B.Sc.-II (Chemistry) Semester III & IV
2021-22

SEMESTER III

Paper	Title	Max. Marks	Sem. Paper	Int. Asstt.	Pass Percentage
I	INORGANIC CHEMISTRY	35	26	09	35%
II	ORGANIC CHEMISTRY	35	26	09	35%
III	PHYSICAL CHEMISTRY	35	26	09	35%
I	PRACTICAL CHEMISTRY-I	45	16 (Pass Marks)		35%

SEMESTER IV

Paper	Title	Max. Marks	Sem. Paper	Int. Asstt.	Pass Percentage
I	INORGANIC CHEMISTRY	35	26	09	35%
II	ORGANIC CHEMISTRY	35	26	09	35%
III	PHYSICAL CHEMISTRY	35	26	09	35%
I	PRACTICAL CHEMISTRY-II	45	16 (Pass Marks)		35%

B.Sc.-II (Chemistry) 2021-22, 2022-23 & 2023-24
CHEMISTRY
SEM-III

PAPER-I
INORGANIC CHEMISTRY

Max Marks : 35
Semester Paper : 26
Internal Assessment: 9
Pass Marks : 35%

30 hours
Time allowed - 3 hrs
3 period/week

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections: A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 4 marks each. Section C will consist of 5 short answer questions that will cover the entire syllabus and will be of 2 marks each. Use of scientific non-programmable calculator is allowed.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions selecting two questions from each of A & B Sections and Section C 9th question being compulsory.

SECTION-A

I. Chemistry of Elements of First Transition Series

Characteristic properties of d-block elements. Properties of the elements of the first transition series, their simple compounds and complexes illustrating relative stability of their oxidation states, coordination number and geometry. (10 Hrs.)

Professor & Head
Deptt. of Chemistry
Punjabi University, Patiala

II. Chemistry of Lanthanide Elements

Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation of lanthanide compounds. (5 Hrs.)

SECTION-B

III. Chemistry of Elements of Second and Third Transition Series

General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states. Magnetic behaviour, spectral properties & stereochemistry (10 Hrs.)

IV. Chemistry of Actinides Elements

General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, similarities between the later actinides and the later lanthanides. (5 Hrs.)

CHEMISTRY
SEM-III

PAPER II : ORGANIC CHEMISTRY

Max Marks : 35
Semester Paper : 26
Internal Assessment: 9
Pass Marks : 35%

30 hours
Time allowed - 3 hrs
3 period/week

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections: A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 4 marks each. Section C will consist of 5 short answer questions that will cover the entire syllabus and will be of 2 marks each. Use of scientific non-programmable calculator is allowed.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions selecting two questions from each of A & B Sections and Section C 9th question being compulsory.

Section - A

I. Alcohols

Classification and nomenclature.

Monohydric Alcohols-nomenclature, methods of formation by reduction of aldehydes, ketone, carboxylic acids and esters. Hydrogen bonding, Acidic nature, Reactions of alcohols.

Dihydric alcohols-nomenclature, methods of formation, chemical reactions of vicinal glycols-nomenclature, methods of formation chemical reaction of vicinal glycols, oxidative cleavage with [Pb $(OAc)_4$ and HIO_4] and Pinacol-Pinacolone rearrangement.

Trihydric alcohol-nomenclature, methods of formation and chemical reactions of

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

glycerol. (7 Hrs.)

II.- Phenols

Nomenclature, structure and bonding. Preparation of Phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonanace stabilization of phenoxide ion. Reactions of phenols-electrophilic aromatic subsititution, acylation and carboxylation Mechanisms of Fries rearrangement. Gatterman synthesis, Hauben. Hostch reaction. Lederer-Mianasse reaction and Reimer-Tiemann reaction. (8 Hrs.)

Section - B

III. Aldehydes and Ketones

Nomenclature and structure of the carbonyl group, Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, synthesis of aldehyes and ketones using 1,3- dithianes, synthesis of ketones from nitrites and from carboxylic acids. Physical properties and Mechanism of nucleophillic addition to carbonyl group with particular emphasis ofBenzoin, Aldol, Perkin and Knoevenagel condensations, Condensation with ammonia and its derivatives, Wittig reaction, and Mannich reaction.

Use of acetals as protecting group. Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV (Meerwein Pondoroff Vorley) reaction, Clemmensen, Wolff-Kishner, $LiAlH_4$ and $NaBH_4$ reductions. Halogenation of enolizable ketones.

An Introduction to α, β unsaturated aldehydes and ketones, Michael addition. (15 Hrs.)

CHEMISTRY
SEM-III

PAPER III : PHYSICAL CHEMISTRY

Max Marks : 35
Semester Paper : 26
Internal Assessment: 9
Pass Marks : 35%

30 hours
Time allowed - 3 hrs
3 period/week

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections: A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 4 marks each. Section C will consist of 5 short answer questions that will cover the entire syllabus and will be of 2 marks each. Use of scientific non-programmable calculator is allowed.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions selecting two questions from each of A & B Sections and Section C 9th question being compulsory.

Professor & Head,
Deptt. of Chemistry

Section - A

I. Thermodynamics-I

Definition of thermodynamics terms: system, surroundings. Types of systems, intensive and extensive properties. State and path functions and their differentials, Thermodynamic processes, Concept of heat and work, elementary idea of thermochemistry.

First Law of Thermodynamics : statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule's law. Joule Thomson coefficient and inversion temperature, Calculation of w, q, dU & dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process.

(10 Hrs.)

II. Thermodynamics-II- (Part-a)

Second law of thermodynamics: need for the law, different statements of the law. Carnot cycle and its efficiency, Carnot theorem. Thermodynamic scale of temperature. (5 Hrs.)

SECTION-B

III. Thermodynamics-II- (Part-b)

Concept of entropy as a state function, entropy as a function of V & T, entropy as a function of P & T, entropy change in physical change, Clausius inequality, entropy as a criterion of spontaneity and equilibrium. Entropy change in ideal gases mixing of gases. (5 Hrs.)

IV. Thermodynamics-III

Third law of thermodynamics, Nernst heat theorem, statement and concept of residual entropy, evaluation of absolute entropy from heat capacity data, Gibbs and Helmholtz functions; Gibbs function (G) and Helmhotz function (A) as thermodynamic quantities. A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change. Variation of G and A with P, V and T. (5 Hrs.)

V. Chemical Equilibrium

Equilibrium constant and free energy, Thermodynamic derivation of law of mass action. Le Chatelier's principle.

Reaction isotherm and reaction isochore-Clapeyron equation and Clausius-Claperyron equation.

(5 Hrs.)

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

B.Sc.-II
PRACTICALS CHEMISTRY-I
Sem.-III

Max. Marks: 45 6 Periods/week
Time: 4 Hrs.
Pass Percentage: 35%

Volumetric Analysis and TLC

Volumetric Analysis

(a) Determination of acetic acid in commercial vinegar using NaOH, Alkalinity of water sample.
(b) Determination of alkaline content of antacid.
(c) Estimation of calcium content in chalk as calcium oxalate by permanganometry .
(d) Estimation of hardness of water by EDT A.
(e) Estimation of ferrous and ferric by dichromate method.
(f) Estimation of copper using sodium thiosulphate.

Organic Chemistry

Laboratory Techniques

Thin Layer Chromatography

Determination of R_f values of different components.

(a) Separation of green leaf pigments (spinach leaves may be used)

(b) Preparation and separation of 2, 4-dinitrophenylhydrazones of acetone, benzophenone and cyclohexanone using toluene and light petroleum mixture (40 : 60).

(c) Separation of a mixture of dyes.

PRACTICALS

INSTRUCTIONS FOR EXAMINERS AND CANDIDATES

The practical examination will be held in single session (morning/evening). Candidates are required to perform practicals from volumetric Analysis and TLC. Distribution of marks will be as under (Books may be consulted):

(1)	Volumetry analysis	=	20 marks {Initial write up 7 marks (Volumetry; equation:1, Indicator:1, end point:1 and general calculations:4) Performance and results 13 marks (initial burette reading:2, final reading:2, end point:2 calculations and result:7)}
(2)	TLC	=	10 marks (Performance and result)
(3)	Viva-Voce	=	10 marks
(4)	Note Books	=	5 marks
	Total	=	**45 marks**

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

CHEMISTRY
SEM-IV

PAPER I : INORGANIC CHEMISTRY

Max Marks : 35
Semester Paper : 26
Internal Assessment: 9
Pass Marks : 35%

30 hours
Time allowed - 3 hrs
3 period/week

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections: A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 4 marks each. Section C will consist of 5 short answer questions that will cover the entire syllabus and will be of 2 marks each. Use of scientific non-programmable calculator is allowed.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions selecting two questions from each of A & B Sections and Section C 9th question being compulsory.

Section - A

I. Coordination Compounds

Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes. (10 Hrs.)

II. Oxidation and Reduction

Use of redox potential data-analysis of redox cycle, redox stability of water-Frost, Latimer and Pourbaix diagrams. Principles involved in the extraction of the elements. (5 Hrs.)

Section - B

III. Acids and Bases

Arrhenius, Bronsted-Lowry, the Lux-Flood solvent system and Lewis concepts of acids and bases. (7Hrs.)

IV. Non-aqueous Solvents

Physical properties of a solvent, types of solvents and their general characteristics, reaction in non-aqueous solvents with reference to liquid NH_3 and liquid SO_2 (8 Hrs.)

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

CHEMISTRY
SEM-IV

PAPER II : ORGANIC CHEMISTRY

Max Marks : 35
Semester Paper : 26
Internal Assessment: 9
Pass Marks : 35%

30 hours
Time allowed - 3 hrs
3 period/week

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections: A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 4 marks each. Section C will consist of 5 short answer questions that will cover the entire syllabus and will be of 2 marks each. Use of scientific non-programmable calculator is allowed.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions selecting two questions from each of A & B Sections and Section C 9th question being compulsory.

Section - A

I. Carboxylic Acids

Nomenclature, structure and bonding. physical properties, acidity of carboxylic acids, effects of substituents on acid strength. Preparation of carboxylic acids, Reactions of amides, Reactions of carboxylic acids, Mechanism of decarboxylation.

Methods of formation and chemical reactions of Halo acids and Hydroxyacids. Maleic acid, tartaric acid and citric acid. (Structural Formula only).

Methods of formation and chemical reaction of unsaturated monocarboxylic acids. Dicaboxylic acids, methods of formation and effect of heat and dehydrating agents. (10 Hrs.)

II. Carboxylic Acid Derivatives

Structure and nomenclature of acid chlorides, esters. amides and acid anhydrides. Relative stability and reactivity of acyl derivatives.

Physical properties, interconversion of acid derivatives by nucleophillic acyl substitution.

Preparation of carboxylic derivatives, chemical reactions, Mechanism of esterfication and hydrolysis (acidic and Basic). (5 Hrs.)

SECTION-B

III. Ethers and Epoxides

Nomenclature of ethers and methods of their formation, physical properties, Chemical reactions-cleavage and autooxidation, Ziesel' s Method.

Synthesis of epoxides, acid and base catalysed ring opening of epoxide, orientation of ring opening reactions of Gringard and organolithium reagents with epoxide. (3 Hrs.)

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

IV. Fats, Oils and Detergents

Natural fats, edible and industrial oils of vegetable origin, common fatty acids, glycerides, hydrogenation of unsaturated oils. Saponification value, iodine value, acid value. Soaps, synthetic detergents, alkyl and aryl sulphonates. (3 Hrs.)

V. Organic Compounds of Nitrogen

a) Nitro Compounds

Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanism of nucleophilic substitution in nitroarenes and their reactions in acidic, neutral and alkaline media, Picric acid. (4 Hrs.)

b) Amines

Reactivity, structure and nomenclature of amines, physical properties. Stereochemistry of amines. Separation of mixture of primary, secondary and tertiary amines. Structural features affecting the basicity of amines. Amine salts as phase-transfer catalyst and preparation of alkyl and aryl amines (reduction of nitro compounds and nitriles), reductive amination of aldehydic and ketonic compounds Gabriel-phthalimide reaction, Hoffmann bromamide reaction. (5 Hrs.)

CHEMISTRY
SEM-IV

PAPER III : PHYSICAL CHEMISTRY

Max Marks : 35
Semester Paper : 26
Internal Assessment: 9
Pass Marks : 35%

30 hours
Time allowed - 3 hrs
3 period/week

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections: A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 4 marks each. Section C will consist of 5 short answer questions that will cover the entire syllabus and will be of 2 marks each. Use of scientific non-programmable calculator is allowed.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions selecting two questions from each of A & B Sections and Section C 9th question being compulsory.

Section - A

I. Phase Equilibrium

Statement and meaning of the terms-phase, component and degree of freedom, derivation of Gibbs phase rule; phase equilibria of one component system-water and S systems.

Phase equilibria of two component systems-solid-liquid equilibria, simple eutectic Pb-Ag sytems, desilverisation of lead.

Solid Solutions-compound formation with congruent melting point (Mg-Zn) and incongruent melting point, ($NaCl$-H_2O), ($FeCl_3H_2O$) systems. Freezing mixtures,

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

acetone-dry ice.
Partially miscible liquids: Lower and upper consolute temperature, Effect of impurity on consolute temperature. Immiscible liquids, steam distillation.
Nernst distribution law, thermodynamic derivation & applications. (10 Hrs.)

II. Electrochemistry-l (a)

Electrical transport-conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance with dilution.

Migration of ions and Kohlrausch law. Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, its uses and limitations. Debye-Huckel-Onsagar's equation for strong electrolytes (elemental treatment only). (5 Hrs.)

SECTION-B

III. Electrochemistry-I (b)

Transport number, definition and determination by Hittorf method and moving boundary method. Applications of conductance measurements: determination of degree of dissociation, determination of K_a of acids, determination of solubility product of a sparingly soluble salts, conductometric titrations. (5 Hrs.)

IV. Electrochemistry-II

Types of reversible electrodes--gas-metal ion, metal-metal ion, metal-insoluble salt-anion and redox electrodes. Electrode reactions, Nernst equation, derivation of cell E.M.F. and single electrode potential, standard hydrogen electrode-reference electrodes-standard electrode. potential, sign conventions, electrochemical series and its significance.

Electrolyte and Galvanic cells-reversible and irreversible cells, conventional representation of electrochemical cells.
EMF of a cell and its measurements, Computation of cell EMF. Calculation of thermodynamic quantities of cell reaction (G, H and K), polarization, over potential and hydrogen over voltage.

Concentration cell with and without transport, liquid junction potential, application of concentration cells, valency of ions, solubility product and activity coefficient potentiometric titrations.

Definition of pH and pK., determination of pH using hydrogen, quinhydrone and glass electrodes, by potentiomentric methods.

Buffers--mechanism of buffer action, Henderson-Hazel equation, Hydrolysis of saits, Corrosion-types, theories and methods of combating it. (10 Hrs.)

B.Sc.-II
PRACTICALS CHEMISTRY-II
Sem.-IV

Max. Marks: 45 6 Periods/week
Time: 4 Hrs.
Pass marks: 35%

Qualitative Analysis

Detection of elements (N, S and halogens) and functional groups (phenolic, carboxylic, carbonyl, esters, carbohydrates, amines, amides, nitro and anilide) in

Professor & Head,
Deptt. of Chemistry

simple organic compounds.

Physical Chemistry

1. To determine the solubility of benzoic acid at different temperatures and to determine ΔH of the dissolution process.

2. To determine the enthalpy of neutralisation of a weak acid/weak base versus strong base/strong acid and determine the enthalpy of ionisation of the weak acid/weak base.

3. To determine the enthalpy of solution of solid calcium chloride.

INSTRUCTIONS FOR EXAMINERS AND CANDIDATES

The practical examination will be held in single session (morning/evening). Candidates are required to perform practicals from Qualitative Organic Analysis and Physical Chemistry Experiments. Distribution of marks will be as under (Books may be consulted):

(1)	Organic Qualitative Analysis	=	15 marks (Detection of elements identification and confirmation of functional group by 2 confirmatory tests.)
(2)	Physical Chemistry Experiment	=	15 marks {Initial Write up 5 marks (Theory/principle:1, Procedure:2, General Calculations:2) Performance and result: 10 marks (Full credit up to 10% error)}
(3)	Viva-Voce	=	10 marks
(4)	Note Books	=	5 marks
	Total	=	**45 marks**

BOOKS SUGGESTED (THEORY COURSES)

1.*Basic Inorganic Chemistry.* F.A. Cotten. G. Wilkinson and P.L.. Gaus. Wiley.
2.*Concise Inorganic Chemistry. 1.D.* Lee. ELBS.
3.*Concepts of Models of Inorganic Chemistry.* B. Doaglas. D. McDaniel and 1. Alexander, John Wiley.
4.*Inorganic Chemistry.* D.E. Shriver, P. W. Aikins and C.H. Langford. <Oxford.
5.*Inorganic Chemistry.* W. W. Porterfield Addison. Wesley.
6.*Inorganic Chemistry.* A.G. Sharpe, ELBS.
7.*Inorganic Chemistry.* G.L. Miessler and O.A. Tarr, Prentice Hall.
8.*Organic Chemistry.* Morrison and Boyd, Prentice Hall.
9.*Organic Chemistry.* L.G. Wade lr.Prentice Hall.
10.*Fundamentals of Organic Chemistry.* Solomons, John Wiley.
11.*Organic Chemistry.* Vol. I, II & III. S.M. Mukherji, S.P. Singh and R.P. Kapoor, Wiley Eastern Ltd. (New Age International)
12.*Organic Chemistry.* F.A. Aarey, McGraw Hill India.
13.*Introduction to Organic Chemistry.* Stretwieser, Heathcock and Kosover, Machmilan.
14.*Physical Chemistry.* G.M. Barrow, International Student Edition. McGraw Hill.
15.*Basic Programming with Application.* V.K. Jain, 1'ata McGraw Hill.
16.*Computers and Common. Sense.* B. Ryal and Shely, Prentice Hall.

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

17.*University General Chemistry.* C.N.B. Rao. Macmillan.
18.*Physical Chemistry.* R.A. Alberty, Wiley Eastern Ltd.
19.*The Elements of Physical Chemistry,* P.w. Aikins, Oxford.
20.*Physical Chemistry Through Problems.* S.K. Dogra and S. Dogra. Wiley Eastern Ltd.

Professor & Head,
Deptt. of Chemistry
Punjabi University, Patiala

SYLLABUS

B.Sc. Part-II (Semester-III and IV) Subject Botany

(Session 2021-22, 2022-23 and 2023-24)

Semester-III

THEORY

	External Marks	**Internal Assessment**
Paper-V: Diversity and Systematics of Gymnosperms	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
Paper-VI: Diversity and Systematics of Angiosperms	40	15 (Attendance: 3 + Assignment: 6 + House Test 6

PRACTICAL

Pertaining to Theory **Paper-V** Pertaining to Theory **Paper-VI**	40

Theory		80 Marks
Practical		40 Marks
Internal Assessment Pertaining to Theory Paper-V & VI		30 Marks
Total	**:**	**150 Marks**

Semester-IV

THEORY

	External Marks	**Internal Assessment**
Paper-VII: Plant Anatomy	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
Paper-VIII: Development and Reproduction in Flowering Plants	40	15 (Attendance: 3 + Assignment: 6 + House Test 6

PRACTICAL

Pertaining to Theory **Paper-VII** Pertaining to Theory **Paper -VIII**	40
Total	**Marks (Semester-IV)**

Theory		80 Marks
Practical		40 Marks
Internal Assessment Pertaining to Theory Paper-**VII** & **VIII**		30 Marks
Total	**:**	**150 Marks**

Note:

1) The number of teaching hours per week will be three for each theory paper and three for each practical in every semester. In all, there will be 12 teaching hours per week covering both theory and practical requirements. (Six teaching hours for theory and Six teaching hours for practical per week)
2) Practical paper in each semester will be of 3 hours. The timing of practical examination will be 9.00 am to 12.00 noon.

Paper-V: DIVERSITY AND SYSTEMATICS OF GYMNOSPERMS

Max. Marks: 55 marks
Pass Marks: 35% in Theory and Practical Separately
Theory Paper: 40 marks
Internal Assessment: 15 marks

Total Teaching hours: 45
Time Allowed: 3 Hours

Objective of the paper is to impart knowledge to students about the general characters, classification, evolution and diversity of representatives of different gymnosperms.

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective section of syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions (8-10 lines) of 2 marks each which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

Section-A

1. General features of gymnosperms and their classification; fossil gymnosperms Pentoxylon, Cordaites, Bennettites, Glossopteris, Lyginopteris, Williamsonia, Distribution, Cytology and Economic Importance of Indian Gymnosperms.
2. General characters of Pro-Gymnosperms, morphological features of *Arachaeopteris* and *Aneurophyton*.

Section-B

3. General characters of Cycadales and Coniferales. Morphology, anatomy, reproduction and life cycle of *Cycas* and *Pinus*.
4. General characters of Ephedrales and Gnetales. Morphology, anatomy, reproduction and life cycle of *Ephedra* and *Gnetum*.

RECOMMENDED READINGS

1. Bhatnagar, A.M. 2004. *Gymnosperms*, New Age International (P) Limited, Publishers, New Delhi.
2. Bhatnagar, S.P. and Moitra, A. 1996. *Gymnosperms*, New Age International Limited, New Delhi.
3. Pant, D.D. 1973. *Cyas & Cyadales*, Central Book Dept Allahabad, UP
4. Sharma, O.P. 2002. *Gymnosperms*, Pragati Prakashan, Merrut.
5. Sporne, K.R. 1965. *The Morphology of Gymnosperms*, Hutchinson & Co. (Publishers) Ltd., London.
6. Stewart, W.M. 1983. *Paleobotany and the Evolution of Plants*, Cambridge University Press, Cambridge.

B.Sc. (Botany) Part-II (SEMESTER-III)

Paper-VI: DIVERSITY AND SYSTEMATICS OF ANGIOSPERMS

Max. Marks: 55 marks
Pass Marks: 35% in Theory and Practical Separately
Theory Paper: 40 marks
Internal Assessment: 15 marks

Total Teaching hours: 45
Time Allowed: 3 Hours

Objective of the paper is to acquaint the students about the origin and evolution of angiosperms, angiosperm taxonomy, diagnostic features and technical description of angiosperm families.

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective section of syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions (8-10 lines) of 2 marks each which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

Section-A

1. Origin and evolution of Angiosperms giving suitable examples. Primitive and advanced characters of Angiosperms.
2. Angiosperm taxonomy; brief history, aims and fundamental components (α-taxonomy, β-taxonomy and Ω-taxonomy); identification keys. International code of Botanical nomenclature: Principles and rules; taxonomic ranks; type concept.

Section-B

3. Classification of angiosperms: salient features, comparison, merits and demerits of the classification systems proposed by Bentham and Hooker and Engler and Prantl.
4. Diagnostic features, technical description and taxonomic significance of flowering plants as illustrated by members of families Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Cucurbitaceae, Rosaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Euphorbiaceae, Asteraceae, Lilliaceae and Poaceae.

RECOMMENDED READINGS

1. Chopra, G.L. 2000. *Angiosperms*. Pardeep Publications, Jalandhar.
2. Pandey, B.P. 2004. *A Text Book of Botany: Angiosperms*. S. Chand and Company Ltd. New Delhi.
3. Pullaiah, T.2007. *Taxonomy of Angiosperms* (2nd ed.), Regency Publications, New Delhi.
4. Sambamurty, V.S.S. 2005. *Taxonomy of Angiosperms*, I.K. International, Pvt. Ltd., New Delhi.
5. Singh, G. 2006. Plant Systematic. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi
6. Sharma, O.P. 2004. Plant Taxonomy. Tata McGraw-Hill Publishing Company Ltd., New Delhi.

SUGGESTED LABORATORY EXCERCISES

Gymnosperms:

Cycas

I. Study of microsporophyll, megasporophyll and mature seed.
II. Study through permanent slides – normal root (T.S.) and ovule (L.S.)
III. Study through hand sections– coralloid root (T.S.). rachis (T.S.), leaflet (V.S.), pollen grains (W.M.)

Pinus

I. Long and dwarf shoot, male and female cones, winged seeds.
II. Study through permanent slides – root (T.S.), Male cone (L.S.), female cone (L.S.), ovule (L.S.), embryo (W.M.) showing polycotyledonous condition.
III. Study through hand sections and preparation of permanent studies in young stem (T.S.), old stem (T.S., T.L.S. and R.L.S.), needle (T.S.), pollen grains (W.M.).

Ephedra

I. Structure of male and female cones.
II. Hand sections – Stem (T.S.), maceration to show vessel structure; pollen grains (W.M.)

Angiosperms:

The following genera are recommended for study. This list is only indicative. Teachers may select plants available in their locality.

1. Ranunculaceae: *Ranunculus, Delphinium*.	8. Rosaceae : Rosa
2. Brassicaceae: *Brassica, Iberis*.	9. Apocynaceae : Neerium.
3. Malvaceae: *Hibiscus, Abutilon*.	10. Asclepiadaceae: *Calotropis*.
4. Rutaceae: *Murraya, Citrus*.	11. Solanaceae: *Solanum, Withania*.
5. Fabaceae: *Faboideae: Lathyrus, Trigonella*; Caesalpiniodeae: *Cassia*; Mimosoideae: *Acacia, Albizzia.*	12. Euphorbiaceae: *Euphorbia, Phyllanthus*.
	13. Asteraceae: *Helianthus, Ageratum* and *Sonchus*.
6. Apicaceae: *Coriandrum*.	14. Lamiaceae: *Ocimum, Salvia*.
7. Cucurbitaceae: *Cucurbita*	15. Liliaceae: *Asparagus, Allium*.
	16. Poaceae : Avena, Triticum.

Note for teachers:

The students should be made familiar with the families listed in the syllabus in the practical classes with representative species or any other that may be available locally. The teacher should prevent students from collection of plants from nature and submitting them for the practical examination. Instead, the students should be trained in field botany and asked to prepare field reports for which students should be taken for botanical excursion.

INSTRUCTIONS FOR PAPER SETTER
PRACTICAL PAPER-III (PERTAINING TO THEORY PAPER- Paper-V & VI)

	Practical	Marks
1.	Section cutting and preparation of permanent slide	05
2.	Description of complete flower, along with V.S., floral diagram and referring to the family giving reasons.	06
3.	Description of only two floral whorls of a given flower (to be given by the examiner)	04
4.	Field Report	05
5.	Two Morphological notes (Pertaining to Gymnosperms)	06
6.	Identification of two spots and two slides (with atleast two diagnostic features)	06
7.	Note-book	04
8.	Viva-voce.	04
		40 Marks

Paper-VII: PLANT ANATOMY

Max. Marks: 55 marks
Pass Marks: 35% in Theory and Practical Separately
Theory Paper: 40 marks
Internal Assessment: 15 marks
Total Teaching hours: 45
Time Allowed: 3 Hours

Objective of the paper is to impart knowledge to students about the tissue systems, root shoot and leaf anatomy.

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective section of syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions (8-10 lines) of 2 marks each which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

Section-A

1. Tissue Systems**:** Epidermal: Structure and types of stomata, idioblasts, trichomes, nectaries, hydathodes. Fundamental: parenchyma, collenchyma, and sclerenchyma; Vascular system.
2. The root system: the root apical meristem and its histological organization; anatomical details of Dicot and Monocot roots.

Section-B

3. The shoot system: The shoot apical meristem and its histological organization. Anatomical details of Dicot and Monocot stems. Cambium and its functions. Secondary growth including anomalous secondary growth
4. Leaf: Anatomy in Dicots and Monocots and modification with special reference to their function.

RECOMMENDED READINGS

1. Esau, K. 1977. *Anatomy of Seed Plants 2nd* Edition, John Wiley & Sons., New York.
2. Fahn, A. 1974. *Plant Anatomy 2nd* Edition, Pergamon Press, Oxford.
3. Mauseth, J.D. 2008. *Plant Anatomy*, Blackburn Press, New Jersey, USA.
4. Rudall, P. 2007. *Anatomy of Flowering Plants,- An Introduction to structure and Development*, Cambridge University Press, Cambridge, U.K.

Paper-VIII: DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS

Max. Marks: 55 marks
Pass Marks: 35% in Theory and Practical Separately
Theory Paper: 40 marks
Internal Assessment: 15 marks

Total Teaching hours: 45
Time Allowed: 3 Hours

Objective of the paper is acquaint the students about the vegetative and sexual reproduction in angiosperm, structure of male and female gametophytes and post fertilization changes.

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective section of syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions (8-10 lines) of 2 marks each which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

Section-A

1. Vegetative Reproduction: Various methods of vegetative propagation and applications in floriculture and horticulture.
2. Flower: a modified shoot; structure, development of flower; Inflorescence types; structure of anther and pistil.

Section-B

3. Male and female gametophyhtes; types of pollination; pollen-pistil interaction, self incompatibility, double fertilization.
4. Post fertilization changes, endosperm and embryo development; seed development, structure and dispersal; dormancy fruit development and types of fruit.

RECOMMENDED READINGS

1. Bhojwani, S.S. and Bhatnagar, S.P. 2000. *The Embryology of Angiosperms*; 4th revised and enlarged edition, Vikas Publishing House, Delhi.
2. Larsten, N.R. 2008. *Flowering Plant Embryology*, John Wiley & sons, New York, USA.
3. Pullaiah, T. 2001. *Text Book of Embryology of Angiosperms*, Regency Publications, New Delhi.

SUGGESTED LABORATORY EXERCISES

Teachers may select plant/material available in their locality/institution.

1. To study the anatomy of Dicot and Monocot root, stem and leaves from the locally available material.
2. Study of anomalous secondary growth in *Boerhavia, Nyctanthus, Bougainvillea, Mirabilis*.
3. Examination of flowers for their pollination mechanism (*Salvia, Ficus, Calotropis, Triticum*).
4. Structure of anther, microsporogenesis (using slides) and pollen grains and pollinia (using whole mounts).
5. Study of Pollen viability using glycero-acetocarmine.
6. Structure of ovule and embryo sac. (Permanent slides)
7. Nuclear and cellular endosperm. Embryo development in monocots and dicots.(Permanent slides)
8. Simple experiments to show vegetative propagation (leaf cuttings in *Bryophyllum*; stem cuttings in rose, money plant, sugarcane and *Bougainvillea)*.
9. Testing percentage seed viability through tetrazolium chloride and actual seed germination.
10. Study of placentation, fruit types and seed types.

INSTRUCTIONS FOR THE PAPER SETTER

PRACTICAL PAPER-IV (Pertaining to theory paper Paper-VII & VIII)

		Marks
1.	Study of anatomical details of root/stem/leaves in Dicots and Monocots including study of anomalous secondary growth.	07
2.	Maceration/Stomatal Study	05
3.	Study of pollen viability/Seed viability	04
4.	Flower study in relation to pollination/study of Inflorescence and Fruit types	05
5.	Study of polyembryony/ Placentation /Vegetative Propagation	05
6.	Identification of four slides with two diagnostic features each	06
7.	Practical Note-book.	04
8.	Viva-voce	04
		40 Marks

SYLLABUS

B.Sc. (Zoology) Part-II (Semester-III and IV)

(Session 2021-22, 2022-23 and 2023-24)

Semester-III

THEORY

	External Marks	**Internal Assessment**
Paper-V : Biochemistry	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
Paper-VI : Animal Physiology	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)

PRACTICAL

Pertaining to Theory Paper-V and Theory Paper-VI:	40

Total Marks (Semester-III)

Theory		80 Marks
Practical		40 Marks
Internal Assessment pertaining to Theory Paper V & VI		30 Marks
Total	**:**	**150 Marks**

Semester-IV

THEORY

	External Marks	**Internal Assessment**
Paper-VII : Evolutionary Biology	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
Paper-VIII : Genetics	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)

PRACTICAL

Pertaining to Theory Paper-VII and Theory Paper-VIII :	40

Total Marks (Semester-IV)

Theory		80 Marks
Practical		40 Marks
Internal Assessment pertaining to Theory Paper VII & VIII		30 Marks
Total	**:**	**150 Marks**

Note:

1) The number of teaching hours per week will be three for each theory paper and three for each practical in every semester. In all, there will be 12 teaching hours per week covering both theory and practical requirements. (Six teaching hours for theory and Six teaching hours for practical per week)
2) There will be one Practical paper of 3 hours pertaining to the theory papers in each semester. The timing of practical examination will be 9.00 am to 12.00 noon.

SEMESTER-III

PAPER-V: BIOCHEMISTRY

Max. Marks: 55 ***Time Allowed: 3 hours***
Pass marks: 35% ***Lectures to be delivered: 45***
Theory-40 ***(Each of 45 minutes duration)***
Internal Assessment: 15

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

Section A

1. Biochemistry: its scope and importance, chemical bonds and energy, Biomolecules: configuration and conformation, Properties of water as biological solvent, Introduction to metabolism.

2. Carbohydrates: Structure and Biological importance- Monosaccharides, Disaccharides, Polysaccharides; Derivatives of Monosaccharides; Carbohydrate metabolism: Glycolysis, Citric acid cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogenesis, Glycogenolysis.

3. Proteins: Amino acids- Structure, Classification, General and Electrochemical properties of α-amino acids; Physiological importance of essential and non-essential amino acids, Peptide Bond stabilizing protein structure; Levels of protein organization; Protein metabolism: Transamination, Deamination, Urea cycle, Fate of C-skeleton of Glucogenic and Ketogenic amino acids

Section B

4. Lipids: Structure and Significance: Physiologically important saturated and unsaturated fatty acids, Triacylglycerols, Phospholipids, Sphingolipid, Glycolipids, Steroids, Eicosanoids and terpenoids. Lipid metabolism: β-oxidation of fatty acids - Palmitic acid, Linoleic acid; Fatty acid biosynthesis, Formation of lipid bi-layer

5. Nucleic Acids: Structure of Purines, Pyrimidines, Nucleosides and Nucleotides; Nucleic Acid Metabolism: Catabolism of Adenosine, Guanosine, cytosine and thymine.

6. Enzymes : Nomenclature and classification; Cofactors; Specificity of enzyme action; Isozymes; Mechanism of enzyme action; Enzyme kinetics; Derivation of Michaelis-Menton equation, Lineweaver-Burk plot; Factors affecting rate of enzyme-catalyzed reactions; Enzyme inhibition.

PAPER-VI : ANIMAL PHYSIOLOGY

Max. Marks: 55 ***Time Allowed: 3 hours***
Pass marks: 35% ***Lectures to be delivered: 45***
Theory-40 ***(Each of 45 minutes duration)***
Internal Assessment: 15

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

SECTION-A

1. Digestion: Physiology of digestion in the alimentary canal; Absorption of carbohydrates, proteins, lipids

2. Respiration: Pulmonary ventilation, Respiratory volumes and capacities, Transport of Oxygen and carbon dioxide in blood, Oxygen dissociation curve of haemoglobin, Bohr effect, chloride shift, Haldane effect and control of breathing.

3. Excretion: Structure of nephron, Mechanism of Urine formation, Counter-current Mechanism, Osmoregulation

4. Cardiovascular system: Composition of blood, molecular structure and function of haemoglobin, blood clotting, blood groups including Rh-factor, haemostasis and haemopoiesis. Origin and conduction of the cardiac impulse, Cardiac cycle, electrocardiogram.

SECTION-B

6. Structure and physiology of endocrine glands- thyroid; Parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.

7. Nerve: Structure of a neuron, Resting membrane potential, Origin of Action potential and its propagation in myelinated and non-myelinated nerve fibres, synapse and myoneural junction.

8. Muscle: Ultra-structure of skeletal muscle, Molecular and chemical basis of muscle contraction.

Books recommended:

- A.L., Lehninger (1982). *Principles of Biochemistry*, Worth Publishers, Inc. New York.
- E.E. Conn and P.K. Stumpf. (1976) *Outlines of Biochemistry,* Wiley Eastern, New Delhi.
- L. Stryer (1995) *Biochemistry*, W.H. Freeman Press, San Francisco, USA.
- Voet, D. and Voet, J.G. (2004). *Biochemistry*, 3rd Edition, John Wiley & Sons, Inc. USA.
- Guyton, A.C. and Hall, J.E. (2011). T*extbook of Medical Physiology*, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company
- Tortora, G.J. and Derrickson, B.H. (2009). *Principles of Anatomy and Physiology*, XII Edition, John Wiley & Sons, Inc.

LIST OF PRACTICALS

1. Identification of food stuffs: starch, glucose, proteins and fats in a given solution.
2. Demonstration of osmosis and diffusion.
3. Demonstration of presence of amylase in saliva, denaturation with change of pH and temperature.
4. Analysis of urine for urea and glucose.
5. Determination of coagulation and bleeding time of blood in man.
6. Determination of blood groups of human blood sample.
7. Recording of blood pressure of man.
8. Estimation of haemoglobin content.
9. Preparation of slide to study TLC and DLC.
10. Preparation and study of human blood smear.
11. Study of permanent mount of striated muscles.
12. Study of permanent mount of myelinated nerve fibre.

13. Identification of permanent histological sections of mammalian thyroid; Parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.
14. Field study: Visit to a clinical lab.

INSTRUCTIONS FOR PRACTICAL PAPER

Max. Marks: 40 *Time Allowed: 3 hours*
Pass Marks: 35%

1.	Biochemistry Experiment out of Experiment No. 1-4	8
2.	Physiology Experiment out of Exp. No. 5-8	8
3.	Preparation, Study & Sketch of slide out 9-10	8
4.	Identification of 2 slides out of 11-13.	6
5.	Lab Visit report	4
6.	Viva-voce	3
7.	Note Book	3

SEMESTER-IV
PAPER-VII : EVOLUTIONARY BIOLOGY

Max. Marks: 55 ***Time Allowed: 3 hours***
Pass marks: 35% ***Lectures to be delivered: 45***
Theory-40 ***(Each of 45 minutes duration)***
Internal Assessment: 15

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

SECTION A

1. Life's Beginnings: Chemogeny, RNA world, Biogeny, Origin of photosynthesis, Evolution of eukaryotes
2. Historical review of evolutionary concept: Lamarckism, Darwinism, Neo-Darwinism
3. Sources of variations: Heritable variations and their role in evolution
4. Evidences of Evolution: Fossil record (types of fossils, transitional forms, geological time scale, evolution of horse and man, Molecular evolution (three domains of life, neutral theory of molecular evolution, molecular clock

SECTION B

5. Hardy-Weinberg Law (its assumptions and applications)
6. Natural selection and other forms of selection. Genetic Drift (mechanism, founder's effect, bottleneck phenomenon; Role of Migration and Mutation in changing allele frequencies)
7. Product of evolution: Micro and Macro evolution and isolating mechanisms, Micro evolutionary changes (inter-population variations), Modes of speciation
8. Extinctions, Back ground and mass extinctions (causes and effects), detailed example of K-T extinction
9. Origin and evolution of man, Unique hominid characteristics contrasted with primate characteristics, primate phylogeny from Dryopithecus leading to *Homo sapiens*, molecular analysis of human origin

Books Recommended

1. Ridley,M (2004) Evolution III Edition Blackwell publishing
2. Hall, B.K. and Hallgrimson, B (2008). Evolution IV Edition. Jones and Barlett Publishers.
3. Campbell, N.A. and Reece J.B (2011). Biology. IX Edition. Pearson, Benjamin, Cummings.
4. Douglas, J. Futuyuma (1997).Evolutionary Biology. Sinauer Associates.
5. Snustad. S Principles of Genetics.
6. Pevsner, J (2009). Bioinformatics and Functional Genomics. II Edition WileyBlackwell
7. Minkoff, E. (1983). Evolutionary Biology. Addison-Wesley

PAPER-VIII : GENETICS

Max. Marks: 55 ***Time Allowed: 3 hours***
Pass marks: 35% ***Lectures to be delivered: 45***
Theory-40 ***(Each of 45 minutes duration)***
Internal Assessment: 15

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 6 marks each. Section C will consist of 8 short-answer type questions which will cover the entire syllabus uniformly and will carry 16 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C, which is compulsory.

Section-A

1. Chromatin and the Nucleosome: Structure of Nucleosome. Chromatin structure-Euchromatin, Heterochromatin-Constitutive and Facultative heterochromatin. Organization of Chromosomes.

2. Mendelism, Non- Mendelian Gene Interactions: Complementary factor, Epistatic gene, Duplicate genes, Supplementary factor, Lethal genes, Pleiotropism. Incomplete Dominance

3. Multiple Alleles: Inheritance of ABO Blood groups in Man, Rh factor and Erythroblastosis foetalis in Man, Polygenic inheritance- Skin pigmentation in Man, Eye colour in *Drosophila*.

4. Linkage –Types, theories and significance

5. Crossing over-Mechanism of crossing over, Factors affecting crossing over, Significance and consequences of crossing over.

6. Cytoplasmic Inheritance: Definition, characteristics, and examples: Shell coiling in *Pila* and Kappa particles in *Paramecium*.

Section B

7. Mutation: Chromosomal Mutations: Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy; Gene mutations: Induced versus Spontaneous mutations, Back versus Suppressor mutations, Molecular basis of Mutations in relation to UV light and chemical mutagens, Detection of mutations.

8. Sex determination: Autosomes and allosomes (sex chromosomes), Chromosomal methods of sex determination – XO, XY (Man and Drosophila), ZZ,ZW .
Sex linked inheritance: Sex linked inheritance in *Drosophila*, Sex linked inheritance in man –colourblindness, Haemophilia, Hypertrichosis and Baldness

9. Transposable genetic elements: Prokaryotic transposable elements- IS elements, Eukaryotic transposable elements- P elements in Drosophila; Uses of transposons

10. Human Genetics: Syndromes – Turner's, Klinefelter's, Down's and Cri-du-chat, In Born errors of metabolism –Phenylketonuria (PKU), Alkaptonuria, Albinism, Human pedigree analysis.

11. Genetic Analysis in Bacteria: Conjugation, Transformation, Transduction

Books Recommended

1. Karp, G. 2010 Cell and Molecular Biology: Concepts and Experiments. 6th edition. John Wiley & Sons. Inc.
2. De Robertis, E.D.P. and De Robertis, E.M.F. 2006 Cell and Molecular Biology. 8th edition. Lippincott Williams and Wilkins, Philadelphia.
3. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2009 The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco.
4. Watson, J. D., Baker T.A., Bell, S. P., Gann, A., Levine, M., and Losick, R., 2008 Molecular Biology of the Gene (6th edition.). Cold Spring Harbour Lab. Press, Pearson Pub.

LIST OF PRACTICALS

1. Study of fossils from models/ pictures
2. Study of homology and analogy from suitable specimens
3. Study and verification of Hardy-Weinberg Law by chi square analysis
4. Graphical representation and interpretation of data of height/ weight of a sample population in relation to their age and sex.
5. Phylogeny of horse with diagrams of limbs and teeth of horse ancestors
6. Study of evolution of Darwin's Finches with diagrams of beaks of different species
7. Study of Evolution of man from charts
8. Visit to natural history museum (Excursion file)
9. Demonstration of Mendelian laws and gene interaction (use of colored beads).
10. Study of Human Karyotype (normal and abnormal) From Charts.
11. Problems based on gene interaction and sex-liked inheritance.
12. Preparation of temporary squash preparations of salivary glands for studying polytene chromosomes of *Chironomus*/ *Drosophila.*
13. Study of Gene frequencies (using colored beads)
14. Dermatographics: palm print taking and finger tip patterns and relation to genetic diseases
15. Survey of human subjects for the demonstration of the frequency of dominant and recessive traits such as free and attached pinna, rolling of tongue, eye colour, hair colour etc.

INSTRUCTIONS FOR PRACTICAL PAPER

Max. Marks: 40 *Time Allowed: 3 hours*

Pass Marks: 35%

1.	Evolutionary biology experiment out of 1-3	7
2.	Evolutionary experiment out of Exp. No. 4-7	7
3.	Genetics experiment out of 9-12	7
4.	Genetics experiment out of 13-15	7
5.	Excursion Report or Project regarding Inheritance of human characteristics or Dermatographics	4
5.	Viva-voce	4
6.	Note Book	4

ਬੀ.ਏ. ਦੂਜਾ, ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਸਮੈਸਟਰ ਤੀਜਾ ਅਤੇ ਚੌਥਾ)

ਰੈਗੂਲਰ ਪ੍ਰੀਖਿਆਰਥੀਆਂ ਲਈ

2021-22, 2022-23 ਅਤੇ 2023-24 ਸੈਸ਼ਨ ਲਈ

(ਸਮੈਸਟਰ ਤੀਜਾ)

ਕੁਲ ਅੰਕ : 100 ਵਿਸ਼ੇ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 40

ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ : 25 ਅੰਕ ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 10

ਬਾਹਰੀ ਪਰੀਖਿਆ: 75 ਅੰਕ ਬਾਹਰੀ ਪਰੀਖਿਆ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 30

ਸਮਾਂ : 3 ਘੰਟੇ (ਅਧਿਆਪਨ: 50 ਪੀਰੀਅਡ, 6 ਪੀਰੀਅਡ ਪ੍ਰਤੀ ਹਫਤਾ)

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ

ਭਾਗ-ਓ

ਓ-1: ਨਾਵਲ ਕੀ ਹੁੰਦਾ ਹੈ, ਨਾਵਲ ਦਾ ਸਰੂਪ, ਨਾਵਲ ਅਤੇ ਨਾਵਲੈੱਟ ਵਿਚ ਅੰਤਰ, ਨਾਵਲ ਅਤੇ ਕਹਾਣੀ ਵਿਚ ਅੰਤਰ

ਓ-2: ਨਾਵਲ: **ਰੋਹੀ ਬੀਆਬਾਨ (ਕਰਮਜੀਤ ਸਿੰਘ ਕੁੱਸਾ),**

ਨੋਟ: ਵਿਦਿਆਰਥੀ ਨੂੰ ਨਾਵਲ ਪੜ੍ਹਨ ਲਈ ਉਤਸਾਹਿਤ ਕੀਤਾ ਜਾਵੇਗਾ ਅਤੇ ਨਾਵਲ ਬਾਰੇ ਉਸ ਨੂੰ ਆਪਣੀ ਰਾਇ ਬਨਾਉਣ ਅਤੇ ਪਾਠਕੀ ਹੁੰਗਾਰੇ ਨੂੰ ਦਰਜ ਕਰਨਾ ਸਿਖਾਇਆ ਜਾਵੇਗਾ

ਭਾਗ-ਅ

ਅ-1: ਪੰਜਾਬੀ ਪੱਤਰਕਾਰੀ:

ੳ) ਖ਼ਬਰ ਅ) ਵਿਸ਼ੇਸ਼ ਅਖ਼ਬਾਰੀ ਰਿਪੋਰਟ ੲ) ਫ਼ੀਚਰ ਲੇਖਣ ਸ) ਇਸ਼ਤਿਹਾਰ ਲੇਖਣ ਹ) ਇਸ਼ਤਿਹਾਰੀ ਖ਼ਬਰ: ਸੰਕਲਪ ਅਤੇ ਅਭਿਆਸ

(ਇਸ ਖੰਡ ਦੇ ਆਧਾਰ 'ਤੇ ਵਿਦਿਆਰਥੀ ਤੋਂ ਇੱਕ ਅਭਿਆਸ-ਪੁਸਤਕ ਤਿਆਰ ਕਰਵਾਈ ਜਾਵੇਗੀ। ਉਸ ਵਿਚ ਵਿਦਿਆਰਥੀ ਕੁਲ 20 ਪੰਨੇ ਦੀਆਂ ਖ਼ਬਰਾਂ, ਵਿਸ਼ੇਸ਼ ਅਖ਼ਬਾਰੀ ਰਿਪੋਰਟਾਂ, ਨਿਊਜ਼ ਫ਼ੀਚਰ, ਇਸ਼ਤਿਹਾਰ ਅਤੇ ਇਸ਼ਤਿਹਾਰੀ ਖ਼ਬਰਾਂ ਤਿਆਰ ਕਰੇਗਾ। ਹਰ ਵੰਨਗੀ ਦੀਆਂ ਘੱਟ ਤੋਂ ਘੱਟ ਦੋ ਲਿਖਤਾਂ ਜ਼ਰੂਰ ਸ਼ਾਮਿਲ ਕੀਤੀਆਂ ਜਾਣਗੀਆਂ। ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਵਿਚ ਅਸਾਈਨਮੈਂਟ ਦੇ ਨੰਬਰ ਇਸ ਅਭਿਆਸ ਪੁਸਤਕ ਦੇ ਆਧਾਰ 'ਤੇ ਦਿੱਤੇ ਜਾਣਗੇ)

ਅ-2 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਨਾਲ ਜਾਣ-ਪਛਾਣ:

ੳ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਇਤਿਹਾਸ ਅਤੇ ਇਲਾਕਾਈ ਵੰਨਗੀਆਂ

ਅ) ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦਾ ਇਤਿਹਾਸ ਅਤੇ ਗਰਮੁਖੀ ਆਰਥੋਗਰਾਫ਼ੀ

ੲ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ: ਸਵਰ, ਵਿਅੰਜਨ, ਖੰਡੀ ਅਤੇ ਅਖੰਡੀ ਧੁਨੀਆਂ

ਭਾਗ-ਏ

ਪਾਠਕ੍ਰਮ ਦੇ ਭਾਗ ਓ ਅਤੇ ਅ ਵਿਚੋਂ ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਪਾਠਕ੍ਰਮ ਦੇ ਦੋ ਭਾਗ ੳ ਅਤੇ ਅ ਹਨ ਪਰ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਤਿੰਨ ਭਾਗ ੳ, ਅ ਅਤੇ ੲ ਹੋਣਗੇ।

2. ਭਾਗ ੳ-1) ਵਿਚੋਂ 2 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਇੱਕ ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਦੇਵੇਗਾ। ਇਹ ਪ੍ਰਸ਼ਨ ਦਿੱਤੇ ਗਏ ਗਲਪ ਰੂਪਾਂ ਦੇ ਸਰੂਪ, ਤੱਤਾਂ ਬਾਰੇ ਜਾਂ ਇਨ੍ਹਾਂ ਵਿਚਕਾਰ ਸਮਾਨਤਾਵਾਂ ਜਾਂ ਅੰਤਰਾਂ ਬਾਰੇ ਹੋਣਗੇ। 10 ਅੰਕ

3. ਭਾਗ ੳ-2 ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਇੱਕ ਦਾ ਉੱਤਰ ਦੇਣਾ ਹੋਵੇਗਾ। ਨਾਵਲ ਬਾਰੇ ਪਾਠਕੀ ਹੁੰਗਾਰਾ, ਨਾਵਲ ਬਾਰੇ ਵਿਦਿਆਰਥੀ ਦੇ ਪ੍ਰਭਾਵ, ਨਾਵਲ ਦੇ ਮੰਤਵ ਅਤੇ ਜੀਵਨ ਨੂੰ ਸਮਝਣ ਵਿਚ ਨਾਵਲ ਦੇ ਮਹੱਤਵ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛਿਆ ਜਾ ਸਕਦਾ ਹੈ। ਇਸ ਭਾਗ ਵਿਚ ਪਾਤਰਾਂ ਬਾਰੇ ਵੀ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾ ਸਕਦੇ ਹਨ। ਨਾਵਲ ਦੇ ਵਿਸ਼ੇ-ਵਸਤੂ, ਵਿਚਾਰਧਾਰਾ, ਸਮਕਾਲੀ ਜੀਵਨ ਵਿਚ ਨਾਵਲ ਦੇ ਵਿਸ਼ੇ ਦੇ ਮਹੱਤਵ, ਪਾਤਰਾਂ ਦੀ ਘਾੜਤ, ਮਨਪਸੰਦ ਪਾਤਰ, ਪਾਤਰਾਂ ਦੇ ਸੁਭਾਅ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਕਰਨ ਲਈ ਕਿਹਾ ਜਾ ਸਕਦਾ ਹੈ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਬਣਾਉਣ ਲੱਗਿਆਂ ਧਿਆਨ ਰੱਖਿਆ ਜਾਵੇ ਕਿ ਵਿਦਿਆਰਥੀ ਦੇ ਆਪਣੇ ਵਿਚਾਰਾਂ ਦੇ ਪ੍ਰਗਟਾਵੇ ਨੂੰ ਉਤਸਾਹਿਤ ਕੀਤਾ ਜਾਵੇ। 10 ਅੰਕ

4. ਭਾਗ ਅ-1 ਵਿਚ ਦਰਜ ਪੱਤਰਕਾਰੀ ਰੂਪਾਂ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਸਰੂਪ, ਪ੍ਰਕਾਰਜ ਅਤੇ ਮਹੱਤਵ ਦੇ ਨਾਲ ਨਾਲ ਇਨ੍ਹਾਂ ਰੂਪਾਂ ਦੇ ਆਪਸੀ ਨਿਖੇੜੇ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾ ਸਕਦੇ ਹਨ। ਇਸ ਭਾਗ ਵਿਚੋਂ ਕੁਲ 4 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ 2 ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਇੱਕ-ਡੇਢ ਪੰਨੇ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ। 5x2=10 ਅੰਕ

5. ਭਾਗ ਅ-2 ਵਿਚੋਂ ਵੀ 5 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ 3 ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਇੱਕ-ਡੇਢ ਪੰਨੇ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ। 5x3=15 ਅੰਕ

6. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਭਾਗ ੲ ਵਿਚ ਪਾਠਕ੍ਰਮ ਦੇ ਭਾਗ ੳ ਅਤੇ ਅ ਵਿਚੋਂ 15 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਵਿਦਿਆਰਥੀ ਨੇ ਇਨ੍ਹਾਂ ਸਾਰੇ ਪ੍ਰਸ਼ਨਾਂ ਦਾ ਉੱਤਰ 5-6 ਸਤਰਾਂ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ। 15x2=30 ਅੰਕ

ਸਹਾਇਕ ਪਾਠ ਸਮੱਗਰੀ

1. ਰਾਜਿੰਦਰਪਾਲ ਸਿੰਘ ਬਰਾੜ, ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਸਾਹਿਤ ਰੂਪਾਕਾਰ: ਸਿਧਾਂਤ ਅਤੇ ਰੂਪਾਂਤਰਣ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2011
2. ਸਾਹਿਤ ਕੋਸ਼, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1989
3. ਡਾ. ਪਰਮਿੰਦਰ ਸਿੰਘ ਤੇ ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ, ਸਾਹਿਤ ਦੇ ਰੂਪ, ਲਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, 1977
4. ਡਾ. ਟੀ. ਆਰ, ਵਿਨੋਦ, ਨਾਵਲ ਆਲੋਚਨਾ ਸ਼ਬਦਾਵਲੀ ਕੋਸ਼, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1999
5. ਗਿ. ਲਾਲ ਸਿੰਘ ਤੇ ਹਰਕੀਰਤ ਸਿੰਘ, ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਣ, ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ
6. ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ, ਸਾਹਿਤਆਰਥ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ
7. ਖੋਜ ਪਤ੍ਰਿਕਾ (ਗਲਪ ਵਿਸ਼ੇਸ਼ ਅੰਕ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

ਬੀ.ਏ. ਭਾਗ ਦੂਜਾ, ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਸਮੈਸਟਰ ਤੀਜਾ ਅਤੇ ਚੌਥਾ)

ਰੈਗੂਲਰ ਪਰੀਖਿਆਰਥੀਆਂ ਲਈ

2021-22, 2022-23, 2023-24 ਸੈਸ਼ਨਾਂ ਲਈ

(ਸਮੈਸਟਰ ਚੌਥਾ)

ਕੁਲ ਅੰਕ : 100 ਵਿਸ਼ੇ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 40

ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ : 25 ਅੰਕ ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 10

ਬਾਹਰੀ ਪਰੀਖਿਆ: 75 ਅੰਕ ਬਾਹਰੀ ਪਰੀਖਿਆ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 30

ਸਮਾਂ : 3 ਘੰਟੇ (ਅਧਿਆਪਨ: 50 ਪੀਰੀਅਡ, 6 ਪੀਰੀਅਡ ਪ੍ਰਤੀ ਹਫਤਾ)

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ

ਭਾਗ-ਓ

ਕਾਵਿ ਲਹਿਰਾਂ (ਸੰਪਾ. ਲਖਵੀਰ ਸਿੰਘ, ਡਾ. ਜਸਵਿੰਦਰ ਸਿੰਘ, ਡਾ. ਇੰਦਰਜੀਤ ਸਿੰਘ ਚੀਮਾ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਓਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ)

ਭਾਗ-ਅ

ਅ-1: ਪੰਜਾਬੀ ਕੰਪਿਊਟਰ ਸਿਖਲਾਈ:

ੳ) ਗੁਰਮੁਖੀ ਫ਼ੌਂਟ: ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ

ਅ) ਫ਼ੌਂਟ ਬਦਲੀ ਤਕਨੀਕ (ਫ਼ੌਂਟ ਕਨਵਰਟਰ): ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ

ੲ) ਯੂਨੀਕੋਡ ਪ੍ਰਣਾਲੀ ਨਾਲ ਜਾਣ-ਪਛਾਣ

(ਇਸ ਹਿੱਸੇ ਲਈ ਵਿਦਿਆਰਥੀ ਅਭਿਆਸ-ਪੁਸਤਕ ਤਿਆਰ ਕਰੇਗਾ, ਇਹ ਅਭਿਆਸ ਪੁਸਤਕ ਸੋਫ਼ਟ ਰੂਪ ਵਿਚ ਹੋਵੇਗੀ। ਅਧਿਆਪਕ ਉਸ ਦੇ ਸੌਫ਼ਟ ਰੂਪ ਦਾ ਮੁਲਾਂਕਣ ਕਰੇਗਾ ਪਰ ਵਿਦਿਆਰਥੀ ਰਿਕਾਰਡ ਹਿਤ ਇਸ ਦਾ ਪ੍ਰਿੰਟ ਕਢਵਾ ਕੇ ਅਧਿਆਪਕ ਨੂੰ ਜਮ੍ਹਾਂ ਕਰਵਾਏਗਾ। ਉਹ ਆਪਣੇ ਮੁੱਖ ਵਿਸ਼ਿਆਂ ਨਾਲ ਸੰਬੰਧਿਤ 20 ਤੋਂ 25 ਪੰਨੇ (ਰਾਵੀ ਯੂਨੀਕੋਡ ਫ਼ੌਂਟ ਮਾਪ 12, ਸਤਰਾਂ ਵਿਚ ਵਿੱਥ 1.5, ਡਿਫ਼ਾਲਟ ਪੇਜ ਸੈਟਿੰਗ) ਲਿਖੇਗਾ, ਜਿਸ ਵਿਚ ਘੱਟ ਤੋਂ ਘੱਟ 10 ਲਿਖਤਾਂ ਜ਼ਰੂਰ ਹੋਣ।

ਅ-2 ਵਿਆਕਰਣ:

ੳ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ: ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸੰਬੰਧਕ, ਯੋਜਕ

ਅ) ਵਿਆਕਰਣਕ ਵਰਗ: ਲਿੰਗ, ਵਚਨ, ਕਾਲ, ਕਾਰਕ, ਪੁਰਖ, ਵਾਚ, ਪੱਖ (ਇਨ੍ਹਾਂ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਹਵਾਲੇ ਨਾਲ ਇਨ੍ਹਾਂ ਦੀ ਸਮਝ)

ੲ) ਗੁਰਬਾਣੀ ਵਿਆਕਰਣ ਨਾਲ ਜਾਣ-ਪਛਾਣ (ਭੂਮਿਕਾ (ਪੰਨਾ ੳ ਤੋਂ ਖ ਤਕ) ਸ਼ਬਦਾਰਥ ਸ੍ਰੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਜੀ, ਪੋਥੀ ਪਹਿਲੀ, (ਪ੍ਰਕਾਸ਼ਕ ਸ਼੍ਰੋਮਣੀ ਗੁਰਦੁਆਰਾ ਪ੍ਰਬੰਧਕ ਕਮੇਟੀ, ਸ੍ਰੀ ਅੰਮ੍ਰਿਤਸਰ) ਦੇ ਪ੍ਰਸੰਗ ਵਿਚ)

ਭਾਗ-ਏ

ਪਾਠਕ੍ਰਮ ਦੇ ਭਾਗ ੳ ਅਤੇ ਅ ਵਿਚੋਂ ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਭਾਗ ੳ ਵਿਚੋਂ ਕਿਸੇ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ/ ਸਾਰ/ ਪਾਠਕੀ ਹੁੰਗਾਰਾ/ ਕਵਿਤਾ ਦਾ ਸੁਨੇਹਾ ਅਤੇ ਜੀਵਨ ਵਿਚ ਮਹੱਤਵ (ਤਿੰਨ ਵਿਚੋਂ ਇੱਕ) 10 ਅੰਕ
2. ਭਾਗ ੳ ਵਿਚੋਂ ਹੀ ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇੱਕ) 10 ਅੰਕ
3. ਭਾਗ ਅ-1 ਦੇ ਕੰਪਿਊਟਰ ਸਿਖਲਾਈ ਵਾਲੇ ਭਾਗ ਵਿਚੋਂ 4 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਦੋ ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਇੱਕ-ਡੇਢ ਪੰਨੇ ਵਿਚ ਲਿਖੇਗਾ। 2x5=10 ਅੰਕ
4. ਭਾਗ ਅ-2 ਵਿਚਲੇ ਵਿਆਕਰਣ ਨਾਲ ਸੰਬੰਧਿਤ ਵਿਸ਼ਿਆਂ ਵਿਚੋਂ 5 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ 3 ਦਾ ਉੱਤਰ ਇੱਕ-ਡੇਢ ਪੰਨੇ ਵਿਚ ਲਿਖੇਗਾ। 3X 5 =15 ਅੰਕ
5. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਭਾਗ ੲ ਵਿਚ 15 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਵਿਦਿਆਰਥੀ ਨੇ ਇਨ੍ਹਾਂ ਸਾਰਿਆਂ ਦੇ ਸੰਖੇਪ ਉੱਤਰ ਲਿਖਣੇ ਹੋਣਗੇ। ਇਹ ਪ੍ਰਸ਼ਨ ਪਾਠਕ੍ਰਮ ਦੇ ਭਾਗ ੳ, ਅ-1 ਅਤੇ ਅ-2 ਵਿਚ ਦਰਜ ਵਿਸ਼ਿਆਂ ਦੇ ਆਧਾਰ 'ਤੇ ਹੋਣਗੇ 15x2=30 ਅੰਕ

सहाइक पाठ-सम॔गरी

1. ਡਾ. ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ ਅਤੇ ਹੋਰ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਵਿਆਕਰਣ ਭਾਗ-।, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ ਜਲੰਧਰ, 1991, ਪੰਨਾ 67-73
2. ਡਾ. ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ ਅਤੇ ਹੋਰ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਵਿਆਕਰਣ ਭਾਗ-।।, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ ਜਲੰਧਰ, 1992
3. ਗਿ. ਲਾਲ ਸਿੰਘ ਤੇ ਹਰਕੀਰਤ ਸਿੰਘ, ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਣ, ਪੰਜਾਸ ਸਟੇਟ ਯੂਨੀ. ਟੈਸਕਟ ਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ
4. ਰਾਜਿੰਦਰ ਪਾਲ ਸਿੰਘ, ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਪੁਨਰ ਚਿੰਤਨ, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ।
5. ਰਾਜਿੰਦਰ ਪਾਲ ਸਿੰਘ, ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਇਤਿਹਾਸ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ।
6. ਜਸਵਿੰਦਰ ਸਿੰਘ , ਨਵੀਂ ਪੰਜਾਬੀ ਕਵਿਤਾ ਪਛਾਣ ਚਿੰਨ੍ਹ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ
7. ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ, ਸਾਹਿਤਆਰਥ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ
8. ਸੀ. ਪੀ. ਕੰਬੋਜ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਕੰਪਿਊਟਰੀਕਰਨ, ਗਰੇਸ਼ੀਅਸ ਬੁੱਕਸ, ਪਟਿਆਲਾ
9. ਸੀ. ਪੀ. ਕੰਬੋਜ, ਕੰਪਿਊਟਰ ਵਿਗਿਆਨ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

ਅੰਡਰ-ਗ੍ਰੈਜੂਏਟ ਪੱਧਰ ਦੇ ਸਾਰੇ ਕੋਰਸਾਂ ਲਈ ਸਾਂਝਾ ਸਿਲੇਬਸ ਭਾਗ-ਦੂਜਾ, ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਮੁੱਢਲਾਗਿਆਨ)

(ਸਮੈਸਟਰ ਤੀਜਾ ਅਤੇ ਚੌਥਾ)

2018-19,2019^20 ਅਤੇ 2020-21 ਸੈਸ਼B bJh

2021-22,2022^23 ਅਤੇ 2023-24 ਸੈਸ਼B bJh

(ਸਮੈਸਟਰ ਤੀਜਾ)

eb ne L 100
ndoBh wbKeD L 25 ne
pkjoh gohfynkL 75 ne
;wK L 3 xN

ft;l ftuh gk; jD bJh ne L 35
ndoBh wbKeD ftuh gk; jD bJh ne L 09
pkjoh gohfynk ftuh gk; jD bJh ne L 26
(nfXnkgBL 6 ghohnv gsh jcsk)

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ

Gkr^T

ਨਿਰਧਾਰਤ ਪੁਸਤਕ : ਪੰਜਾਬੀ ਦੀ ਪਾਠ ਪੁਸਤਕ, ਪ੍ਰੋ. ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, (ਇਸ ਪੁਸਤਕ ਵਿੱਚੋਂ ਕੇਵਲ ਕਵਿਤਾ ਵਾਲਾ ਭਾਗ ਇਸ ਸਮੈਸਟਰ ਦੇ ਸਿਲੇਬਸ ਵਜੋਂ ਪੜ੍ਹਿਆ ਜਾਣਾ ਹੈ)

Gkr^n

ਅ-1 L ਵਿਸ਼ਰਾਮ ਚਿੰਨ ਦੀ ਵਰਤੋ

ਅ-2 ਸ਼ਬਦ ਜੋੜਾਂ ਦੀ ਸੁਧਾਈ

ਅ-3 ਪੈਰ੍ਹਾ ਰਚਨਾ : ਵਿਦਿਅਕ ਜਾਂ ਸੈਰ ਸਪਾਟੇ ਨਾਲ ਸਬੰਧਤ

ਭਾਗ-ਏ

ਉਪਰੋਕਤ ਪਾਠਕ੍ਰਮ ਤੇ ਅਧਾਰਤ ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ ਦਾ ਮੁਢਲਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਕੀਤਾ ਹੈ । ਇਸ ਲਈ ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਭਾਸ਼ਾ ਅਤੇ ਲਿਪੀ ਦੇ ਗਿਆਨ ਨੂ ਧਿਆਨ ਵਿਚ ਰਖਦਿਆਂ ਸਰਲ, ਸਪਸ਼ਟ ਅਤੇ ਛੋਟੇ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ ।

2H ਸਾਰੇ ਭਾਗਾਂ ਵਿੱਚੋਂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਜਾਣ ।

3. ਸਰਲ ਅਤੇ ਸ਼ਪਸਟ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਜਾਣ ।

4. ਵਰਣਾਤਮਕ ਪ੍ਰਸ਼ਨ ਨਾ ਪੁੱਛੇਜਾਣ ।

5. ਲੋੜ ਅਨੁਸਾਰ ਵਿਦਿਆਰਥੀਆਂ ਨੂ ਛੋਟ ਜਾਂ ਚੋਣ ਦੇਣੀ ਲਾਜ਼ਮੀ ਹੈ ।

6. ਭਾਗ ਓ ਵਿੱਚੋਂ ਕਿਸੇ ਕਵਿਤਾ ਦੇ ਸਰਲ ਅਰਥ ਜਾਂ ਸਾਰ (ਪੰਜ ਵਿੱਚੋਂ ਦੋ) 2X05=10 ਅੰਕ

7. ਕਿਸੇ ਕਾਵਿ ਟੁਕੜੇ ਤੇ ਭਾਵ ਅਰਥ (ਤਿੰਨ ਵਿੱਚੋਂ ਇਕ) 05 ਅੰਕ

8. 15 ਸਬਦ ਦੇ ਕੇ 10 ਸ਼ਬਦਾਂ ਦੇ ਸਬਦ ਜੋੜ ਸੁੱਧਕਰਨੇ 10 ਅੰਕ

9. ਕਿਸੇ ਦਿੱਤੇ ਪੈਰੇ ਜਾਂ ਵਾਕਾਂ ਵਿਚ ਵਿਸ਼ਰਾਮ ਚਿੰਨਾਂ ਦੀ ਵਰਤੋ 10 ਅੰਕ

10. ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਜੀਵਨ ਦੇ ਕਿਸੇ ਆਮ ਵਿਸੇ ਨਾਲ ਸਬੰਧਿਤ ਪੈਰ੍ਹਾ ਰਚਨਾ 10 ਅੰਕ

11. ਭਾਗ ਏ ਵਿਚ ਪਾਠ ਪੁਸਤਕ (ਕਵਿਤਾਵਾਂ) ਤੇ ਆਧਾਰਤ ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ 15 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਜਾਣਗੇ । ਵਿਦਿਆਰਥੀ ਨੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹੋਣਗੇ । ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ 3-4 ਸਤਰਾਂ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ । ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 2 ਅੰਕ ਹੋਣਗੇ

15X02=30 ਅੰਕ

ਅੰਡਰ-ਗ੍ਰੈਜੂਏਟ ਪੱਧਰ ਦੇ ਸਾਰੇ ਕੋਰਸਾਂ ਲਈ ਸਾਂਝਾ ਸਿਲੇਬਸ ਭਾਗ-ਦੂਜਾ, ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਮੁਢਲਾ ਗਿਆਨ)

(ਸਮੈਸਟਰ ਤੀਜਾ ਅਤੇ ਚੌਥਾ)

2018-19,2019^20 ਅਤੇ 2020-21 ਸੈਸ਼B bJh

(ਸਮੈਸਟਰ ਚੌਥਾ)

eb ne L 100 ft;ftuh gk; jD bJh ne L 35

ndoBh wbKeD L 25 ne ndoBh wbKeD ftuh gk; jD bJh ne L 09

pkjoh gohfynkL 75 ne pkjoh gohfynk ftuh gk; jD bJh ne L 26

;wK L 3 xN (nfXnkgBL 50 ghohnv)

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ

Gkr^T

ਨਿਰਧਾਰਤ ਪੁਸਤਕ : ਪੰਜਾਬੀ ਦੀ ਪਾਠ ਪੁਸਤਕ, ਪ੍ਰੋ. ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, ਇਸ ਪੁਸਤਕ ਵਿੱਚੋਂ ਕਹਾਣੀ ਅਤੇ ਨਾਟਕ ਵਾਲਾ ਭਾਗ ਸਿਲੇਬਸ ਵਜ਼ੋਂ ਪੜ੍ਹਿਆ ਜਾਣਾ ਹੈ ।

Gkr^n

ਅ-1 L ਨਿਜੀ ਚਿਠੀ/ਪੱਤਰ

ਅ-2 ਸ਼ਬਦਾਂ ਦਾ ਅਨੁਵਾਦ (ਪੰਜਾਬੀ ਤੋ ਅੰਗ੍ਰੇਜ਼ੀ ਅਤੇ ਅੰਗ੍ਰੇਜ਼ੀ ਤੋ ਪੰਜਾਬੀ)

ਭਾਗ-ਏ

ਉਪਰੋਕਤ ਪਾਠਕ੍ਰਮ ਤੇ ਅਧਾਰਤ ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ ਦਾ ਮੁਢਲਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਕੀਤਾ ਹੈ । ਇਸ ਲਈ ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਭਾਸ਼ਾ ਅਤੇ ਲਿਪੀ ਦੇ ਗਿਆਨ ਨੂ ਧਿਆਨ ਵਿਚ ਰਖਦਿਆਂ ਸਰਲ, ਸਪਸ਼ਟ ਅਤੇ ਛੋਟੇ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ ।

2H ਸਾਰੇ ਭਾਗਾਂ ਵਿੱਚੋਂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਜਾਣ ।

3. ਸਰਲ ਅਤੇ ਸਪੱਸ਼ਟ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਜਾਣ ।

4. ਵਰਣਾਤਮਕ ਪ੍ਰਸ਼ਨ ਨਾ ਪੁੱਛੇਜਾਣ ।

5. ਲੋੜ ਅਨੁਸਾਰ ਵਿਦਿਆਰਥੀਆਂ ਨੂ ਛੋਟ ਜਾਂ ਚੋਣ ਦੇਣੀ ਲਾਜ਼ਮੀ ਹੈ ।

6.	ਭਾਗ ਓ ਵਿੱਚੋਂ ਕਿਸੇ ਕਹਾਣੀ ਦਾ ਸਾਰ	(ਦੋ ਵਿੱਚੋਂ ਇਕ)	08 ਅੰਕ
7.	ਕਿਸੇ ਪਾਤਰ ਸੰਬੰਧੀ ਸੰਖੇਪ ਜਾਣਕਾਰੀ	(ਦੋ ਵਿੱਚੋਂ ਇਕ)	04 ਅੰਕ
8.	ਨਾਟਕ ਦੇ ਪਾਤਰਾਂ ਸਬੰਧੀ ਜਾਣਕਾਰੀ	(ਤਿੰਨ ਵਿੱਚੋਂ ਇਕ)	08 ਅੰਕ
9.	ਨਿੱਜੀ ਚਿੱਠੀ ਜਾਂ ਪੱਤਰ	(ਦੋ ਵਿੱਚੋਂ ਇਕ)	09 ਅੰਕ

10. ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਆਮ ਜੀਵਨ ਨਾਲ ਸਬੰਧਿਤ ਸ਼ਬਦਾਵਲੀ ਦਾ ਅੰਗ੍ਰੇਜ਼ੀ ਅਤੇ ਪੰਜਾਬੀ ਅਨੁਵਾਦ 8+8=16 ਅੰਕ

11. ਭਾਗ ਏ ਵਿਚ ਪਾਠ ਪੁਸਤਕ ਤੇ ਆਧਾਰਤ ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ 15 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਜਾਣਗੇ । ਵਿਦਿਆਰਥੀ ਨੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹੋਣਗੇ । ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ 3-4 ਸਤਰਾਂ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ । ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 2 ਅੰਕ ਹੋਣਗੇ

15X02=30 ਅੰਕ

B.A. Part – II (Semester-III)
English (Communication Skills)
(For Sessions 2022-23, 2023-24, and 2024-25)

One paper of 75 marks to be attempted in three hours
Time: 3 hours
(Six periods per week)
Number of teaching periods: 75

Written Examination: 75 Marks
Internal Assessment: 25 Marks
Pass marks: 35%

COURSE CONTENT:

1. *Gleanings from Home and Abroad* (Orient BlackSwan).

The following essays from this book are prescribed:

1. Toasted English - R.K. Narayan
2. Work Brings Solace- A.P.J. Abdul Kalam
3. On Letter-Writing - A.G. Gardiner
4. Towards Creating a Poverty-Free World – Muhammad Yunus
5. Wikileaks, Facebook and the End of Discretion - Mukul Kesavan
6. Issues in the Writing of Environmental History- Mahesh Rangarajan
7. Why I Want a Wife - Judy Brady
8. Universal Declaration of Human Rights - Leah Levin

2. *English Grammar in Use* by Raymond Murphy (Cambridge University Press).
Prescribed Units: 92-120

Recommended Reading

Composition and Writing Skills. Orient BlackSwan. (For the questions dealing with Composition).
The Student's Companion by Wilfred D. Best.

TESTING

UNIT-I

I. The candidate shall attempt one essay type question (with internal choice) on theme, central idea or substance from the first four prescribed essays from *Gleanings from Home and Abroad.* The answer shall not exceed 250 words
10 marks

II. The candidate shall attempt one essay type question (with internal choice) on theme, central idea or substance from last four (5-8) prescribed essays from *Gleanings from Home and Abroad.* The answer shall not exceed 250 words.
10 marks

UNIT-II

III. Five short-answer questions to be attempted (in about 50 words each) out of given seven questions from the prescribed essays from *Gleanings from Home and Abroad.*
5x3=15 marks

IV. Letter-writing: Personal letters, letters to the editor on current issues, applications.
The candidate shall write one out of the given choice of two.
10 marks

UNIT-III

V. This question shall be based on *English Grammar in Use* by Raymond Murphy. Prescribed Units: 92-120
Candidates shall be required to do as directed on the basis of prescribed exercises. The examiner shall set 25 sentences from the prescribed exercises in the syllabus out of which the candidates shall attempt any 20.

Professor and Head
Department of English
Punjabi University, Patiala

25% of the questions shall be set from the prescribed literary text and remaining 75% shall be based on the exercises prescribed in *English Grammar in Use*.

Each sentence shall be of 1.5 marks. 20x1½=30 marks.

Professor and Head
Department of English
Punjabi University, Patiala.

B.A. Part – II (Semester-IV)
English (Communication Skills)
(For Sessions 2022-23, 2023-24, and 2024-25)

One paper of 75 marks to be attempted in three hours
Time: 3 hours

Written Examination: 75 Marks
Internal Assessment: 25 Marks
Pass marks: 35%

No. of teaching periods: 75
(Six periods per week)

COURSE CONTENT:

(A) *Pride and Prejudice* by Jane Austen. Orient Longman College Classics. Abridged Classics. Simplified and Abridged by Manju Sambhunath Sen. Consultant Editor, Bikram K. Das. Orient Longman, Hyderabad, 2003. Reprinted, 2007.

(B) *English Grammar in Use* by Raymond Murphy (Cambridge University Press).
Prescribed Units: 121-145, Appendix 7 and Additional Exercises (Complete)

Recommended Reading

1. *Composition and Writing Skills*. Orient BlackSwan. (For questions dealing with Composition).
2. *The Student's Companion* by Wilfred D. Best.

TESTING

UNIT-I

Q. No.1 One essay type question of about 250 words with an internal alternative on theme, plot, narrative or incident from *Pride and Prejudice.* 10 marks

Q. No 2 One essay type question of about 250 words with an internal alternative on character/characters from *Pride and Prejudice* 10 marks

UNIT-II

Q. No. 3 Four short-answer questions to be attempted (in about 50 words each) out of given six questions from *Pride and Prejudice*. 4x3=12 marks

Q. No.4 (i) Dialogue-writing: Transcoding a given prose passage into a dialogue. 06 marks

(ii) Paragraph on one out of the given four topics in about 250 words. 07 marks

UNIT-III

Q. No. 5 This question shall be based on *English Grammar in Use* by Raymond Murphy. Prescribed Exercises: 121-145, Appendix 7 and Additional Exercises (Complete).

Candidates shall be required to do as directed on the basis of prescribed exercises. The examiner shall set 25 sentences set from the prescribed exercises in the syllabus out of which the candidates shall attempt any 20.

25% of the questions shall be set from the prescribed literary text and remaining 75% shall be based on the exercises prescribed in *English Grammar in Use*.

Each sentence shall be of 1.5 marks. 20x1½=30 marks.

Professor and Head
Department of English
Punjabi University, Patiala.

All UG Courses - IInd Year (3rd Semester)

Environmental and Road Safety Awareness
Session: 2019-20, 2020-21 & 2021-22

Total Marks : 100
Theory : 60 marks
Internal Assessment: 15
(5 for Attendance & 10 for MST)
Mandatory field visit to PG
Science City & Report : 25 Marks

Max Time: 3 hrs.
Lectures per week 5
Credits: 04

INSTRUCTIONS FOR THE PAPER SETTERS (Regular Students)

The question paper will consist of three sections A, B and C. Each of sections A and B will have four questions from the respective sections of the syllabus. Each question shall carry 9 marks. Section C will consist of 12 short answer type questions of 2 marks each.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any two questions from each section A and B. Section C is compulsory.

PRIVATE/DISTANCE EDUCATION STUDENTS

Max Marks: 100

Max Time: 3hrs.
Lectures per week 5

INSTRUCTIONS FOR THE PAPER SETTERS

The question paper will consist of three sections A, B and C. Each of sections A and B will have four questions from the respective sections of the syllabus. Each question shall carry 15 marks. Section C will consist of 20 short answer type questions of 2 marks each.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any two questions from each section A and B. Section C is compulsory.

SECTION-A

INTRODUCTION TO ENVIRONMENTAL STUDIES:

The multidisciplinary nature of environmental studies. Definition, scope and importance
Concept of Biosphere – Lithosphere, Hydrosphere, Atmosphere.

ECOSYSTEM & BIODIVERSITY CONSERVATION

Ecosystem and its components, Types of Ecosystems
Biodiversity - Definition and Value, Threats to biodiversity and its conservation
Level of biological diversity: genetic, species and ecosystem diversity; bio-geographic zones of India; biodiversity patterns and global biodiversity hot spots.
India as Mega-biodiversity nation; Endangered and endemic species of India.
Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value.

NATURAL RESOURCES–RENEWABLE AND NON RENEWABLE RESOURCES

Land resources and land use change; land degradation, soil erosion and desertification.

Deforestation: causes and impacts due to mining, dam building on environment, Forests, Biodiversity and tribal populations.

Water: Use and over-exploitation of surface and ground water, Floods, droughts, conflicts over water (international & inter-state)

Energy resources: renewable and nonrenewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Environmental Pollution

Environmental Pollution : types, causes, effects and controls; Air, Water, Soil and noise pollution. Nuclear hazards and human health risks Solid waste management, Source Segregations : Control measures of urban and Industrial waste. Pollution case studies.

SECTION-B

ENVIRONMENTAL PROTECTION LAWS IN INDIA

Environmental protection act for; Air (Prevention and control of pollution), Water (Prevention and Control of pollution), Wild life, Forest Conservation, Issues involved in the enforcement of environmental legislation.Role of an individual in prevention of pollution.

Environmental policies & Practices; Climate change, global warming, ozone layer depletion, acid rain and imapcts on human communities and agriculture.

Human Communities and the Environment

Human population growth: Impacts on environment, human health and welfare, Sanitation & Hygiene. Resettlement and rehabilitation of project affected persons; case studies. Disaster management: floods, earthquake, cyclones and landslides. Environment movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation for a Clean-green pollution free state.

Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi)

ROAD SAFETY AWARENESS

Concept and significance of Road safety, Traffic signs, Traffic rules, Traffic Offences and penalties, How to obtain license, Role of first aid in Road Safety.

Stubble Burning

Meaning of Stubble burning.

Impact on health & environment.

Management and alternative uses of crop stubble.

Environmental Legislations and Policies for Restriction of Agriculture Residue Burning in Punjab.

Field Work

Visit to an area to document environmental assets: river/Forest/Flora/Fauna, etc.

Visit to Local polluted site –urban/Rural/Industrial/Agricultural.

Study of common Plants, Insects, Birds and basic principles of identification.

Study of simple ecosystems-pond, river, Delhi Ridge, etc.

Suggested Readings :

1. Carson, R.2002. Silent Spring, Houghton Mifflin Harcourt.
2. Gadgil. M., & Guha,R.1993. This Fissured Land : An Ecological History of India. Univ. of California Press.
3. Gleeson, B. and Low, N.(eds.)1999. Global Ethics and Environment, London, Routledge.
4. Gleick,P.H.1993. Water in Crisis.Pacific Institute for Studies in Dev. Environment & Security. Stockholam Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland : Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalays dams. Science,339:36-37.
7. McCully,P.1996. Rivers no more: the environmental effects of dams (pp.29-64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun : An Environmental History of the Twentieth Century.
9. Odum, E.P., H.T & Andrews, J.1971. Fundamentals of Ecology. Philadelphia : Saunders.
10. Pepper, I.L., Gerba ,C.P & Brusseau, M.L. 2011. Environmental and Pollution Sciences. Academic Press.
11. Rao, M.N. & Datta, A.K.1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt.Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R.2012,Environment. 8Th edition. John Wiles & Sons.
13. Rosencranz, A., Divan, S., & Nobie, M.L. 2001. Environmental law and policy in India. Tripathi 1992
14. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
16. Sodhi, N.S. Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.
17. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.
18. Warren, C.E. 1971. Biology and Water Pollution Control. WB Saunders.
19. Wilson, E.O. 2006. The Creation: An appeal to save life on earth. New York: Norton.
20. World commission on Environment and Development. 1987. Our Common Future. Oxford University Press.