PUNJABI UNIVERSITY, PATIALA
(Established Under Punjab Act. No. 35 of 1961)

ORDINANCES
AND
OUTLETS OF TESTS,
SYLLABUS AND COURSES OF READING
FOR B.SC. (CHEMISTRY) PART-I
SESSION 2020-21, 2021-22 & 2022-23

PUNJABI UNIVERSITY, PATIALA

B.Sc. (Chemistry) Part-I
2020-21, 2021-22 & 2022-23

SEMESTER I

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

SEMESTER II

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

Drug Abuse Problem, Management and Prevention* **100 (MM)** **70 (SP)** **30(IA)**
Qualifying Paper: Session 2016-17, 2017-18 and 2018-19
*As per University Letter No.13831/SM-6 Dated: 12.10.2016

PAPER-I
INORGANIC CHEMISTRY

Max Marks : 35 **30 hours**
Semester Paper : 26 **Time allowed - 3 hrs**
Internal Assessment: 9 **3 period/week**
Pass Marks : 35%

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 (Section C 9th question being compulsory) selecting two questions from each of A & B Sections.

Section - A

1. Atomic Structure 7 hrs

Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation, significance of, Ψ and , Ψ^2, quantum numbers, radial and angular wave functions and probability distribution curve, shapes of s, p, d orbitals. Aufbau and Pauli exclusion principles, Hund's multiplicity rule. Electronic configurations of the elements and ions.

2. Periodic Properties 5 hrs.

Position of element in the periodic table effective nuclear charge and its calculations. Atomic and ionic radii, ionization energy, electronic affinity and electronegativity-definition, methods of determination or evaluation, trends in periodic table and applications in predicting and explaining the chemical behavious.

3. Chemistry of Noble gases 3 hrs.

Chemical properties of the noble gases, chemistry of xenon, structure and bonding in xenon compounds.

Section - B

1. Chemical Bonding - I 15 hrs.

Covalent Bond-Valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions. BeF_2 , BF_3 , CH_4, PF_5, SF_6, IF_7, $SnCl_2$, XeF_4, BF_4^-, PF_6^-, $SnCl_6^{2-}$.

2. Chemical Bonding - II

Valence shell electron pair repulsion (VSEPR) theory to NH_3, H_3O^+, SF_4, CIF_3, ICI_2, and H_2O. MO theory, homonuclear (elements and ions of 1st and 2nd row), and heteronuclear (BO, CN, CO^+, NO^+, CO, CN), diatomic molecules, multicenter bonding in electron deficient molecule (Boranes) percentage ionic character from dipole moment and eIectronegativity difference.

SEMESTER I
PAPER-II
ORGANIC CHEMISTRY

Max Marks : 35 **30 hours**
Semester Paper : 26 **Time allowed - 3 hrs**
Internal Assessment: 9 **3 period/week**
Pass Marks : 35%

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 (Section C 9th question being compulsory) selecting two questions from each of A & B Sections.

Section - A

I. Structure and Bonding 5 Hrs.

Hybridization, bond lengths and bond angles, bond energy, localized and delocalized chemical bond, Van der Walls interactions, resonance, hyperconjugation, aromaticity, inductive and field effects, hydrogen bonding.

II . Mechanism of Organic Reactions 7 Hrs

Curved arrow notation, drawing electron movements with half- headed and double headed arrows, homolytic and heterolytic bond breaking. Types of reagents of organic reaction. Energy considerations. Reactive intermediates-bocations, carbanions, free radicals, carbenes, arynes and nitrenes (with examples). Assigning formal charges on intermediates and other ionic species.

Methods of determination of reaction mechanism (product analysis, intermediates, isotope effect, kinetic and stereo-chemical studies).

III. Alkanes 4 Hrs.

Isomerism in alkanes, sources, methods offormation (with special reference to Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids), physical properties and Mechanism of free radical halogenation of alkanes: orientation, reactivity and selectivity.

Section – B

1. Cyclo alkanes 3 Hrs.

Cycloalkanes--nomenclature, chemical reactions, Baeyer's strain theory and its limitations. Ring strain in small rings (cyclopropane and cyclobutane), theory of strain less rings. The case of cyclopropane ring: banana bonds.

2. Alkcnes, Cycloalkenes 6 Hrs.

Nomenclature of alkenes-methods of formation, mechanisms and dehydration of alcohols and dehydrohalogenation of alkyl halides regioselectivity in alcohol dehydration. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes-mechanisms involved in hydrogenation, electrophilic and free radical additions Markownikoff's rule, hydroboration-oxidation, oxymercuration reduction. Epoxidation, ozonolysis, hydration, hydroxylation and oxidation with $KMnO_4$. Polymerization ofalkenes. Substitution and the allylic and vinylic positions of alkenes. Industrial application of ethylene and propene.

Methods of formation, conformation and chemical reactions of Cycloalkenes.

3. Dienes And Alkynes 6 Hrs.

Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of allenes and butadiene, methods of formation, polymerization. Chemical reactions-I,2 and l,4 additions, Diels-Alder reaction.

Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidityn of alkynes. Mechanism of electrophilic and nucleophilic addition reactions hydroboration-oxidation. metal-ammonia reductions, oxidation and polymerization.

SEMESTER I
PAPER-III
PHYSICAL CHEMISTRY

Max Marks : 35 **30 hours**
Semester Paper : 26 **Time allowed - 3 hrs**
Internal Assessment: 9 **3 period/week**
Pass Marks : 35%

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 (Section C 9th question being compulsory) selecting two questions from each of A & B Sections.

Section - A

1. **Mathematical Concepts** 8 Hrs.

Logarithmic relations. curve sketching, linear graphs and calculation of slopes, differentiation of functions like kx, e^x, x^n, sin x, log x, maxima and minima, partial differentiation and reciprocity relations. Integration of some useful/relevant functions permutations and combinations. Factorials. Probability .

2. **Evaluation of Analytical Data** 6 Hrs.

Terms of mean and median, precision and accuracy in chemical analysis, determining accuracy of methods, improving accuracy of analysis, data treatment for series involving relatively few measurements, linear least squares curve fitting, types of errors, standard deviation, confidence limits, rejection of measurements (F-test and Q-test) numerical problems related to evaluation of analytical data.

Section - B

3. **Liquid State** 4 Hrs.

Intermolecular forces, structure of liquids (a qualitative description) Structural differences between solids, liquids and gases.

Liquid crystals: Difference between liquid crystal, solid and liquid, Classification, structure of nematic and eholestric phases. Thermography and seven segment cell.

4. **Gaseous State** 8 Hrs

Postulates of kinetic theory of gases, deviation from ideal behaviour, van der Waals equation of states, the isotherms of van der Waals equation, relationship between critical constants and van der Waals constants, the law of corresponding states, reduced equation of state.

Molecular velocities: Root mean square, average and most probable velocities. Qualitative discussion of the Maxwell's distribution of molecular velocities, collision

number, mean free path and collision diameter, Liquifacation of gases (based on Joule-Thomson effect).

5. **Physical Properties and Molecular Structure** 4 Hrs.

Optical activity, polarization-(Clausius-Mossotti equation), orientation of dipoles in an electric field, dipole moment. Induced dipole moment, measurement of dipole moment temperature method and refractivity method. Dipole moment and structure of molecules, magnetic properties-paramagnetism, diamagnetism and ferromagnetism.

PRACTICAL CHEMISTRY - I
SEMESTER I

Max Marks : 45 6 Periods / week
Passing Marks : 35%

INSTRUCTIONS FOR THE
PAPER SETTERS EXAMINERS/CANDIDATES

The Practical Examinations will be held in morning (one day) and morning session will be of 3 hours duration. During this session students will perform semi micro analysis. Paper setter will enlist five different mixtures and the examiner will randomly distribute these mixtures amongst the students. Each candidate will analyse one mixture. Students are permitted to consult the books for the scheme of tests for semimicro analysis. Examiners will check the note books and will hold viva-voce.

INORGANIC CHEMISTRY

Semi-micro analysis:

Cation analysis, separation and identification of ions from Groups I, II, III, IV, V and VI. Anion analysis (2 cation and 2 anion with no interference). 30 Marks

Viva Voce 10 Marks

Copy 5 Marks

SEMESTER II
PAPER-I
INORGANIC CHEMISTRY

Max Marks : 35 **30 hours**
Semester Paper : 26 **Time allowed - 3 hrs**
Internal Assessment: 9 **3 period/week**
Pass Marks : 35%

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 (Section C 9th question being compulsory) selecting two questions from each of A & B Sections.

Section - A

1. Ionic Solids- 5 hrs.

Concept of close packing, Ionic structures, (NaCl type, Zinc blende, Wurzite, CaF_2 , and antifluorite), radius ratio rule and coordination number, Limitation of radius ratio rule, lattice defects, semiconductors, lattice energy and Born-Haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule. Metallic bond-free electron, valence bond and bond theories.

2. s-Block Elements 5 hrs.

Comparative study, diagonal relationships, salient features of hydrides, solvation and complexation tendencies including their function in biosystems.

3. p - Block Elements (Group 13) 5 hrs.

Comparative study (including diagonal relationship) of groups 13 elements, compounds like hydrides, oxides, oxyacids and halides of groups 13; hydrides of boron-diborane and higher boranes, borazine, borohydrides.

Section - B

4. p - Block Elements (Group 14-17) 15 hrs.

Comparative study (including diagonal relationship) of groups 14-l7 elements, compounds like hydrides, oxides, oxyacids and halides of groups 14-17; fullerenes, carbides, fluorocarbons, silicates (structural principle), tetrasulphur tetranitride, basic properties of halogens, interhalogens and polyhalides.

SEMESTER II
PAPER-II
ORGANIC CHEMISTRY

Max Marks : 35 **30 hours**
Semester Paper : 26 **Time allowed - 3 hrs**
Internal Assessment: 9 **3 period/week**
Pass Marks : 35%

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 (Section C 9th question being compulsory) selecting two questions from each of A & B Sections.

Section - A

1. Stereochemistry of Organic Compounds 15 Hrs.

Concept of isomerism. Types of isomerism

Optical isomerisin-elements of symmetry, molecular chirality, enantiomers, stereogenic centrec, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers, meso compounds, resolution of enantiomers, inversion, retention and racemization.

Relative and absolute configuration, sequence rules, D & Land R & S systems of nomenclature.

Geometric isomerism-determination of configuration of geometric isomers, E & Z system of nomenclature, geometric isomerism in oximes and alicyclic compounds.

Conformational isomerism-conformational analysis of ethane and n-butane; conformations of cyclohexane, axial and equatorial bonds, conformation of mono substituted cyclohexane derivatives.

Newman projection and Sawhorse formulae, Fischer and flying wedge formulae.

Difference between configuration and conformation.

Section - B

1. Arcncs and Aromaticity 7 Hrs.

Nomenclature of benzene derivatives. Aromatic nucleus and side chain. Structure of benzene: molecular formula and Kekule structure. Stability and carbon-carbon bond lengths of benzene, resonance structure, MO picture.

Aromaticity: the Huckel rule, aromatic ions.

Aromatic electrophilic substitution-general pattern of the mechanism, role of σ and π complexes. Mechanism or nitration, halogenation, sulphonation, mercuration and Friedel-Crafts reaction. Energy profile diagrams. Activating and deactivating substituents, orientation and ortho/para ratio. Side chain reactions of benzene derivatives.

Methods of formation and chemical reaction of alkylbenzenes alkynyl benzenes.

2. Alkyl and aryl halides 8 Hrs.

Nomenclature and classes of alkyl halides, methods of formation chemical reactions. Mechanisms of nucleophilic substitution reactions of alkyl halides, S_N^1 and S_N^2 reactions with energy profile diagrams.

Methods of formation of aryl halides, nuclear and side chain reactions. The addition elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions.

Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides.

SEMESTER II
PAPER-III
PHYSICAL CHEMISTRY

Max Marks : 35 **30 hours**
Semester Paper : 26 **Time allowed - 3 hrs**
Internal Assessment: 9 **3 period/week**
Pass Marks : 35%

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 (Section C 9th question being compulsory) selecting two questions from each of A & B Sections.

Section - A

1. **Solutions, Dilute Solutions and Colligative Properties** 8 Hrs.

Ideal and non-ideal solutions, methods of expressing concentration of solutions, activity and activity coefficients.

Dilute solution, colligative properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis, law of osmotic pressure and its measurement, determination molecular weight from osmotic pressure,

Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties.

Abnormal molar mass, degree of dissociation and association of solutes.

2. **Colloidal State** 7 Hrs.

Definition of colloids, classification of colloids

Solids in liquids (sols): properties-kinetic, optical and electrical; stability of colloids protective action, Hardy-Schulze law, gold number.

Liquids in liquids (emulsions) types of emulsions, preparation, Emulsifiers.

Liquids in solids (gels): Classification, preparation and properties inhibition. General applications of colloids.

Section – B

3. **Chemical Kinetics and catalysis** 15 Hrs.

Chemical kinetics and its scope, rate of a reaction, factors influencing the rate of a reaction- concentration, temperature, pressure, solvent, light, catalyst. Concentration dependence of rates, mathematical characteristics of simple chemical reactions-zero order, first order, second order, pseudo order, half life and mean life. Determination of the order of reaction-s-differential method, method of integration, method of half life period and isolation method.

Radioactive decay as a first order phenomenon.

Theories of chemical kinetics, effect of temperature on rate of reaction. Arrhenius equation, concept of activation energy.

Simple collision theory based on hard sphere model, transition state theory (equilibrium hypothesis). Expression for the rate constant based on equilibrium constant and thermodynamic aspects.

Catalysis and general characteristics of catalytic reactions. Homogeneous catalysis, acid base catalysis and enzyme catalysis including their mechanisms, Michaelis Menten equation for enzyme catalysis and its mechanism.

PRACTICAL CHEMISTRY II
SEMESTER II

Max Marks : 45 6 Periods / week
Passing Marks : 35%

INSTRUCTIONS FOR THE
PAPER SETTERS EXAMINERS/CANDIDATES

In this session in morning students will perform physical and organic chemistry practicals. Examiner will again conduct viva-voce of students.

1) The examiner should preferably give different liquids solids to the candidates for the determination of boiling point/melting point and crystallization from the list of liquids/solids by the paper setter.
2) The paper setter will provide a list of five physical chemistry experiments. The examiner will allot one experiment randomly to each candidate. The candidate will write theory, brief procedure and

general calculations of the experiment in the first 10 minutes and thereafter perform the actual experiment.

DETAILS OF DISTRIBUTION OF MARKS

1) Melting point/boiling point/crystallization 10 marks
2) Physical chemistry experiment 20 marks
   a) Initial write up 7 marks
   b) Performance 18 marks
4) Viva-voce 10 marks
5) Note Book 5 marks

Laboratory Techniques

Determination of melting points:

Naphthalene, 80-82°. Benzoic acid, 121.5-122°
Urea, 132.5-133°, Succinic acid, 184.5-185°.
Cinnamic acid, 132.5-133°, Salicylic acid, 157.5-158°.
Acetanilide, 113.5-114°, *m*-Dinitrobenzene, 90°.
p-Dichlorobenzene, 52°, Asprin, 135°.

Determination of boiling points

Ethanol, 78°, Cyclohexane, 81.4°. Tolune, 110.6°, Benzene, 80°.

Crystallization

Concept of induction of crystallization
Phthalic acid from hot water (using fluted filter paper and seamless funnel)
Acetanilide from boiling water
Naphthalene from ethanol
Benzoic acid from water

Physical Chemistry Experiment 20 Marks

Chemical Kinetics

1. To determine the specific reaction rate of the hydrolysis of methyl acetate/ethyl acetate catalyzed by hydrogen ions at room temperature.
2. To study the effect of acid strength on the hydrolysis of an ester.
3. Viscosity & Surface Tension of pure liquids.
   To determine the viscosity and surface tension of C_2H_5OH and glycerin solution in water
4. Molecular weight determined by Rast method.

Viva Voce 10 Marks
Copy 5 Marks

BOOKS SUGGESTED (THEORY COURSES)

1. *Basic Inorganic Chemistry.* F.A. Cotten. G. Wilkinson and P.L.. Gaus. Wiley.
2. *Concise Inorganic Chemistry.* J. 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.
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.

BOOKS SUGGESTED (LABORATORY COURSES)

I. *Vogel's Qualitative Inorganic Analysis,* revised, Svehla, Orient Longman.
2. *Vogel's Textbook of Quantitative Inorganic Analysis* (revised), J. Basseff, R.C. Dennery, G.H. Jeffery and J. Mendham, ELBS.
3. *Standard Methods of Chemical Analysis,* W.w. Scott the Technical Press.
4. *Experimental Inorganic Chemistry:* W.G. Palmer, Cambridge.
5. *Handbook of Preparative Inorganic Chemistry.* Vol. I & II, Brauer, Academic Press.
6. *Inorganic Synthesis,* McGraw Hill.
7. *Experimental Organic Chemistry.* Vol. I & II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill.
8. *Laboratory Manual in Organic Chemistry.* R.K. Bansal, Wiley Eastern.'
9. *Vogel's Textbook 0/ Practical Organic Chemistry.* B.S. Furniss, A.1. Harnaford, V. ogers, P.w.G. Smith and A.R. Tatchell, ELBS. -.
10. *Experiments in General Chemistry.* C.N.R. Rao and U.e. Aggarwal. East- West Press.
11. *Experiments in Physical Chemistry.* R.C. Dass and B. Behra, Tata McGraw Hill.
12. *Advanced Practical PhysicalChemistry,* J.B. Yadav, Goel Publishing House.
13. *Advanced Experimental Chemistry.* Vol. I : Physical, J.N. Gurtu and R. Kapoor, S. Chand & CO.
14. *Selected Experiments in Physical Chemistry,* N.G. Mukherjee, J.N. Ghose & Sons.
15. *Experiments in Physical Chemistry.* J.E. Ghosh, Bharati Bhavan.

SYLLABUS

B.Sc. (Botany) Part-I (Semester-I and II)

(Session 2022-23 and 2023-24)

Semester-I

THEORY

	External Marks	Internal Assessment
BOTB1101T: Diversity of Microbes	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
BOTB1102T: Diversity of Cryptogams	40	15 (Attendance: 3 + Assignment: 6 + House Test 6

PRACTICAL (BOTB1101L)

Pertaining to Theory Paper-**BOTB1101T**:	40
Pertaining to Theory Paper-**BOTB1102T**:	

Theory		80 Marks
Practical		40 Marks
Internal Assessment Pertaining to Theory Paper **BOTB1101T** & **BOTB1102T**		30 Marks
Total	:	**150 Marks**

Semester-II

THEORY

	External Marks	Internal Assessment
BOTB1203T: Cell Biology	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
BOTB1204T: Genetics and Evolution	40	15 (Attendance: 3 + Assignment: 6 + House Test 6

PRACTICAL(BOTB1202L)

Pertaining to Theory Paper **BOTB1203T**:	40
Pertaining to Theory Paper **BOTB1204T**:	

Theory		80 Marks
Practical		40 Marks
Internal Assessment Pertaining to Theory Paper **BOTB1203T** & **BOTB1204T**		30 Marks
Total	:	**150 Marks**

Note:

1) The number of teaching hours per week will be **four and half** for each theory paper and **three** for each practical in **every semester**. In all, there will be **15 teaching hours per week** covering both theory and practical requirements. (**Nine** 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.

B.Sc. (BOTANY) PART-I (SEMESTER-I)

BOTB1101T: DIVERSITY OF MICROBES

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

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. Viruses: General characters, structure, classification and replication of viruses; importance of viruses, a brief account of Mycoplasma.
2. Bacteria- A general account with particular reference to ultra structure, classification, mode of reproduction. A brief account of Archaebacteria.
3. Nutritional types in bacteria, economic importance of viruses and bacteria.
4. General account of Cyanobacteria: thallus organization, photosynthetic pigments, reserve food material & multiplication with emphasis on *Oscillatoria*.

Section-B

5. Fungi and Fungi like organisms: General characters. Classification and economic importance. Important features and life history of members of Kingdom Chromista: *Phytophthora* and Protozoa: *Stemonitis*.
6. Important features and life history of members of Kingdom Fungi: Chytridiomycota-*Physoderma*; Zygomycota-*Mucor*; Ascomycota-*Saccharomyces, Pencillium* and *Peziza*.
7. Important features and life history of Basidiomycota and Mitosporic Fungi: *Puccinia, Ustilago, Agaricus*; *Cercospora, Colletotrichum*.
8. Lichens: Structure, morphology, reproduction and economic importance.

RECOMMENDED REDINGS

1. Alexopolus, C.J., Mims, C.W. and Blackwell, M. 1996. *Introductory Mycology*. John Willey & Sons. Inc., Singapore.
2. Black, J.G. 1999. *Microbiology – Principles and Explorations*. John Wiley & Sons, Inc. Singapore.
3. Clitton, A. 1958. *Introduction to Bacteria*. McGraw Hills & Co., New York.
4. Deacon, J.W., 1997. Modern Mycology 3rd Edition, Blackwell Science, Ltd. U.K.
5. Dube, H.C.1990. *An Introduction to Fungi*. Vikas Publishing House Pvt. Ltd., New Delhi.
6. Sharma, P.D. 2001. *The Fungi*. Rastogi Co., Meerut.
7. Stainer, R.Y., Ingraham, J.L., Wheelis, M.L. and Painter, P.R. 1989. *General Microbiology*. Macmillan.

B.Sc. (BOTANY) PART-I (SEMESTER-I)
BOTB1102T: DIVERSITY OF CRYPTOGAMS

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

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. Basic characteristics of Algae; habitat, algal cell structure, photosynthetic pigments, reserves food material, classification and economic importance of algae.
2. Important features and life history of Chlorophyceae with emphasis on *Volvox* and *Oedogonium*.
3. Important features and life history of Xanthophyceae and Phaeophyceae with emphasis on *Vaucheria*, *Ectocarpus* and *Sargassum*.
4. Important features and life history of Rhodophyceae with emphasis on *Batrachospermum*. Cell structure and reproduction in Diatoms.

Section-B

5. Bryophyta: General characters, classification, amphibians of Plant Kingdom displaying alternation of generations and ecological and economic importance.
6. Structure, reproduction and affinities of *Marchantia* (Hepaticopsida); *Anthoceros* (Anthocerotopsida); *Funaria* (Bryopsida) - developmental stages are excluded. Evolution of sporophytes in Bryophytes.
7. Pteridophyta: General characters, classification and economic importance of Pteridophytes. Evolution of stellar system in Pteridophytes. Important features and life history of Psilopsida (*Rhynia*) – developmental stages are excluded.
8. Important features and life history of Lycopsida (*Selaginella*); Sphenopsida (*Equisetum*) and Pteropsida (*Pteris* and *Marsilea*) – developmental stages are excluded.

RECOMMENDED REDINGS

1. Kumar, H.D. 1999. *Introductory Phycology (Second Edition)*. Affiliated East West Press Ltd., New Delhi.
2. Parihar, N.S. 1996. *Biology and Morphology of Pteridophytes*. Central Book Depot., Allahabad.
3. Rashid, A. 1998. *An Introduction to Bryophyta*. Vikas Pub. House Pvt. Ltd., New Delhi.
4. Rashid, A. 1999. *An Introduction to Pteridophyta*. Vikas Publ. House, Pvt.Ltd., New Delhi.
5. Sharma, O.P. 2001. *Text Book of Pteridophytes*. MacMillan India Ltd.
9. Sporne, K.R.1991. *The Morphology of Pteridophytes*. B. I. Publishing Pvt. Ltd., Bombay.

10. Vasishta, P.C. 1996. *Bryophyta*. S. Chand & Co. Ltd., New Delhi.
11. Vasishta, P.C. 2000. *Pteridophyta*. S. Chand & Co. Ltd., New Delhi.
12. Singh, S.K. 2008. Bryophyta. Compus Book, International, NewDelhi.
13. Lec., R.E. 2008. Phycology. Combridge University, Press, U.K.
14. Sharma, O.P. (2011). Diversity of Microbes and Cryptogams-Algae. Tata McGraw Hill, New Delhi.
15. Vashishta, B.R., Sinha, A.K. and Singh, V.P. (2011). Botany for Degree Students-Algae. S. Chand Publisher, New Delhi

SUGGESTED LABORATORY EXCERCISES

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

1. Study of the genera included under algae and fungi indicating their systematic position.
2. Study of morphology, reproductive structures and anatomy of the examples cited in theory under Bryophyta and Pteridophyta indicating their systematic position.
3. Observation of disease symptoms in hosts infected by bacteria – (Citrus canker), fungi – (Late blight of potato, loose smut of wheat, brown rust of wheat, yellow stripe rust of wheat, tikka disease of groundnut, red rot of sugarcane), viruses – (Yellow vein mosaic of bhindi) and mycoplasma – (little leaf disease of brinjal). Examination of diseased material and identification of pathogens.
4. Gram staining of bacteria.
5. Study of crustose, foliose and fruiticose lichen thalli.

SUGGESTED READING (FOR LABORATORY EXCERCISES)

Books:

1. Bendre, A. and Kumar, A. 1990-91, *Practical Botany*. Rastogi Publications, Meerut.
2. Kashyap, S.R. 1972. *Liverworts of the Western Himalayas*. New Delhi.
3. Singh, R.S. 1998. *Plant Diseases*. Oxford IBH Publishing Co. Pvt. Ltd., New Delhi.

INSTRUCTIONS FOR PAPER SETTER

Practical Paper-I (Pertaining to Theory Paper- I & II)

		Marks
1.	Section cutting and preparation of permanent slide of material pertaining to Bryothytes/Pteridophytes.	8
2.	Identification, classification and morphological note on specimens from Algae, Fungi, Lichen Bryophyta and Pteridophyta.	4 x 5 = 20
3.	Study of diseased plant material	4
4.	Practical note book.	4
5.	Viva-voce.	4
		40

B.Sc. (BOTANY) PART-I (SEMESTER-II)

BOTB1203T : CELL BIOLOGY

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

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. Structural organisation of cell: Prokaryotic and Eukaryotic cells; Plant and Animal cells.
2. The cell envelops: Structure, composition and functions of cell wall in Bacteria, fungi and plants.
3. Plasma membrane: Structure and function; various models proposed, fluid mosaic model; transport across membrane.
4. Structure and function of cell organelles: Endoplasmic reticulum, Ribosomes, Golgi Bodies, Lysosomes, Vacuoles and Peroxisomes.

Section-B

5. Structure and function of nucleus; organisation of nuclear membrane, nucleolus and chromosomes.
6. Structure and function of Mitochondria and Plastids, semiautonomous nature.
7. Genetic material: Structure of DNA and RNA, elucidation of DNA and RNA as genetic materials.
8. Organisation of DNA into chromosomes, nucleosome structure. Organisation of genetic material in eukaryotes, prokaryotes and viruses.

RECOMMENDED READINGS

1. Alberts, B., Bray, D., Lewis, J., Raf, T.M., Roberts, K. and Watson, I.D.1999. *Molecular Biology of Cell*. Garland Publishing Co., Inc., New York, USA.
2. Bhatia, K.N. and Neelam, Dhand. *Cell Biology & Genetics*. Atruman's Pub., Jallandhar.
3. Gupta, P.K. 1999. *A text Book of Cell and Molecular Biology*. Rastogi Publicatons, Meerut, India.
4. Kleinsmith, L.J. and Kish, V.M. 1995. *Principles of Cell and Molecular Biology* (2nd Edition) Harper Colins College Publishers, New York, USA.
5. Lodish, H., Berk, A., Zipursky, S.L., Matsudaira, P., Bltimore, D. and Darnell, J. 2000. *Molecular Cell Biology*. W.H. Freeman & Co., New York, USA.
6. De Roberts, E.D.P. and De Robertis, Jr. E.M.F. 2006, Cell and Molecular Biology, Lippincott Williams & Wilkins, USA.

B.Sc. (BOTANY) PART-I (SEMESTER-II)

BOTB1204T : GENETICS AND EVOLUTION

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

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. Replication of DNA in prokaryotes and eukaryotes, Mitosis and Meiosis
2. Transcription and Translation in eukaryotes and prokaryotes, genetic code.
3. Mutations – spontaneous and induced; transposable genetic elements.
4. Chromosome alterations – deletions, duplications, translocations, inversions. Variations in chromosome number – aneuploidy, polyploidy.

Section-B

5. Genetic inheritance: Mendelism: laws of segregation and independent assortment: linkage analysis; allelic and non-allelic interactions.
6. A brief account of origin of earth. Origin of life: History, Theories; abiogenesis, panspermia, chemical evolution, Oparin's hypothesis, Miller's experiments. Evolution of progenote. Protein evolution.
7. Theory of Organic Evolution. A detailed account on Lamarckism, Darwinism, Modern synthetic theory, germplasm theory and mutation theory.
8. Evidences of evolution: Direct and Indirect evidences, Fossils; Fossilization, types and significance. Geological time scale, determination of age of rocks and fossils.

RECOMMENDED READINGS

1. Bhatia, K.N. and Neelam, Dhand. *Cell Biology & Genetics*. Atruman's Pub., Jallandhar.
2. Gupta, P.K. *Cytology, Genetics & Evolution*. Rastogi Publications, Meerut.
3. Gupta, P.K. 1999. *A text Book of Cell and Molecular Biology*. Rastogi Publicatons, Meerut, India.
4. Kleinsmith, L.J. and Kish, V.M. 1995. *Principles of Cell and Molecular Biology* (2nd Edition) Harper Colins College Publishers, New York, USA.
5. Lodish, H., Berk, A., Zipursky, S.L., Matsudaira, P., Bltimore, D. and Darnell, J. 2000. *Molecular Cell Biology*. W.H. Freeman & Co., New York, USA.
6. Snustud, D.P. and Simmons, M.J. 2000. *Principles of Genetics*. John Wiley & Sons. Inc., USA.
7. Karp, G. 1999, Cells and Molecular Biology: Concepts and Experiments, John Wiley & Sons Inc. USA.
8. De Roberts, E.D.P. and De Robertis, Jr. E.M.F. 2006, Cell and Molecular Biology, Lippincott Williams & Wilkins, USA.

SUGGESTED LABORATORY EXCERCISES

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

1. To study cell structure from onion leaf peels.
2. Examination of electron micrographs of eukaryotic cells with special reference to organelles.
3. Examination of various stages of mitosis and meiosis using appropriate plant material (e.g. onion root tips, onion flower buds).
4. Preparation of karyotypes from dividing root tip cells of *Allium*.
5. Study of pollen mitosis of *Impatiens balsamina*.
6. Study of special types of chromosomes from slides/photographs.
7. Working out the laws of inheritance using seed mixture data provided using Chi-squire methods.

SUGGESTED READINGS (FOR LABORATORY EXCERCISES)

1. Fukui, K. and Nakayama, S. 1996. *Plant Chromosomes Laboratory Methods*. CRC Press, Boca Raton, Florida.
2. Gunning, B.E.S. and Steer, M.W. 1996. *Plant Cell Biology: Structure and Function*. Jones and Barlett Publishers, Boston, Massachusetts.
3. Harris, N. and Oparka, K.J. 1994. *Plant Cell Biology: A Practical Approach*. IRL Press at Oxford University Press, Oxford, UK.
4. Sharma, A.K. and Sharma, A. 1999. *Plant Chromosomes: Analysis Manipulation and Engineering*. Harwood Academic Publishers, Australia.

INSTRUCTIONS TO PAPER SETTER

Practical Paper-II (Pertaining to Theory Paper- III & IV)	**Marks**
1. Preparation of squash mount to show a cell division stage from onion root tip/flower.	10
2. Experiment on laws of inheritance using seed mixtures.	8
3. Preparation of temporary slide of onion peel to study cell structure.	5
4. Identification of three slides/Electron microphotographs.	9
5. Practical Note Book.	4
6. Viva-voce.	4
	40

PUNJABI UNIVERSITY, PATIALA 147002

(INDIA)

(Established under Punjab Act No. 35 of 1961)

Faculty of Life Sciences

Outline of Course and Syllabi

for

B.Sc. Zoology

Sessions: 2020-21, 2021-22 and 2022-23

SYLLABUS

B.Sc. (Zoology) Part-I (Semester-I and II)

(Session 2020-21, 2021-22 and 2022-23)

Semester-I

THEORY

	External Marks	Internal Assessment
Paper-I : Cell Biology	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
Paper-II : Non-chordates	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)

PRACTICAL

Pertaining to Theory Paper-I and Theory Paper-II:	40

Total Marks (Semester-I)

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

Semester-II

THEORY

	External Marks	Internal Assessment
Paper-III : Ecology	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)
Paper-IV : Chordates	40	15 (Attendance: 3 + Assignment: 6 + House Test 6)

PRACTICAL

Pertaining to Theory Paper-III and Theory Paper-IV :	40

Total Marks (Semester-II)

Theory		80 Marks
Practical		40 Marks
Internal Assessment pertaining to Theory Paper III & IV		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 I & II in each semester. The timing of practical examination will be 9.00 am to 12.00 noon.

SEMESTER-I

PAPER-I: CELL 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. Overview of Cells: Prokaryotic and Eukaryotic cells, Principle of light and electron microscope
2. Plasma Membrane: Various models of plasma membrane structures, Transport across membranes: Active and Passive transport, Facilitated transport, endocytosis, exocytosis
3. Cell-Cell Junction structures and functions: Tight junctions, Adhesive junctions, Gap junctions.
4. Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosomes, Ribosome; Vesicular transport from ER to Golgi Apparatus; Protein sorting and transport from Golgi Apparatus.

SECTION-B

5.Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis Mitochondrial Respiratory Chain, Chemi-Osmotic Hypothesis and ATP Synthase.
6. Cytoskeleton: Structure and Functions: Microtubules, Microfilaments and Intermediate filaments.
7. Nucleus: Structure of Nucleus: Nuclear envelope, Nuclear Pore Complex, Chromatin: Euchromatin and Hetrochromatin, Nucleolus.
8. Cell Division: Mitosis, Meiosis, Cell cycle and its regulation

Books Recommended:

1. De Robertis, EDP, Dc Robertis, E.M.F., *Cell Biology and Molecular Biology,* Eighth Edition. W.B. Saunders Co., Philadelphia, 1995.
2. Powar, C.B., *Cell Biology,* Himalaya Publishing House, Bombay, 1999.
3. Alberts, B Bray, D., Lewis, J., Raff, M., Roberts, K., Watson, J.D., *Molecular Biology of the Cell,* Gerland Publ. Inc., New York, 1998.

PAPER-II : NON-CHORDATES

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. Protozoa

General characteristics, Locomotion in *Euglena*, *Paramecium* and *Amoeba*; Conjugation in *Paramecium*. Life cycle and pathogenicity of *Plasmodium vivax* and *Entamoeba histolytica.*

2. Porifera :

General characteristics, Canal system in sponges, Skeleton of sponges.

3. Coelenterata:

General characteristics,Polymorphism in *Obelia*; Corals and coral reef diversity, Conservation of coral and coral reefs.

4. Platyhelminthes:

General characteristics,Life cycle and pathogenicity and control measures of *Fasciola hepatica* and *Taenia solium.*

5. Aschelminthes:

General characteristics, Life cycle, and pathogenicity and control measures of *Ascaris lumbricoides* and *Wuchereria bancrofti,* Parasitic adaptations in helminthes.

6. Annelida:

General characteristics, Excretion in Annelida through nephridia; Metamerism in Annelida, Evolution of coelom.

SECTION-B

7. Arthropoda:

General characteristics,Respiration: Terrestrial respiration in *Periplaneta* – Structure of tracheal system and mechanism of respiration. Aquatic respiration in Prawn– structure and types of gills and mechanism of respiration.

Metamorphosis in Lepidopteran Insects; Social life in Termite and honeybee,

8. Onychophora

General characteristics and Evolutionary significance, affinities of *Peripatus.*

9. Mollusca:

General characteristics, Torsion in Gastropoda; definition of Torsion, effects of Torsion on body structure, detorsion, Feeding and respiration in *Pila globosa*.

10. Echinodermata:

General characteristics, Water vascular system in *Asterias*, Echinoderm larvae, affinities with chordates

11. Hemichordata

General characteristics, *Balanoglossus*; external characters and affinities.

Books Recommended:

1. Dhami P. S. & Dhami J. K., *Invertebrates,* R. Chand & Co., New Delhi, 2001.
2. Barnes, R.D., *Invertebrates Zoology,* W.B. Saunders Philadelphia, 1999.
3. E. L. Jordan and others: *Invertebrate Zoology,* 14th ed. Rep. 2002 ISBN: 81-219-0367X.
4. Ashok Sabharwal & S. K. Malhotra: *Modern Zoology,* Vol. I, Modern Publishers.
5. P. S. Verma & V. K. Aggarwal: *Environmental Biology,* 4th ed. Rep. 2003.

PRACTICAL PAPER (Pertaining to paper I & II)

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

Pass marks : 35%

1. Classification upto orders with ecological notes and economic importance of the following:

A. Protozoa: (a) Slides: *Amoeba, Euglena, Trypansoma, Noctiluca, Eimeria, Monocystis, Paramecium (*Binary fission and conjugation), *Opalina, Vorticella, Balantidium, Nyctotherus* & *Polystomella.*

B. Porifera: Specimens: *Sycon, Grantia, Euplectella, Hyalonema, Spongilla* and *Euspongia.*

C. Coelenterata: (a) Specimens: *Porpita, Velella, Physalia, Aurelia, Rhizostoma, Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia* and *Astrangia.*

(b) Slides: *Hydra (*W.M.), *Hydra* with buds, *Obelia (*colony and medusa), *Sertularia, Plumularia, Tubularia, Bougainvillea* and *Aurelia.*

D. Platyhelminthes: (a) Specimens: Dugesia, Fasciola*, Taenia* and *Echinococcus.*

(b) Slides: Miracidium, Sporocyst, Redia, Cercaria of *Fasciola,* Scolex and Proglottids of *Taenia (*mature and gravid)

E. Aschelminthes : *Ascaris (*male and female*), Trichinella* and *Ancylostoma.*

F. Annelida : Specimens: *Pheretima, Nereis, Heteronereis, Polynoe, Eunice, Aphrodite, Chaetopterus, Arenicola, Tubifex* and *Pontobdella.*

G. Arthropoda : *Peripatus, Palaemon* (Prawn), *Lobster,* Cancer (Crab), *Sacculina, Eupagurus (*Hermit crab), *Lepas, Balanus, Cyclops, Daphnia, Lepisma, Periplaneta (*Cockroach), *Schistocerca* (Locust), *Poecilocerus* (Ak grasshopper), *Gryllus,* (Cricket), *Mantis* (Praying mantis), *Cicada, Forficula* (Earwig), Dragonfly, termite queen, bug, moth, beetle, *Polistes* (Wasp), *Apis* (Honey bee), *Bombyx, Pediculus* (Body louse), Millipede and Centipede, *Palamnaeus* (Scorpion*), Aranea* (Spider), and *Limulus* (King crab).

H. Mollusca : *Anodonta, Mytilus, Ostrea, Cardium, Pholas, Solen* (Razor fish), *Pecten, Haliotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus* shell (Complete and T.S.), *Chiton* and *Dentalium.*

I. Echinodermata: *Asterias, Echinus, Ophiothrix* and *Antedon.*

J. Hemichordata: *Balanoglossus.*

2. Study of the following permanent stained preparations:

A. L.S. and T.S. *Sycon,* Gemmules, Spicules and Spongin fibres of a sponge.

B. T.S. *Pheretima* septal nephridia,

3. Preparation of the following slides:

Preparation of permanent whole mount stained in borax carmine : *Hydra, Obelia, Sertularia, Plumularia* and *Bougainvillea.*

4. Cell Biology:

A. Study of permanent slides of Mitosis and Meiosis.

B. Identification of ultrastructure of different cell organelles from electron micrographs.

C. To study Principle of the Light and Electron microscope.

D. Preparation of temporary stained mount to show the presence of Barr body in human female cheek cells.

INSTRUCTIONS FOR PRACTICAL PAPER

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

Pass Marks: 35%

1.	5 Museum specimens/slides from Protozoa to Hemichordata for identification, classification and short morphological note.	15
2.	Identification of 2 permanent stained slides of mitosis/meiosis.	6
3.	Identification of cell organelle form electron micrograph.	4
4.	To write principle of light and electron microscope/temporary stained mount to show the presence of Barr body.	5
5.	Viva-Voce	5
6.	Practical note book	5

***

SEMESTER-II

PAPER-III: ECOLOGY

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. Ecological Hierarchy, Sub divisions of ecology, Relation and scope of Ecology.

2. Environmental Factors: Liebig's law of minimum, Shelford's law of tolerance , Concept of limiting factors , Physical factors of the environment and their effect on animals Topography, light , temperature , water, Humidity.

3. Population: Characteristics–Size & density, Natality, Mortality, Dispersion, Age structure. Biotic potential and Environment resistance, r and K strategies

4. Population Dynamics & Regulation: Population Growth curves (I and J) , Survivorship curves, Population cycles - Density dependent and Density independent, Regulation of population.

SECTION-B

5. Biotic Community:General Characteristics, Food chain (Linear and Y-shaped), Food web, Flow of Energy, Ecological Pyramids, Productivity. Niche: Niche Concept, Types of Niche–Spatial, Trophic , Multidimensional; Gause's Principle, Lotka-Volterra equation for competition, Ecotone and edge effect

6. Biotic Interactions: Intra specific interactions and Inter specific interactions(Antagonism : Competition, Predation, Parasitism, Ammensalism; Beneficial : Commensalism , Proto cooperation, Mutualism).

7. Wild life: Importance, need of conservation, conservation strategies, projects for endangered species, project tiger, crocodile breeding project, Gir lion sanctuary project, vulture breeding project.

Books Recommended

1. Kormondy E. J., *Concepts of Ecology,* Englewood Cliffs, N.J. Prentice Hall Inc., 1975.
2. Kreb C. J., *Ecology,* Harper & Row, New York, 1982.
3. E.P. Odum, *Fundamentals of Ecology,* W.B. Saunders Co., Philadelphia, 1995.
4. Dhami P. S. & Dhami J. K., *Invertebrates,* R. Chand & Co., New Delhi, 2001.
5. Barnes, R.D., *Invertebrates Zoology,* W.B. Saunders Philadelphia, 1999.
6. Cooper, G.M., Hausman, R.E. (2009) The Cell: A molecular approach. ASM Press and Sinauer Associates (Fifth Edition).
7. Karp, G. (2010). Cell and Molecular Biology: Concepts and Experiments (Sixth Edition) John Wiley & Sons Inc.

PAPER-IV : CHORDATES

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 (8 to 10 lines) 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. Brief classification of Chordata, Chordate characters, Origin of Chordata

2. Protochordata: General characteristics, affinities of Hemichordata, Urochordata and Cephalochordata; Study of larval forms in protochordates; Retrogressive metamorphosis in Urochordata
3. Advanced features of vertebrates over Protochordata
4. Agnatha: General characteristics, External features of *Petromyzon*.
5. Pisces: General characteristics and outline classification (up to order), General characteristics of Chondrichthyes and Osteichthyes, Scales and fins in fishes. Parental care in fishes, Migration, Swim bladder, Osmoregulation in fishes, Economic importance of fishes
6. Origin of Tetrapoda (Evolution of terrestrial ectotherms)
Amphibia: General character, Neoteny and Paedogenesis, Parental care in Amphibia.

SECTION-B

7. Higher Chordata: Salient features, of various Higher chordate groups as covered under respective taxonomic groups.
8. Reptilia: A brief knowledge of extinct reptiles. Poisonous and non- poisonous snakes. Poison apparatus of snake. Snake venom and anti-venom. Evolution and Adaptive radiation in reptiles.
9. Aves: General characteristics, Origin and Ancestry of birds, Archaeopteryx-a connecting link, Flightless birds and their distribution. Principles and aerodynamics of flight, Flight adaptations in birds, Perching mechanism, Bird migration.
10. Mammalia: General characters, Origin and ancestry, affinities of Prototheria. Adaptive radiation, Dentition in mammals.

Books Recommended

1. Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford university press.
2. Pough H. Vertebrate life, VIII Edition, Pearson International.
3. Darlington P.J. The Geographical Distribution of Animals, R.E. Krieger Pub. Co.
4. Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.

PRACTICAL PAPER (Pertaining to paper III & IV)

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

I. Classification up to orders, excepting Pisces and Aves where classification up to subclasses only is required, habits, habitats, external characters and economic importance (if any) of the following animals:

1. Urochordata : *Herdmania,Doliolum, Salpa* and *Oikopleura*.
2. Cephalochordata: *Amphioxus*.
3. Cyclostomata: *Petromyzon*, *Myxine*
4. Chondrichthyes :*Zygaena* (Hammer headed shark), *Pristis* (saw fish), *Narcine* (Electric ray), *Trygon*, *Rhinobatus* and *Chimaera* (Rabbit fish).
5. Actinopterygii :*Polypterus, Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Tetradon, Echeneis* and *Solea*.
6. Dipneusti (Dipnoi) :*Protopterus* (African lung fish).
7. Amphibia :*Uraeotyphlus, Necturus, Amphiuma, Amblystoma* and its Axolotl Larva,*Salamandra, Hyla and Rhacophorus*.
8. Reptilia :*Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Naja, Hydrus, Viper, Crocodilus, Gavialis, Chelone* (Turtle) and *Testudo* (Tortoise).
9. Aves :*Ardea, Anas, Milvus, Pavo, Tyto, Alcedo, Eudynamis* and *Casuarius*.
10. Mammalia :*Ornithorhynchus, Echidna, Macropus, Loris, Macaca, Manis, Hystrix, Funambulus, Herpestes* and *Pteropus*.

II. Study of following prepared slides : T.S. *Amphioxus* through various regions. Spicules, pharynx of *Herdmania* and pharynx of *Amphioxus*, Scales of fishes

III. Study of Types of beaks and claws of birds

IV. Use of key for Identification of poisonous and non-poisonous snakes

V. Preparation of Charts for Origin and Ancestry of Chordates and its various classes

VI. Study of an aquatic ecosystem: Measurement of temperature, turbidity, and pH.

VII. To study species composition, dominant species and population ratio using coloured beads

VIII. Plotting of survivorship curves from the hypothetical data.

IX. Study of morphological adaptations.

XI. Report on a visit to National Park/Biodiversity Park/Wild life sanctuary / Zoological garden.

INSTRUCTIONS FOR PRACTICAL PAPER

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

1. Museum Specimens/slides from Phylum Urochordata, Cephalochordata, Chondrichthyes, Actinopterygii, Dipnusti(Dipnoi), Amphibia, Reptilia, Aves,Mammalia. for identification, classification and morphological note.	10
2. To identify and write a note on beak / Claw of the given bird	2
3. To identify the poisonous/ non poisonous snake by key	2
4. Identification of morphological adaptation	4
5. Ecology experiment (out of VI-VIII)	10
5. Excursion note	4
6. Viva-voce	4
7. Practical note-book and charts	4

ਬੀ.ਏ ਭਾਗ–ਪਹਿਲਾ (ਸਮੈਸਟਰ)

(ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ)

2020-21, 2021-22 ਅਤੇ 2022-23 ਸੈਸ਼ਨਾਂ ਲਈ

ਸਮੈਸਟਰ ਪਹਿਲਾ

ਕੁਲ ਅੰਕ : 100
ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ : 25 ਅੰਕ
ਬਾਹਰੀ ਪਰੀਖਿਆ: 75 ਅੰਕ
ਸਮਾਂ : 3 ਘੰਟੇ

ਵਿਸ਼ੇ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 35
ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 09
ਬਾਹਰੀ ਪਰੀਖਿਆ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 26
(ਅਧਿਆਪਨ: 6 ਪੀਰੀਅਡ ਪ੍ਰਤੀ ਹਫ਼ਤਾ)

ਸਿਲੇਬਸ ਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਭਾਗ-ਓ-1: ਕਹਾਣੀ ਕੀ ਹੁੰਦੀ ਹੈ?

ਨਿੱਕੀ ਕਹਾਣੀ, ਲੰਮੀ ਕਹਾਣੀ, ਮਿੰਨੀ ਕਹਾਣੀ ਦੀ ਬਣਤਰ, ਸਰੂਪ ਅਤੇ ਆਪਸੀ ਵੱਖਰੇਵਾਂ 12 ਅੰਕ

ਭਾਗ ਓ-2: ਕਥਾ ਪੰਜਾਬ, ਸੰਪਾ. ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ, ਨੈਸ਼ਨਲ ਬੁੱਕ ਟ੍ਰਸਟ, ਇੰਡੀਆ (ਅਧਿਆਪਕ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਕਹਾਣੀ ਦੇ ਸਾਰ, ਤੱਤਸਾਰ, ਵਿਸ਼ੇ ਬਾਰੇ ਦੱਸੇਗਾ ਅਤੇ ਕਹਾਣੀ ਦੀ ਸਾਹਿਤਕ ਕਲਾ ਬਾਰੇ ਜਾਣੂੰ ਕਰਵਾਏਗਾ ਅਤੇ ਨਾਲ ਹੀ ਉਨ੍ਹਾਂ ਨੂੰ ਇਨ੍ਹਾਂ ਬਾਰੇ ਆਪਣੇ ਵਿਚਾਰ ਬਨਾਉਣ ਅਤੇ ਆਪਣਾ ਸਿਰਜਣਾਤਮਕ ਹੁੰਗਾਰਾ ਸਿਰਜਣ ਲਈ ਪ੍ਰੇਰਿਤ ਕਰੇਗਾ) 12 ਅੰਕ

ਭਾਗ-ਅ 1: ਪੰਜਾਬੀ ਲਿਖਣ ਕਲਾ: ਹੇਠ ਲਿਖੇ ਰੂਪਾਂ ਦਾ ਸਰੂਪ. ਆਪਸੀ ਨਿਖੇੜਾ ਅਤੇ ਵਿਹਾਰਕ ਅਭਿਆਸ

1) ਲੇਖ 2) ਪੈਰ੍ਹਾ 3) ਅਖ਼ਬਾਰੀ ਲੇਖ 4) ਮਿਡਲ 5) ਪ੍ਰੈਸ ਰਿਪੋਰਟ 6) ਖ਼ਬਰ 12 ਅੰਕ

(ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਲਈ ਅਸਾਈਨਮੈਂਟ ਦੇ ਤੌਰ 'ਤੇ ਵਿਦਿਆਰਥੀ ਨੂੰ ਇਨ੍ਹਾਂ ਰੂਪਾਂ ਨਾਲ ਸੰਬੰਧਿਤ 50 ਪੰਨਿਆਂ ਦੀ ਸਕਰੈਪ ਬੁੱਕ ਤਿਆਰ ਕਰਨ ਲਈ ਕਿਹਾ ਜਾਵੇਗਾ ਜਿਸ ਵਿਚ ਉਹ ਹਰ ਰੂਪ ਨਾਲ ਸੰਬੰਧਿਤ ਘੱਟ ਤੋਂ ਘੱਟ 4 ਲਿਖਤਾਂ ਲਿਖੇਗਾ ਅਤੇ ਉਸ ਦੇ ਆਧਾਰ 'ਤੇ ਅਸਾਈਨਮੈਂਟ ਦੇ ਅੰਕ ਲਗਾਏ ਜਾਣਗੇ।)

ਭਾਗ ਅ 2: ਲੇਖ ਰਚਨਾ: ਸਮਕਾਲ ਨਾਲ ਸੰਬੰਧਿਤ ਸਮਾਜਿਕ ਮਸਲਿਆਂ (ਸਮਾਜਿਕ ਨਿਆਂ, ਲਿੰਗਕ ਬਰਾਬਰੀ, ਧਰਮ-ਨਿਰਪੇਖਤਾ ਅਤੇ ਖੇਤਰਵਾਦ) ਬਾਰੇ, ਸਿੱਖਿਆ ਵਿਚ ਮਾਤ ਭਾਸ਼ਾ ਦੇ ਮਹੱਤਵ ਬਾਰੇ, ਵਿਗਿਆਨ ਸਿੱਖਿਆ ਤੇ ਮਾਤਭਾਸ਼ਾ, ਤਕਨੀਕੀ ਵਿਕਾਸ ਅਤੇ ਵਾਤਾਵਰਣ, ਅਜੋਕੀ ਗੀਤਕਾਰੀ ਵਿਚ ਹਿੰਸਾ, ਜਾਤਪਾਤ ਅਤੇ ਲੱਚਰਤਾ ਬਾਰੇ, ਸਾਈਬਰ-ਕ੍ਰਾਂਤੀ ਅਤੇ ਮਨੁੱਖੀ ਅਧਿਕਾਰਾਂ ਦੇ ਮਸਲੇ, ਇੰਟਰਨੈੱਟ ਦਾ ਪਾਸਾਰ ਦੀਆਂ ਮੁਸ਼ਕਿਲਾਂ, ਤਕਨੀਕੀ ਵਿਕਾਸ ਅਤੇ ਸਮਾਜਿਕ ਆਰਥਿਕ ਪਿਛੜੇਵਾਂ ਦੇ ਸੰਬੰਧ ਬਾਰੇ, ਆਨਲਾਈਨ ਅਧਿਆਪਨ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਅਤੇ ਸੰਭਾਵਨਾਵਾਂ ਬਾਰੇ, ਸਿੱਖਿਆ ਦੇ ਆਨਲਾਈਨ ਮਾਧਿਅਮ ਦੀਆਂ ਸੰਭਾਵਨਾਵਾਂ ਤੇ ਸੀਮਾਵਾਂ ਬਾਰੇ, ਸਮਾਜਿਕ-ਮੀਡੀਆ ਦੀਆਂ ਸੰਭਾਵਨਾਵਾਂ ਤੇ ਸਮੱਸਿਆਵਾਂ ਬਾਰੇ, ਮੀਡੀਆ ਅਤੇ ਸਭਿਆਚਾਰ ਬਾਰੇ, ਪੰਜਾਬੀ ਸਭਿਆਚਾਰਕ ਵਿਰਾਸਤ ਅਤੇ ਸਭਿਆਚਾਰਕ ਤਬਦੀਲੀ ਬਾਰੇ, ਨੌਜਵਾਨ ਪੀੜੀ ਦੇ ਸੁਪਨੇ ਅਤੇ ਆਦਰਸ਼, ਬੇਰੁਜਗਾਰੀ ਅਤੇ ਪਰਵਾਸ, ਪੰਜਾਬੀਆ ਵਿਚ ਪਰਵਾਸ ਦੇ ਰੁਝਾਨ ਦੇ ਕਾਰਣਾਂ ਬਾਰੇ ਨਿਬੰਧ ਰਚਨਾ 09 ਅੰਕ

ਭਾਗ-ਏ: ਪਾਠਕ੍ਰਮ ਦੇ ਭਾਗ–ਓ ਅਤੇ ਭਾਗ-ਅ-1 (ਪੰਜਾਬੀ ਲਿਖਣ ਕਲਾ) ਵਾਲੇ ਭਾਗ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ। 30 ਅੰਕ

ਅੰਕ-ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਪਾਠਕ੍ਰਮ ਦੇ ਦੋ ਭਾਗ ਓ ਅਤੇ ਅ ਹਨ ਪਰ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਤਿੰਨ ਭਾਗ ਓ, ਅ ਅਤੇ ਏ ਹੋਣਗੇ।
2. ਪੇਪਰ ਨੂੰ ਤਿੰਨ ਭਾਗਾਂ ਓ, ਅ ਅਤੇ ਏ ਵਿੱਚ ਵੰਡਿਆ ਜਾਵੇਗਾ।
3. ਭਾਗ ਓ-1) ਵਿਚੋਂ 2 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਇੱਕ ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਦੇਵੇਗਾ। ਇਹ ਪ੍ਰਸ਼ਨ ਦਿੱਤੇ ਗਏ ਸਾਹਿਤ ਰੂਪਾਂ ਦੇ ਸਰੂਪ, ਤੱਤਾਂ ਬਾਰੇ ਜਾਂ ਇਨ੍ਹਾਂ ਵਿਚਕਾਰ ਸਮਾਨਤਾਵਾਂ ਜਾਂ ਅੰਤਰਾਂ ਬਾਰੇ ਹੋਣਗੇ। 12 ਅੰਕ
4. ਭਾਗ ਓ-2 ਵਿੱਚੋਂ ਤਿੰਨ ਕਹਾਣੀਆਂ ਦੇ ਕੇ ਕਿਸੇ ਇੱਕ ਕਹਾਣੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ/ ਪਾਠਕ ਦਾ ਹੁੰਗਾਰਾ, ਪਾਠਕੀ ਵਿਆਖਿਆ ਕਰਨ ਲਈ ਕਿਹਾ ਜਾਵੇਗਾ। 12 ਅੰਕ

5. ਭਾਗ ਅ-1 ਵਿਚ ਦਰਸਾਏ ਗਏ ਲੇਖਣੀ ਰੂਪਾਂ ਦੇ ਸਰੂਪ ਅਤੇ ਇਨ੍ਹਾਂ ਵਿਚਕਾਰ ਨਿਖੇੜੇ ਬਾਰੇ ਤਿੰਨ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੂੰ ਕਿਸੇ ਇੱਕ ਸਵਾਲ ਦਾ ਉੱਤਰ ਲਿਖਣ ਲਈ ਕਿਹਾ ਜਾਵੇਗਾ। 12 ਅੰਕ

6. ਭਾਗ ਅ-2 ਦਰਸਾਏ ਵਿਸ਼ਿਆਂ ਵਿਚੋਂ ਕਿਸੇ ਵਿਸ਼ੇ ਤੇ ਨਿਬੰਧ ਲਿਖਣ ਲਈ ਕਿਹਾ ਜਾਵੇਗਾ। (ਤਿੰਨ ਵਿੱਚੋਂ ਇੱਕ) 09ਅੰਕ

6. ਭਾਗ-ਏ ਇਸ ਭਾਗ ਵਿਚ ਭਾਗ ੳ) ਅਤੇ ਭਾਗ ਅ-1 (ਪੰਜਾਬੀ ਲਿਖਣ ਕਲਾ) ਵਿੱਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 15 (ਭਾਗ ੳ ਵਿਚੋਂ 10 ਅਤੇ ਭਾਗ ਅ-1 (ਪੰਜਾਬੀ ਲਿਖਣ ਕਲਾ) ਵਿੱਚੋਂ 5) ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਸੰਖੇਪ ਉੱਤਰ ਦੇਣੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 2 ਅੰਕ ਹੋਣਗੇ। 15x2=30 ਅੰਕ

ਸਹਾਇਕ ਪਾਠ-ਸਮੱਗਰੀ

1. **ਰਾਜਿੰਦਰਪਾਲ ਸਿੰਘ, ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਸਾਹਿਤ ਰੂਪਾਕਾਰ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ**
2. ਓਮ ਪ੍ਰਕਾਸ਼ ਵਸਿਸ਼ਟ, ਕੋਸ਼-ਵਿਗਿਆਨ ਅਤੇ ਪੰਜਾਬੀ ਕੋਸ਼ਕਾਰੀ, ਨੈਨਸੀ ਪਬਲਿਸ਼ਰਜ਼. ਚੰਡੀਗੜ੍ਹ
3. ਪਰਮਜੀਤ ਸਿੰਘ ਸਿੱਧੂ, ਕੋਸ਼ਕਾਰੀ-ਕਲਾ ਅਤੇ ਪੰਜਾਬੀ ਕੋਸ਼ਕਾਰੀ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
4. ਅਮਰਜੀਤ ਸਿੰਘ ਵੜੈਚ, ਹੁਣ ਤੁਸੀਂ ਖ਼ਬਰਾਂ ਸੁਣੋ

ਬੀ.ਏ. ਭਾਗ-ਪਹਿਲਾ (ਸਮੈਸਟਰ)

(ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ)

2020-21, 2021-22 ਅਤੇ 2022-23 ਸੈਸ਼ਨ ਲਈ

ਸਮੈਸਟਰ ਦੂਜਾ

ਕੁਲ ਅੰਕ : 100 — ਵਿਸ਼ੇ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 35
ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ : 25 ਅੰਕ — ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 09
ਬਾਹਰੀ ਪਰੀਖਿਆ: 75 ਅੰਕ — ਬਾਹਰੀ ਪਰੀਖਿਆ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 26
ਸਮਾਂ : 3 ਘੰਟੇ — (ਅਧਿਆਪਨ: 6 ਪੀਰੀਅਡ ਪ੍ਰਤੀ ਹਫ਼ਤਾ)

ਸਿਲੇਬਸ ਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਭਾਗ-ਓ-1: ਸਾਹਿਤਕ ਨਿਬੰਧ, ਲਲਿਤ ਨਿਬੰਧ, ਰੇਖਾ ਚਿੱਤਰ, ਸੰਸਮਰਣ (ਯਾਦਾਂ), ਡਾਇਰੀ ਦਾ ਸਰੂਪ, ਸਿਧਾਂਤ ਤੇ ਆਪਸੀ ਨਿਖੇੜਾ
(ਅਧਿਆਪਕ ਇਨ੍ਹਾਂ ਵਾਰਤਕ ਰੂਪਾਂ ਦੀ ਜਾਣ-ਪਛਾਣ ਕਰਵਾਏਗਾ, ਇਨ੍ਹਾਂ ਦੇ ਤੱਤਾਂ, ਲੱਛਣਾਂ ਅਤੇ ਆਪਸੀ ਵਖਰੇਵਿਆਂ ਬਾਰੇ ਦਿਆਰਥੀਆਂ ਨੂੰ ਜਾਣੂੰ ਕਰਵਾਏਗਾ। 12 ਅੰਕ

ਭਾਗ ਓ-2: ਸੂਰਜ ਮੰਦਰ ਦੀਆਂ ਪੌੜੀਆਂ (ਸੁਰਜੀਤ ਪਾਤਰ), ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
(ਅਧਿਆਪਕ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿਬੰਧ ਵਿਚਲੇ ਭਾਵਾਂ-ਵਿਚਾਰਾਂ ਅਤੇ ਨਿਬੰਧ ਦੀ ਸਾਹਿਤਕ ਕਲਾ ਤੇ ਲੇਖਕ ਦੀ ਭਾਸ਼ਾਈ ਮੁਹਾਰਤ ਬਾਰੇ ਜਾਣੂੰ ਕਰਵਾਏਗਾ ਅਤੇ ਨਾਲ ਹੀ ਉਨ੍ਹਾਂ ਨੂੰ ਇਨ੍ਹਾਂ ਬਾਰੇ ਆਪਣੇ ਵਿਚਾਰ ਬਨਾਉਣ ਅਤੇ ਆਪਣਾ ਸਿਰਜਣਾਤਮਕ ਹੁੰਗਾਰਾ ਸਿਰਜਣ ਲਈ ਪ੍ਰੇਰਿਤ ਕਰੇਗਾ) 12 ਅੰਕ

ਭਾਗ-ਅ-1 **ਕੋਸ਼: ਸਿਧਾਂਤ, ਸਰੂਪ ਅਤੇ ਵਰਤੋਂ: ਹੇਠ ਲਿਖੇ ਕੋਸ਼ਾਂ ਦੇ ਸਰੂਪ, ਇਨ੍ਹਾਂ ਵਿਚਲੇ ਨਿਖੇੜੇ ਬਾਰੇ ਅਤੇ ਉਨ੍ਹਾਂ ਦੀ ਵਰਤੋਂ ਬਾਰੇ ਸਿਖਲਾਈ ਦਿੱਤੀ ਜਾਵੇਗੀ। ਅਧਿਆਪਕ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ** ਵੱਖ ਵੱਖ ਤਰ੍ਹਾਂ ਦੇ ਕੋਸ਼ਾਂ ਦੇ ਸਰੂਪ, ਉਨ੍ਹਾਂ ਵਿਚਲੀ ਵਿਉਂਤ; ਵਿਸ਼ਾ ਪਾਸਾਰ, ਮਕਸਦ, ਵਰਤੋਂ, ਵਰਤੋਂ ਵਿਧੀ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇਵੇਗਾ)

1) ਵਿਸ਼ਵਕੋਸ਼ 2) ਦੋ ਭਾਸ਼ਾਈ ਸ਼ਬਦ ਕੋਸ਼ 3) ਵਿਸ਼ਾ ਕੋਸ਼ 4) ਸਮਭਾਸ਼ੀ ਕੋਸ਼ 5) ਤਕਨੀਕੀ ਸ਼ਬਦਾਵਲੀ ਕੋਸ਼ 6) ਵਿਕੀਪੀਡੀਆ 12 ਅੰਕ

ਭਾਗ ਅ-2: ਅਖ਼ਬਾਰ ਲਈ ਪ੍ਰੈੱਸ ਰਿਪੋਰਟ (ਕਿਸੇ ਸਾਹਿਤਕ, ਸਭਿਆਚਾਰਕ, ਅਕਾਦਮਿਕ ਸਮਾਗਮ, ਕਾਨਫ਼ਰੰਸ ਜਾਂ ਸੈਮੀਨਾਰ ਦੀ ਪ੍ਰੈਸ ਰਿਪੋਰਟ ਲਿਖਣ ਦੀ ਸਿਖਲਾਈ) ਇਸ ਵਿਚ ਅਧਿਆਪਕ ਵੱਖ ਵੱਖ ਤਰ੍ਹਾਂ ਦੇ ਆਯੋਜਨਾ ਬਾਰੇ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਜਾਣੂੰ ਕਰਵਾਏਗਾ ਅਤੇ ਇਨ੍ਹਾਂ ਸਮਾਗਮਾਂ ਵਿਚਲੇ ਅੰਤਰ ਨੂੰ ਸਪਸ਼ਟ ਕਰੇਗਾ ਤਾਂ ਕਿ ਵਿਦਿਆਰਥੀ ਉਨ੍ਹਾਂ ਦੀ ਕਲਪਨਾ ਕਰ ਸਕਣ। ਅਧਿਅਪਕ ਇਨ੍ਹਾਂ ਆਯੋਜਨਾ ਵਿਚ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸ਼ਾਮਿਲ ਹੋਣ ਲਈ ਉਤਸਾਹਿਤ ਕਰੇਗਾ ਅਤੇ ਉਨ੍ਹਾਂ ਆਪਣੀ ਵਿਚ ਅਗਵਾਈ ਵਿਚ ਇਨ੍ਹਾਂ ਆਯੋਜਨਾ ਵਿਚ ਲੈ ਕੇ ਜਾਵੇਗਾ। **9 ਅੰਕ**

(ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਲਈ ਅਸਾਈਨਮੈਂਟ ਦਾ ਕਾਰਜ ਪਾਠਕ੍ਰਮ ਦੇ ਇਸ ਭਾਗ ਨਾਲ ਸੰਬੰਧਿਤ ਕਰਵਾਇਆ ਜਾਵੇਗਾ। ਵਿਦਿਆਰਥੀ ਇੱਕ ਸਕਰੈਪ ਬੁੱਕ ਤਿਆਰ ਕਰੇਗਾ ਜਿਸ ਵਿਚ ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਸਾਹਿਤ, ਸਭਿਆਚਾਰ, ਲੋਕਧਾਰਾ ਤੋਂ ਇਲਾਵਾ ਆਪਣੇ ਹੋਰ ਅਧਿਐਨ ਵਿਸ਼ਿਆਂ ਨਾਲ ਸੰਬੰਧਿਤ ਉਪਲਬਧ ਕੋਸ਼ੀ ਇੰਦਰਾਜ਼ ਚਿਪਕਾਏਗਾ ਅਤੇ ਜਿੱਥੋਂ ਤਕ ਸੰਭਵ ਹੋਵੇ ਖ਼ੁਦ ਇੰਦਰਾਜ਼ ਤਿਆਰ ਕਰੇਗਾ। ਅਧਿਆਪਕ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਖ਼ੁਦ ਇੰਦਰਾਜ਼ ਤਿਆਰ ਕਰਨ ਲਈ ਉਤਸਾਹਿਤ ਕਰਨਗੇ। ਉਪਰੋਕਤ ਵੱਖ ਵੱਖ ਤਰ੍ਹਾਂ ਦੇ ਕੋਸ਼ਾਂ ਵਿਚੋਂ ਹਰ ਇੱਕ ਦੀਆਂ ਘੱਟ ਤੋਂ ਘੱਟ 4 ਇੰਦਰਾਜ਼ ਸਕਰੈਪ ਬੁੱਕ ਵਿਚ ਚਿਪਕਾਏ/ਲਿਖੇ ਜਾਣਗੇ)

ਭਾਗ-ਏ ਉਪਰੋਕਤ ਪਾਠਕ੍ਰਮ ਤੇ ਅਧਾਰਤ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ। **30 ਅੰਕ**

ਅੰਕ-ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਪਾਠਕ੍ਰਮ ਦੇ ਦੋ ਭਾਗ ਓ ਅਤੇ ਅ ਹਨ ਪਰ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਤਿੰਨ ਭਾਗ ਓ, ਅ ਅਤੇ ਏ ਹੋਣਗੇ।
2. ਪੇਪਰ ਨੂੰ ਤਿੰਨ ਭਾਗਾਂ ਓ, ਅ ਅਤੇ ਏ ਵਿੱਚ ਵੰਡਿਆ ਜਾਵੇਗਾ।
3. ਭਾਗ ਓ-1 ਵਿਚ ਵਿਚੋਂ ਵਾਰਤਕ ਰੂਪਾਂ ਦੇ ਸਰੂਪ ਅਤੇ ਉਨ੍ਹਾਂ ਦੇ ਆਪਸੀ ਨਿਖੇੜੇ ਬਾਰੇ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਦੋਵਾਂ ਵਿਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਦਾ ਵਿਸਤ੍ਰਿਤ ਉੱਤਰ ਦੇਣਾ ਹੋਵਗਾ। 12 ਅੰਕ

4. ਭਾਗ ਓ-2 ਵਿਚ ਲਗਾਈ ਗਈ ਪਾਠ ਪੁਸਤਕ ਵਿਚੋਂ ਕਿਸੇ ਇਕ ਨਿਬੰਧ ਦਾ ਵਿਸ਼ਾ/ਸਾਰ/ ਨਿਬੰਧ ਵਿਚਲੇ ਵਿਚਾਰਾਂ ਬਾਰੇ ਪਾਠਕ ਦਾ ਹੁੰਗਾਰਾ (ਤਿੰਨ ਵਿੱਚੋਂ ਇੱਕ) 12 ਅੰਕ

4. ਭਾਗ ਅ-1: ਵਿੱਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਤਿੰਨਾਂ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਹੋਵੇਗਾ। ਇਹ ਪ੍ਰਸ਼ਨ ਵੱਖ ਵੱਖ ਤਰ੍ਹਾਂ ਦੇ ਕੋਸ਼ਾਂ ਦੇ ਸਰੂਪ, ਉਨ੍ਹਾਂ ਵਿਚਲੀ ਵਿਉਂਤ, ਵਿਸ਼ਾ ਪਾਸਾਰ, ਮਕਸਦ, ਵਰਤੋਂ, ਵਰਤੋਂ ਵਿਧੀ ਬਾਰੇ ਹੋਣਗੇ। 12 ਅੰਕ

5 ਅ-2 ਦਰਸਾਏ ਵਿਸ਼ਿਆਂ ਵਿਚੋਂ ਕਿਸੇ ਵਿਸ਼ੇ 'ਤੇ ਕੋਈ ਕਾਲਪਨਿਕ ਆਯੋਜਨ ਦਾ ਵੇਰਵਾ ਦੇ ਕੇ ਪ੍ਰੈੱਸ ਰਿਪੋਰਟ ਲਿਖਣ ਲਈ ਕਿਹਾ ਜਾਵੇਗਾ। (ਤਿੰਨ ਵਿੱਚੋਂ ਇੱਕ) 09 ਅੰਕ

6.. ਭਾਗ-ਏ ਵਿਚ ਪਾਠਕ੍ਰਮ ਦੇ ਭਾਗ ਓ ਦੇ ਦੋਵੇਂ ਭਾਗਾਂ ਅਤੇ ਭਾਗ ਅ-1 (ਕੋਸ਼ ਸਿਧਾਂਤ ਸਰੂਪ ਤੇ ਵਰਤੋਂ) ਵਾਲੇ ਭਾਗ ਵਿੱਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 15 (ਭਾਗ ਓ ਵਿੱਚੋਂ 10 ਅਤੇ ਭਾਗ ਅ-2 ਵਿੱਚੋਂ 5) ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਸੰਖੇਪ ਉੱਤਰ ਦੇਣੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 2 ਅੰਕ ਹੋਣਗੇ। 15x2=30 ਅੰਕ

ਸਹਾਇਕ ਪਾਠ-ਸਮੱਗਰੀ

1. **ਰਾਜਿੰਦਰਪਾਲ ਸਿੰਘ, ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਸਾਹਿਤ ਰੂਪਾਕਾਰ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ**
2. **ਅਬਨਾਸ਼ ਕੌਰ, ਪੰਜਾਬੀ ਰੇਖਾ ਚਿੱਤਰ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ**
3. **ਸਤਿੰਦਰ ਸਿੰਘ, ਵਿਹਾਰਕ ਸਮੀਖਿਆ: ਕਵਿਤਾ ਤੇ ਵਾਰਤਕ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ**
4. **ਪਰਮਿੰਦਰ ਸਿੰਘ, ਸਾਹਿਤ ਦੇ ਰੂਪ, ਲਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ**

ਮੀਡੀਆ-34

ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਮੁੱਢਲਾ ਗਿਆਨ) ਭਾਗ-ਪਹਿਲਾ

(ਅੰਡਰ-ਗ੍ਰੈਜੂਏਟ ਪੱਧਰ ਦੇ ਸਾਰੇ ਕੋਰਸਾਂ ਲਈ ਸਾਂਝਾ ਸਿਲੇਬਸ)

2020-21, 2021-22 ਅਤੇ 2022-23 ਸੈਸ਼ਨ ਲਈ

ਰੈਗੂਲਰ ਵਿਦਿਆਰਥੀਆਂ ਲਈ

ਸਮੈਸਟਰ ਪਹਿਲਾ

ਕੁਲ ਅੰਕ : 100 — ਵਿਸ਼ੇ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 35

ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ : 25 ਅੰਕ — ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 09

ਬਾਹਰੀ ਪਰੀਖਿਆ: 75 ਅੰਕ — ਬਾਹਰੀ ਪਰੀਖਿਆ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 26

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

ਭਾਗ-ੳ (1). ਗੁਰਮੁਖੀ ਵਰਣਮਾਲਾ ਤੇ ਲੇਖਣ-ਪ੍ਰਬੰਧ

(ੳ) ਅੱਖਰ ਸਿੱਖਿਆ: ਤਰਤੀਬਵਾਰ ਤੇ ਭੁਲਾਵੇਂ ਅੱਖਰ।

(ਅ) ਅੱਖਰ ਬਣਤਰ: ਅੱਖਰ ਰੂਪ ਤੇ ਲੇਖਣ ਦੇ ਨਿਯਮ। 10 ਅੰਕ

(2). ਗੁਰਮੁਖੀ ਅੱਖਰ ਤੇ ਪੰਜਾਬੀ ਧੁਨੀਆਂ ਦਾ ਪ੍ਰਬੰਧ

(ੳ) ਸਵਰ ਤੇ ਵਿਅੰਜਨ: ਵਰਗੀਕਰਨ ਤੇ ਉਚਾਰਨ।

(ਅ) ਸਵਰ ਸੂਚਕ ਅੱਖਰਾਂ ਤੇ ਧੁਨੀਆਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ।

(ੲ) ਵਿਅੰਜਨ ਸੂਚਕ ਅੱਖਰਾਂ ਤੇ ਧੁਨੀਆਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ।

(ਸ) ਲਗਾਂ-ਮਾਤਰਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ।

(ਹ) ਲਗਾਖਰਾਂ ਦੀ ਪਛਾਣ। 10 ਅੰਕ

ਭਾਗ- ਅ (1). ਲਿਪੀ ਦੇ ਅੱਖਰਾਂ ਦੀ ਵਰਤੋਂ ਦੇ ਨਿਯਮ

(ੳ) ਪੂਰੇ ਤੇ ਅੱਧੇ ਅੱਖਰਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ।

(ਅ) ਸਵਰ ਸੂਚਕ ਅੱਖਰਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ।

(ੲ) ਸਵਰ ਵਾਹਕਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ।

(ਸ) ਮਾਤਰਾ ਤੇ ਸਵਰ ਵਾਹਕਾਂ ਦੀ ਸਾਂਝੀ ਵਰਤੋਂ।

(ਹ) ਮਾਤਰਾ ਦੀ ਵਿਅੰਜਨ ਸੂਚਕਾਂ ਨਾਲ ਵਰਤੋਂ। 10 ਅੰਕ

(2). ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਨਾਲ ਜਾਣ ਪਛਾਣ

(ੳ) ਗਿਣਤੀ

(ਅ) ਹਫ਼ਤੇ ਦੇ ਦਿਨ

(ੲ) ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ

(ਸ) ਰੰਗਾਂ ਦੇ ਨਾਂ

(ਹ) ਫਲਾਂ-ਸਬਜ਼ੀਆਂ ਦੇ ਨਾਂ

(ਕ) ਪਸ਼ੂ-ਛਪੰਛੀਆਂ ਦੇ ਨਾਂ

(ਖ) ਪੰਜਾਬੀ ਰਿਸ਼ਤਾ-ਨਾਤਾ ਪ੍ਰਬੰਧ ਦੀ ਸ਼ਬਦਾਵਲੀ

(ਗ) ਘਰੇਲੂ ਵਸਤਾਂ ਦੀ ਸ਼ਬਦਾਵਲੀ 15 ਅੰਕ

ਭਾਗ-ਏ ਸਾਰੇ ਪਾਠਕ੍ਰਮ ਤੇ ਆਧਾਰਿਤ ਆਬਜੈਕਟਿਵ ਟਾਈਪ /ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ। 15x2=30 ਅੰਕ

ਅੰਕ ਵੰਡ ਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਵਿਦਿਆਰਥੀ ਪਹਿਲੀ ਵਾਰ ਗੁਰਮੁਖੀ ਲਿਪੀ ਸਿੱਖ ਰਹੇ ਹਨ। ਹੋ ਸਕਦਾ ਹੈ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੋਂ ਅਨਜਾਣ ਹੋਣ। ਸੋ ਪ੍ਰਸ਼ਨਾਂ ਦਾ ਪੱਧਰ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਸੀਮਾ ਨੂੰ ਧਿਆਨ ਵਿੱਚ ਰੱਖ ਕੇ ਨਿਸ਼ਚਤ ਕੀਤਾ ਜਾਵੇ।
2. ਸਾਰੇ ਭਾਗਾਂ ਵਿੱਚੋਂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ।
3. ਸਰਲ ਤੇ ਸਪਸ਼ਟ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ।
4. ਵਰਣਾਤਮਕ ਪ੍ਰਸ਼ਨ ਨਾ ਪੁੱਛੇ ਜਾਣ।
5. ਵਿਦਿਆਰਥੀ ਨੂੰ ਲਿਪੀ ਦਾ ਬੋਧ ਕਰਵਾਉਣ ਲਈ ਧੁਨੀਆਂ, ਲਿਪੀ ਚਿੰਨ੍ਹਾਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਸਬੰਧੀ ਸੰਖੇਪ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ। ਲੋੜ ਅਨੁਸਾਰ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਛੋਟ ਜਾਂ ਚੋਣ ਦੇਣੀ ਲਾਜ਼ਮੀ ਹੈ।
6. ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਦੇ ਸਾਰੇ ਭਾਗਾਂ ਵਿੱਚੋਂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ। ਲੋੜ ਅਨੁਸਾਰ ਚੋਣ ਅਤੇ ਛੋਟ ਦਿੱਤੀ ਜਾਵੇ।

ਸਹਾਇਕ ਪਾਠ ਸਮੱਗਰੀ

1. ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ, ਆਓ ਪੰਜਾਬੀ ਸਿਖੀਏ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2009. (ਹਿੰਦੀ ਤੋਂ ਪੰਜਾਬੀ ਸਿੱਖਣ ਲਈ)
2. ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ, ਗੁਰਮੁਖੀ ਸਿੱਖੋ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2011. (ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਸਿਖਣ ਲਈ)
3. ਸੀਤਾ ਰਾਮ ਬਾਹਰੀ, ਪੰਜਾਬੀ ਸਿਖੀਏ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2002 (ਹਿੰਦੀ)
4. ਰਾਜਵਿੰਦਰ ਸਿੰਘ, ਪੰਜਾਬੀ ਗਿਆਨ ਸੀ.ਡੀ. (ਕੰਪਿਊਟਰ ਐਪਲੀਕੇਸ਼ਨ ਟੂ-ਲਰਨ ਐਂਡ ਟੀਚ ਪੰਜਾਬੀ), ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ 2011.
5. Hardev Bahri, Teach Yourself Punjabi, Publication Bureau, Punjabi University, Patiala, 2011.
6. Henry A. Gleason and Harjeet Singh Gill, A Start in Punjabi, Publication Bureau, Punjabi University, Patiala, 1997.
7. Ujjal Singh Bahri and Paramjit Singh Walia, Introductory Punjabi, Publication Bureau, Punjabi University, Patiala, 2003.

ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਮੁੱਢਲਾ ਗਿਆਨ) ਭਾਗ-ਪਹਿਲਾ

(ਅੰਡਰ-ਗ੍ਰੈਜੂਏਟ ਪੱਧਰ ਦੇ ਸਾਰੇ ਕੋਰਸਾਂ ਲਈ ਸਾਂਝਾ ਸਿਲੇਬਸ)

2020-21, 2021-22 ਅਤੇ 2022-23 ਸੈਸ਼ਨ ਲਈ

ਰੈਗੂਲਰ ਵਿਦਿਆਰਥੀਆਂ ਲਈ

ਕੁਲ ਅੰਕ : 100 ਵਿਸ਼ੇ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 35

ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ : 25 ਅੰਕ ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 09

ਬਾਹਰੀ ਪਰੀਖਿਆ: 75 ਅੰਕ ਬਾਹਰੀ ਪਰੀਖਿਆ ਵਿਚੋਂ ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ : 26

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

ਭਾਗ-ੳ (1). ਸ਼ਬਦ ਪ੍ਰਬੰਧ: ਸ਼ਬਦ ਜੋੜਾਂ ਦੀ ਵਰਤੋਂ

(ੳ) ਦੋ ਅੱਖਰੀ ਸ਼ਬਦਾਂ ਦੇ ਸ਼ਬਦ-ਜੋੜ

(ਅ) ਤਿੰਨ ਅੱਖਰੀ ਸ਼ਬਦਾਂ ਦੇ ਸ਼ਬਦ-ਜੋੜ

(ਏ) ਬਹੁ ਅੱਖਰੀ ਸ਼ਬਦਾਂ ਦੇ ਸ਼ਬਦ-ਜੋੜ 15 ਅੰਕ

(2). ਸ਼ਬਦਾਂ ਦੀਆਂ ਸ਼ਰੇਣੀਆਂ ਤੇ ਵਿਆਕਰਨਕ ਵਰਗਾਂ ਦੀ ਪਛਾਣ

(ੳ) ਸ਼ਬਦਾਂ ਦੀਆਂ ਸ਼ਰੇਣੀਆਂ ਦਾ ਸਿਧਾਂਤ, ਪਛਾਣ ਤੇ ਵਰਤੋਂ (ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ ਆਦਿ)

(ਅ) ਵਿਆਕਰਨਕ ਵਰਗਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ (ਲਿੰਗ, ਵਚਨ, ਪੁਰਖ, ਕਾਲ ਆਦਿ) 10 ਅੰਕ

ਭਾਗ-ਅ (1). ਸ਼ਬਦ ਬਣਤਰਾਂ ਤੇ ਵਿਆਕਰਨਕ ਇਕਾਈਆਂ ਦਾ ਸਿਧਾਂਤ ਤੇ ਵਰਤੋਂ

(ੳ) ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰਾਂ ਦਾ ਸਿਧਾਂਤ, ਪਛਾਣ ਤੇ ਵਰਤੋਂ (ਅਗੇਤਰ, ਪਿਛੇਤਰ, ਸਮਾਸ, ਦੁਹਰੁਕਤੀ)

(ਅ) ਵਿਆਕਰਨਕ ਇਕਾਈਆਂ ਦਾ ਸਿਧਾਂਤ, ਪਛਾਣ ਤੇ ਵਰਤੋਂ (ਵਾਕੰਸ਼, ਉਪ-ਵਾਕ ਤੇ ਵਾਕ)

(ਏ) ਸ਼ਬਦਾਂ ਦਾ ਵਿਆਕਰਨਕ ਮੇਲ: ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ 10 ਅੰਕ

(2). ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋਂ। 10 ਅੰਕ

ਭਾਗ-ਏ ਸਾਰੇ ਪਾਠਕ੍ਰਮ ਤੇ ਆਧਾਰਿਤ ਆਬਜੈਕਟਿਵ ਟਾਈਪ /ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ। 15x2 = 30 ਅੰਕ

ਅੰਕ ਵੰਡ ਤੇ ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਵਿਦਿਆਰਥੀ ਪਹਿਲੀ ਵਾਰ ਗੁਰਮੁਖੀ ਲਿਖੀ ਸਿੱਖ ਰਹੇ ਹਨ। ਹੋ ਸਕਦਾ ਹੈ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੋਂ ਅਨਜਾਣ ਹੋਣ। ਸੋ ਪ੍ਰਸ਼ਨਾਂ ਦਾ ਪੱਧਰ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਸੀਮਾ ਨੂੰ ਧਿਆਨ ਵਿੱਚ ਰੱਖਕੇ ਨਿਸ਼ਚਤ ਕੀਤਾ ਜਾਵੇ।
2. ਸਾਰੇ ਭਾਗਾਂ ਵਿੱਚੋਂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ।
3. ਸਰਲ ਤੇ ਸਪਸ਼ਟ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ।
4. ਵਰਣਾਤਮਕ ਪ੍ਰਸ਼ਨ ਨਾ ਪੁੱਛੇ ਜਾਣ।
5. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਵਿਆਕਰਨ ਦੀ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਸਬੰਧੀ ਸੰਖੇਪ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ। ਲੋੜ ਅਨੁਸਾਰ ਵਿਦਿਆਰਥੀ ਨੂੰ ਛੋਟ ਜਾਂ ਚੋਣ ਦੇਣੀ ਲਾਜ਼ਮੀ ਹੈ।

ਸਹਾਇਕ ਪਾਠ ਸਮੱਗਰੀ

1. ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ, ਆਓ ਪੰਜਾਬੀ ਸਿਖੀਏ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2009. (ਹਿੰਦੀ ਤੋਂ ਪੰਜਾਬੀ ਸਿੱਖਣ ਲਈ)
2. ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ, ਗੁਰਮੁਖੀ ਸਿੱਖੋ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2011. (ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਸਿਖਣ ਲਈ)
3. ਸੀਤਾ ਰਾਮ ਬਾਹਰੀ, ਪੰਜਾਬੀ ਸਿਖੀਏ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2002 (ਹਿੰਦੀ)
4. ਰਾਜਵਿੰਦਰ ਸਿੰਘ, ਪੰਜਾਬੀ ਗਿਆਨ ਸੀ.ਡੀ. (ਕੰਪਿਊਟਰ ਐਪਲੀਕੇਸ਼ਨ ਟੂ-ਲਰਨ ਐਂਡ ਟੀਚ ਪੰਜਾਬੀ), ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ 2011.
5. Hardev Bahri, Teach Yourself Punjabi, Publication Bureau, Punjabi University, Patiala, 2011.
6. Henry A. Gleason and Harjeet Singh Gill, A Start in Punjabi, Publication Bureau, Punjabi University, Patiala, 1997.
7. Ujjal Singh Bahri and Paramjit Singh Walia, Introductory Punjabi, Publication Bureau, Punjabi University, Patiala, 2003.

OUTLINE FOR THE SYLLABUS OF A MODULE ON
DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION

Session: 2016-17, 2017-18 & 2018-19

Continued for Sessions 2019-2020, 2020-2021 & 2021-2022

(FOR ALL UNDERGRADUATE COURSES)

Note: This is a compulsory qualifying paper, which the students have to study and qualify during three years of their degree course.

REGULAR STUDENTS

Max Marks: 70 **Max Time: 3hrs.**
Internal Assessment: 30
Total Marks 100 **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 7 marks. Section C will consist of 14 short answer type of 2 marks each.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any three questions from section A and any three questions from section 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 three questions from the respective sections of the syllabus. Each question shall carry 15 marks. Section C will consist of 20 short answer type of 2 marks each.

INSTRUCTIONS FOR THE CANDIDATES

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

SECTION A

UNIT: I – Problem of Drug Abuse: Concept and Overview; Types of Drug Often Abused

(a) Concept and Overview

What are drugs and what constitutes Drug Abuse?

Prevalence of menace of Drug Abuse

How drug Abuse is different from Drug Dependence and Drug Addiction?

Physical and psychological dependence- concepts of drug tolerance

(b) Introduction to drugs of abuse: Short Term, Long term effects & withdrawal symptoms

Stimulants: Amphetamines, Cocaine, Nicotine

Depressants: Alcohol, Barbiturates- Nembutal, Seconal, Phenobarbital Benzodiazepines –Diazepam, Alprazolam, Flunitrazepam

Narcotics: Opium, morphine, heroin

Hallucinogens: Cannabis & derivatives (marijuana, hashish, hash oil)

Steroids

Inhalants

UNIT: II –Nature of the Problem

Vulnerable Age Groups

Signs and symptoms of Drug Abuse

(a)- Physical indicators

(b)- Academic indicators

(c)- Behavioral and Psychological indicators

SECTION B

UNIT: III – Causes and Consequences of Drug Abuse

a) Causes

Physiological

Psychological

Sociological

b) Consequences of Drug Abuse

For individuals

For families

For society & Nation

Unit: IV- Management & Prevention of Drug Abuse

Management of Drug Abuse

Prevention of Drug Abuse

Role of Family, School, Media, Legislation & Deaddiction Centers

Suggested readings

1. Kapoor.T. (1985) Drug Epidemic among Indian Youth, New Delhi: Mittal Pub
2. Modi, Ishwar andModi, Shalini (1997) Drugs: Addiction and Prevention,Jaipur: Rawat Publication.
3. Ahuja, Ram,(2003),Social Problems in India, Rawat Publications: Jaipur
4. 2003 National Household Survey of Alcohol and Drug Abuse. New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
5. World Drug Report 2011, United Nations Office of Drug and Crime.
6. World Drug Report 2010, United nations Office of Drug and Crime.
7. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
8. The Narcotic Drugs and Psychotropic Substances Act, 1985, (New Delhi: Universal, 2012)

Pedagogy of the Course Work:

The pedagogy of the course work will consist of the following:
70% lectures (including expert lectures).
30% assignments, discussion and seminars and class tests.
Note: A visit to drug de-addiction centre could also be undertaken.