c	-	लाभ-हानि खाता
Property A/c	-	सम्पत्ति खाता
Proprietor	-	स्वामी
Protesting	-	विरोध, प्रतिवाद
Purchaser	-	क्रय
Purchases Returns	-	क्रय वापसी
Purchases Book	-	क्रम बही
Purchases Returns Book	-	वापसी बही
		R
Real A/c	-	वास्तविक खाते
Rebate	-	छूट
Receipts	-	प्राप्तियाँ
Reconciliation Statement	-	समाधान विवरण
Rectifying Entries	-	सुधार प्रविष्टियाँ
Rectification of Errors	-	अशुद्धियों का सुधार
Reference	-	सन्दर्भ
Reference in case of need	-	आवश्यकता के समय सन्दर्भ
Renewal	-	नवनीकरण
Reserve of Bad and Doubtful Debts	-	दूबता ऋण संचय
Reserve for Discontents on	-	लेनदारों पर बट्टा संचिती

Creditors	-	देनदारों पर बढ़ा कौम
Reserve for Discounts on Debtors	-	प्रतिबन्धात्मक बैचान
Restrictive Endorsement	-	बिल की परिष्वब्धता के पूर्व चुकता
Retiring a Bill Under Rebate	-	वापसी बहियों
Return Books	-	विक्रय वापसी बही
Returns Inward Book	-	क्रय वापसी बही
Returns outward Book	-	लाभ राग व्यय
Returns Expenditure	-	लाभ प्राप्ति
Revenue Receipts	-	विपरीत प्रविष्टियाँ
Reveising Entries	-	
	(S)	
Sales	-	विक्रय
Sales Book	-	विक्रय बही
Sales Returns Book	-	विक्रय वापसी बही
Sense Recourse	-	बिना उत्तरदायित्व का
salaries	-	वेतन
Saving A/c	-	संचय खाता
Seller	-	विक्रेता
Single Column Cash Book	-	एक स्तम्भ वाली रोकड़ बही
Solvency	-	ऋण शोधन- क्षमता
State Cheque	-	काल तिरोहित घनादेश
Stationary	-	लेखन सामग्री
Sundry Creditors	-	विविध लेनदार
Sundry Debtors	-	विविध देनदार
Subsidiary Books	-	सहायक बहियाँ
Sundries	-	प्रकोर्णक, विविध
Sub-Divisions of Journal	-	रोजनामचे का विभाजन
Suspense A/c	-	संदिग्ध प्रविष्टि खाता, उदरत खाना, उचन्ती खाना
	(T)	
Tabular	-	सारणीयुक्त, विभिन्न स्तम्भयुक्त
Tenor	-	अवधि
Three Column Cash Book	-	त्रिस्तम्भीय रोकड़ बही
Total Amount	-	कुल राशि
Transaction	-	लेन-देन सौदे, व्यवहार
Trade Capital	-	व्यापार पूंजी
Trading A/c	-	व्यापार खाता
Trading Creditors	-	व्यापारिक लेनदार
Transfer	-	स्थानान्तरण
Trail Balance	-	हलपट

(U)

Unconditional Order	- अप्रतिबन्ध आदेश पत्र
Unexpired Income	- अनुपाजित आय
Unexpired Expenses	- अनवसित आय
	(V)
Valuation	- मूल्यांकन, मूल्य निर्धारण
Valuation of Assets	- सम्पत्तियों का मूल्य निर्धारण
	(W)
Wages	- मजदूरी
Wasting Assets	- क्षयो सम्पत्ति, क्षयशील सम्पत्ति
Working Capital	- कार्यशील पूंजी



डॉ. सुकुमार भंडारे
अध्यक्ष, हिंदी पाठ्यक्रम समिति
डॉ. बाबासाहेब आंबेडकर परराजवादा
विद्यापीठ, औरंगाबाद

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद - ४३१००४



पाठ्यक्रम

बी.एस्सी. द्वितीय वर्ष

प्रथम (द्वितीय भाषा : सत्र तृतीय -चतुर्थ)

जून २०१४ से क्रियान्वित

(Effect from June -२०१४ & onwards)

तृतीय सत्र

द्वितीय भाषा - हिंदी

प्रश्नपत्र -III	:बी.एस्सी.: सामान्य हिंदी -३
	चतुर्थ सत्र द्वितीय भाषा- हिंदी
प्रश्नपत्र -IV	: बी.एस्सी.: सामान्य हिंदी -४

बी.एससी. द्वितीय वर्ष : द्वितीय भाषा (SL. Hindi)

प्रश्नपत्र -III सामान्य हिंदी :3

तृतीय सत्र - (Semister -III)

सत्र पद्धति २०१४ से लागू

उद्देश्य :

- १) साहित्य आस्थादन अभिरुची का परिसंस्कार
- २) जीवन मूल्यों के प्रति आस्था
- ३) अत्याधुनिक इलेक्ट्रॉनिक माध्यमों का परिचय

अध्ययन -अध्यापन प्रक्रिया

- १) व्याख्यान पद्धति
- २) लेखन एवं पठन कौशल वृद्धि लिए अभ्यास
- ३) दृक-श्रव्य माध्यम का प्रयोग

पाठ्यपुस्तक :

अ. गद्य के विविध आयाम, संपा.-प्रो.जयमोहन एम.एस., वाणी प्रकाशन, नई दिल्ली

• पाठ्यक्रम में समाविष्ट रचनाएँ

- १) आत्मवृत्त : मेरा जीवन
- २) रेखाचित्र- नीलकंठ मोर
- ३) संस्मरण -कमला
- ४) निबंध- शिरीष के फूल
- ५) यात्रावृत्त - चीड़ों पर चोंदनी

आ. प्रयोजनमूलक हिंदी

- १) प्रयोजनमूलक भाषा
 - अ) भाषा का स्वरूप एवं महत्त्व
 - आ) भाषा की परिभाषा , विशेषताएँ एवं प्रकार्य
 - इ) वैश्वीकरण के परिप्रेक्ष्य में हिंदी भाषा का महत्त्व
- २) भाषा शिक्षण : स्वरूप एवं प्रक्रिया
 - अ) भाषा शिक्षण की प्रक्रिया,

आ) भाषा कौशल

१. श्रवण कौशल

२. भाषण कौशल

३. वाचन कौशल

४. लेखन कौशल

३) व्यावसायिक हिन्दी

अ) वाणिज्य व्यापार : तात्पर्य एवं स्वरूप

आ) वाणिज्य व्यापार के साधन

इ) वाणिज्य व्यापार और भाषिक प्रकार्य

ई) वाणिज्य- व्यावसायिक भाषा : संरचनात्मक विशेषताएँ

उ) व्यावसायिक पत्र लेखन

४) निबंध लेखन :

अ) निबंध : तात्पर्य एवं स्वरूप

आ) निबंध लेखन : साहित्यिक / सामाजिक/ समसामयिक समस्या /
वैज्ञानिक विषय

संदर्भ ग्रंथ :

- १) साहित्य विधाओं की प्रकृति: देवी शंकर अवस्थी
- २) हिन्दी गद्य : विन्यास और विकास : डॉ. रामस्वरूप चतुर्वेदी
- ३) हिन्दी का गद्य पर्व : डॉ. नामवर सिंह
- ४) हिन्दी के अध्यतन अनुप्रयोग : डॉ. माधव सोनटवके
- ५) प्रयोजनमूलक तथा व्यावहारिक हिन्दी : डॉ. सुकुमार मंडारे

प्रश्नपत्र का प्रारूप तथा अंक विभाजन

	कुल अंक -५०
प्र.१ 'गद्य के विशिष्ट आयाम' पर ससंदर्भ व्याख्या विकल्प सहित	१०
प्र.२ 'गद्य के विशिष्ट आयाम' पर विकल्प सहित दीर्घांतरी प्रश्न	१५
प्र.३ प्रयोजनमूलक हिन्दी के पाठ्यांश पर विकल्प सहित दीर्घांतरी प्रश्न	१५
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अ) प्रयोजन मूलक हिन्दी के पाठ्यांश पर विकल्प सहित	०५
आ) प्रयोजनमूलक हिन्दी के पाठ्यांश पर विकल्प सहित	०५

बी.एस्सी.द्वितीय वर्ष : द्वितीय भाषा
प्रश्नपत्र -IV सामान्य हिंदी :४
चतुर्थ सत्र (Semister -IV)
सत्र पद्धति २०१४ लागू

उद्देश्य :

- १) साहित्य आस्वादन अभिरुची का परिसंस्कार
- २) जीवन मूल्यों के प्रति आस्था
- ३) भाषा प्रायोगिकी - विज्ञापन-कला व ज्ञान
- ४) अत्याधुनिक इलेक्ट्रानिक माध्यमों का परिचय

अध्ययन- अध्यापन प्रक्रिया

- १) व्याख्यान पद्धति
- २) लेखन व पठन कौशल वृद्धि के लिए अभ्यास
- ३) दृक-श्रव्य माध्यमों का प्रयोग

पाठ्य - पुस्तक: गद्य के विविध आयाम

संपा. प्रो. जयमोहन एम.एस., वाणी प्रकाशन, नई दिल्ली

• पाठ्यक्रम में समाविष्ट रचनाएँ

- १) डायरी- स्त्री घर
- २) व्यंग्य - कर कमल हो गये
- ३) रिपोर्टाज - जहाँ आकाश नहीं दिखाई देता.
- ४) निबंध- कुरीति तोड़ो, परिवार नहीं
- ५) जीवनी - स्वामी दयानंद

प्रयोजनमूलक हिन्दी

- १) मीडिया लेखन -
अ. जनसंचार माध्यम : विविध रूप
आ. समाचार लेखन
इ. रेडिओ वार्ता लेखन
ई. फीचर लेखन
- २) वैज्ञानिक, तकनीकी हिन्दी

अ. वैज्ञानिक, तकनीकी लेखन का स्वरूप एवं विशेषताएँ

आ. वैज्ञानिक लेखन में पारिभाषिक शब्दावली की भूमिका

१) पारिभाषिक शब्दावली का निर्माण : सिद्धान्त एवं प्रयोग

२) वैज्ञानिक तकनीकी शब्दावली (परिशिष्ट -अ)

३) वैज्ञानिक तकनीकी अनुवाद का स्वरूप

४) वैज्ञानिक तकनीकी अनुवाद व्यवहार

३) अशुद्धि शोधन

अ.शब्द अशुद्धि

आ. वाक्य अशुद्धि

इ. मुद्रित शोधन

४. अनुवाद

अ) बैंकिंग अनुवाद

आ) मीडिया अनुवाद

संदर्भ ग्रंथ :

१) साहित्य विधाओं की प्रकृति: देवी शंकर अवस्थी

२) हिंदी गद्य : विन्यास और विकास : डॉ. रामस्वरूप चतुर्वेदी

३) हिंदी का गद्य पर्व : डॉ. नामवर सिंह

४) हिंदी के अध्ययन अनुप्रयोग : डॉ. माधव सौनटक्के

प्रयोजनमूलक तथा व्यावहारिक हिंदी : डॉ. सुकुमार मंडारे

प्रश्नपत्र का प्रारूप तथा अंक विभाजन

	कुल अंक -५०
प्र.१ 'गद्य के विविध आयाम' पर ससंदर्भ व्याख्या विकल्प सहित	१०
प्र.२ 'गद्य के विविध आयाम' पर विकल्प सहित दीर्घांतरी प्रश्न	१५
प्र.३ प्रयोजनमूलक हिन्दी के पाठ्यशांश पर विकल्प सहित दीर्घांतरी प्रश्न	१५
प्र.४ टिप्पणी लिखिए	
अ) प्रयोजनमूलक हिन्दी के पाठ्यशांश पर विकल्प सहित	०५
आ) प्रयोजनमूलक हिन्दी के पाठ्यशांश पर विकल्प सहित	०५



डॉ. सुकुमार भंडारे
अध्यक्ष, हिन्दी पाठ्यक्रम समिति
डॉ. बाबासाहेब आंबेडकर मराठवाडा
विद्यापीठ, औरंगाबाद