Paper: BIN-1001 **ENGLISH - I**

Note: (i) There will be one paper of **40 marks**, **5 marks** are reserved for the **Internal assessment** and **5 for the Practical work. Total is 50.**

(ii) The paper shall consist of Two Units, Unit I will be text specific and Unit II shall deal with different aspects of Communication and Language Skills.

(iii) For Unit I, the prescribed text is **Varieties of Expression** Ed. A.H.Tak. Foundation Books. Only four Prose chapters and two dramas have been recommended for study. The relevant sections, however, are as follows:

(iv) Practical marks (5) will be based on project work of the candidate.

UNIT I

Prose: Chapters 1-4
Drama: Dramas 1-2

UNIT II

Note (iv) No text book is recommended for Unit II, but a few books that may be used for this Unit are listed towards the end. Unit II shall consist of the following:
Business Communication: It shall focus on different aspects of communication in general and business communication in particular, communication within organizations, types of communication, and significance of positive attitude in improving communication.
Writing Skills: This section shall focus on letters of all kinds, tender notices, auction notices, public notices; and memos.
Note: *In case of private candidates and students of School of Open Learning, the marks obtained by them out of 40 will be proportionately increased out of 50).*

Testing Scheme:
The examination paper shall be divided into two sections, corresponding to two units already proposed in the syllabus. The distribution of questions and marks in Unit I shall be as follows:
Section I (It is text-based and corresponds to Unit I in the syllabus)

Q.1 It shall consist of six short questions. Three from Prose and three from drama (not exceeding 50-60 words) out of which , a student will be expected to attempt any **two** from **Prose** and **two** from **Drama**. This question shall be based upon the prescribed text **Varieties of Expression** and cover a wide range of issues, topics and problems.

10 marks

Q.2 It shall consist of four long questions-**Two** from **Prose** and **two** from **Drama**(not exceeding 100-150 words) out of which a student will be expected to attempt **two-**one from Prose and one from Drama.

5 marks

Note:- The question 1 &2 should be so designed as to cover all the chapters Prescribe (Prose & Drama)

Q.3. It shall exclusively be a test of vocabulary, but designed strictly on the lines of various exercises given at the end of each chapter in the prescribed text. The candidate shall be given **five** words in one column and asked to match them with words/meanings in the next column.

5 marks

UNIT II

Q.4 This question shall test a student's ability to write letter of various kinds(not more than 200 words). Again, there will be internal choice here . **5 marks**

Q.5.Memos/Tender Notices/Auction Notices/Public Notices. **10 marks**

Q.6 One short question to test the students' understanding of various aspects of Business Communication. **5 Marks**

ਸਮੈਸਟਰ ਪਹਿਲਾ

ਕੁੱਲ ਅੰਕ: 5●
ਲਿਖਤੀ: 45
ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ: 5
ਸਮਾਂ:3 ਘੰਟ

ਪਾਠਕ੍ਰਮ

ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਅਧਿਐਨ	14 ਅੰਕ
ਪੱਤਰ-ਵਿਹਾਰ	3½ ਅੰਕ
ਵਿਆਕਰਣ	5 ਅੰਕ

ਕੋਰਸ

ਆਤਮ-ਅਨਾਤਮ (ਕਵਿਤਾ ਤੇ ਕਥਾ ਸੰਗ੍ਰਹਿ)
ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰਬੀਰ ਸਿੰਘ ਤੇ ਡਾ. ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ
ਪ੍ਰਕਾਸ਼ਕ: ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2●●6

ਆਤਮ-ਅਨਾਤਮ ਪੁਸਤਕ ਦੇ ਕਵਿਤਾ ਭਾਗ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਚੋਂ ਇੱਕ)	2½ ਅੰਕ
ਆਤਮ-ਅਨਾਤਮ ਪੁਸਤਕ ਵਿਚਲੀਆਂ ਕਵਿਤਾਵਾਂ ਦਾ ਵਿਸ਼ਾ ਦੱਸ ਕੇ ਸਾਰ ਲਿਖਣਾ (ਦੋ ਚੋਂ ਇੱਕ)	4ਅੰਕ
ਕੋਰਸ ਵਿਚਲੀ ਪਾਠ-ਪੁਸਤਕ (ਆਤਮ-ਅਨਾਤਮ) ਦੀਆਂ ਕਵਿਤਾਵਾਂ ਨਾਲ ਸੰਬੰਧਤ ਪੁਸਤਕ ਵਿਚੋਂ ਦਿੱਤੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ (7 ਚੋਂ 5)	2½ ਅੰਕ
ਸਰਕਾਰੀ ਅਤੇ ਅਖਬਾਰ ਦੇ ਸੰਪਾਦਕ ਨੂੰ ਚਲੰਤ ਮਸਲਿਆਂ ਬਾਰੇ ਪੱਤਰ ਲਿਖਣਾ (ਦੋ ਚੋਂ ਇਕ)	3½ ਅੰਕ
ਵਿਆਕਰਣ: ੳ) ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹ ਅ) ਵਾਕਾਂ ਨੂੰ ਹਰ ਪੱਖੋਂ ਸੋਧ ਕੇ ਲਿਖਣਾ ੲ) ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਾਕਾਂ ਵਿਚ ਵਰਤੋਂ	5 ਅੰਕ
ਪੁਸਤਕ ਵਿਚ ਸ਼ਾਮਿਲ ਕਵੀਆਂ ਦਾ ਜੀਵਨ, ਰਚਨਾ ਤੇ ਯੋਗਦਾਨ	5 ਅੰਕ

ਵਿਸ਼ੇਸ਼ ਨੋਟ : ਸਮੁੱਚੇ ਪਾਠ ਕ੍ਰਮ ਲਈ ਹਫ਼ਤੇ ਵਿਚ 6 ਪੀਰੀਅਡ

OR

Paper – BIN-1003 HISTORY AND CULTURE OF PUNJAB – I

Instructions for the paper-setter and candidates: (for paper in Semester I & II)

1. The syllabus has been divided into four Units.
   There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 10 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 5 short answer type questions. Each question will carry 1 mark. Rest of the paper shall contain 4 units. Each Unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each Unit-IV in all. Each question will carry 10 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.
   The paper-setter must put note (2) in the question paper.
3. One question from Unit-IV shall be set on the map.

Explanation:

1. Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.
2. The distribution of marks for the map question would be as under:
   Map : 06 Marks
   Explanatory Note : 04 Marks
   In case a paper setter chooses to set a question of map on important historical places, the paper setter will be required to ask the students to mark 6 places on map of 1 mark each and write explanatory note on any two of 2 marks each.
3. The paper-setter would avoid repetition between different types of question within one question paper.

PAPER : HISTORY AND CULTURE OF PUNJAB FROM THE EARLIEST TIMES TO 1849

Max. Marks	:	50
Theory	:	45
Internal Assessment	:	05
Time	:	3 Hours

Objectives: To introduce the students to the history of the Punjab region.
Pedagogy: Lectures, library work and discussions.

UNIT I

1. Harappan Civilization: extent and town planning and socio-economic life.
2. Life in Vedic Age: socio-economic and religious.
3. Growth of Jainism and Buddhism in Punjab on the region.

UNIT II

4. Society and Culture under Maurayas

5. Society and Culture under Gupta
6. Cultural Reorientation: main features of Bhakti; origin and development of Sufism

UNIT III

7. Evolution of Sikhism: teaching of Guru Nanak; Institutional Development -Manji, Masand, Sangat and pangat.
8. Transformation of Sikhism: martyrdom of Guru Arjan; martyrdom of Guru Tegh Bahadur; impact.
9. Institution of Khalsa: new baptism; significance

UNIT IV

10. Changes in Society in 18th century: social unrest; emergence of misls and institutions-rakhi, gurmata, dal khalsa.
11. Society and Culture of the people under Maharaja Ranjit Singh
12. MAP (of undivided physical geographical map of Punjab): Major Historical Places: Harappa, Mohenjodaro, Sanghol, Ropar, Lahore, Amritsar, Kiratpur, Anandpur Sahib, Tarn Taran, Machhiwara, Goindwal, Khadur Sahib.

Suggested Readings:

1. Joshi, L.M (ed.) : History and Culture of the Punjab, Part-I, Publication Bureau, Punjabi University, Patiala, 1989 (3rd edn.)
2. Joshi, L.M and Singh, Fauja (ed.) : History and Culture of the Punjab, Vol. I, Punjabi University, Patiala, 1977
3. Prakash, Buddha : Glimpses of Ancient Punjab, P.U., Patiala, 1983
4. Thapar, Romila : A History of India, Vol. I, Penguin Books, 1966
5. Basham, A.L : The Wonder That was India, Rupa Books, Calcutta (18th rep.),1992
6. Sharma, B.N : Life in Northern India, Munshi Ram Manohar Lal, Delhi, 1966
7. Singh,Kirpal : History and Culture of the Punjab, Part II(Medieval Period), Publication Bureau, Punjabi University, Patiala 1990(3rd edn.).
8. Singh, Fauja(ed.) : History of the Punjab, Vol.III, Punjabi University, Patiala 1972
9. Grewal, J.S. : The Sikhs of the Punjab, the New Cambridge History of India, Orient Orient Longman, Hyderabad,1990.
10. Singh, Khuwant : A History of the Sikhs, vol I: 1469-1839, Oxford University Press Delhi, 1991.
11. Chopra, P.N.,Puri, B.N.:A Social, Cultural and Economic History of India, Vol. II, and Das, M.N. Macmillan, Delhi, 1974.
12. Hussain ,Yusuf : Glimpse of Medieval Indian Culture, Asia Publishing House, Bombay, 1973(rep.).

Note: The following categories of the students shall be entitled to take option of History & Culture of Punjab in lieu of Punjabi as compulsory subject:

A. That the students who have not studied Punjabi upto class 10th.
B. Ward of / and Defence Personnel and Central Govt. Employee/Employees who are transferrable on all India basis.
C. Foreigners

BIN-1004 LIFE SCIENCES

Theory : 60
Int. asst. : 15
Time : 3 Hours

Objective
It introduces the students of Non-medical background to the concepts of biological sciences which are integral understanding and application of Bioinformatics.

General Instruction

- The question paper will have seven questions, and each question have 12 marks. The first question would be compulsory having sub-parts covering the entire syllabus in the form of short and objective type questions.
- The remaining six questions will be set out of the Units I and II consisting of three questions from each unit.
- A candidate is required to attempt **five questions** in all by selecting two questions, from each unit and the **first compulsory question**.

UNIT I

General Biology: The nature of life, definition of life, Characteristics of life. Differences between animals and plants. Principal divisions in Biology, Importance of Biology
Introduction to Various systems in human body: Digestive system, Respiratory system, endocrine system, Reproductive system
Basic anatomy of flowering plants

Basics of Cell Biology: Definition of cell, fundamental cell types, differences between prokaryotic and eukaryotic cell types, cell structure, cell wall, plasma membrane
Different organelles and their functions. Cell division, cell cycle and its regulation.

UNIT II

Origin of life, evidences of evolution from plant and Animal and Animal Kingdom. Modern concept in evolution.

General microbiology: A brief history of microbiology, Microbes in our lives, Definition of microorganisms, naming and classification of microorganisms (Bacteria, Viruses). The diversity of microorganisms – Bacteria, Fungi, Protozoa, Algae, Viruses, Multicellular Animal
Microorganisms living in humans and animals, their role, microorganisms used to produce food and chemicals,, Disease causing microorganisms.

Recommended books:

1. Microbiology by Pelczar and Chan, McGraw Hill Book Co. 5th Edition (2000).
2. Plant Molecular Biology by Gierson and S.N.Covey, London, Blackie Publication (2nd Edition) 1984
3. Molecular Cell Biology by Lodish, HF, D. Baltimore, A. Berk, L. Zipursky, P. Matsudaira, and JE Darnell., Wiley & Sons (2003)

4. Cocepts in Biology by Enger & Ross, Publisher: McGraw-Hill Science, 10th Edition (2002)
5. Biology by Neil A. Campbell, Jane B. Reece, Published by Benjamin Cummings Co. Sixth Edition (2004)

BIN-1054 LIFE SCIENCES (Practical Course)

Max Marks 25 (20+5)

1. Preparation of Media, Cotton Plugging and Sterilization
2. Dilution and pour plate techniques. Standard plate count.
3. Gram staining, other staining methods
4. Growth curve of bacteria
5. To study cell structure from onion leaf peels
6. Examination of various stages of mitosis and meiosis

BIN-1005 MATHEMATICS

Theory : 60
Int. ass. : 15
Time : 3 Hours

Objective

The objective is to introduce students about basic Mathematics including real members, functions, complex numbers, Trigonometric, Matrices and Determinates, Calculus, Differential Equations and Linear Programming. These techniques are useful in solving Bioinformatics Problems.

General Instruction

- The question paper will have seven questions, and each question have 12 marks. The first question would be compulsory having sub-parts covering the entire syllabus in the form of short and objective type questions.
- The remaining six questions will be set out of the Units I and II consisting of three questions from each unit.
- A candidate is required to attempt **five questions** in all by selecting two questions, from each unit and the **first compulsory question**.

UNIT I

Set, relation and functions:
Set, Product of sets, relations, Functions (Polynomials, Trigonometric, Exponential, logarithmic, modulus) and their Graphs.

Permutations, Combinations, Binomial Theorem: Fundamental Principle of Counting, Permutations, Binomial theorem for positive integral indices, General and Middle terms etc.

UNIT II

Limit, Continuity and Differentiability: Limit and continuity of the functions, Differentiability of functions, Chain rule, Derivatives of Functions in Parametric Forms.

Simple application of Derivatives: Rate of Change of Quantities, Increasing and Decreasing Functions.

Integration (Definite and indefinite): Integration as an Inverse Process of Differentiation, Methods of Integration, Fundamental theorem of Calculus, Area under simple curves.

Recommended books:

1. Mathematics for Biosciences by Arya J.C and Lardner R.W (1990) Prentice Hall International, New Delhi.
2. Textbook of NCERT (For class XI & XII), 2006.

BIN-1055 MATHEMATICS (PRACTICAL)

Max Marks 25 (20+5)

1. Sets (Venn-Diagram, Union, Intersection, Difference of sets, Symmetric Difference of sets, Complement of sets).
2. Relations (graphical representation of relation from set A to set B or set A to set A).
3. Functions(Graph of standard functions, modulus, greatest, integer, exponential, $\log_e x$, signum, sin, cos, tan, cot, sec, cosec)
4. Increasing and Decreasing (Polynomial functions)

BIN-1006 CHEMISTRY- I

Theory : 60
Int. asst. : 15
Time : 3 Hours

Objective *To introduce the basic concepts of Chemistry with application in biological Sciences*

General Instruction

- The question paper will have seven questions, and each question have 12 marks. The first question would be compulsory having sub-parts covering the entire syllabus in the form of short and objective type questions.
- The remaining six questions will be set out of the Units I and II consisting of three questions from each unit.
- A candidate is required to attempt **five questions** in all by selecting two questions, from each unit and the **first compulsory question**.

UNIT I

Periodic properties

Position of elements in the periodic table, effective nuclear charge and its calculations, atomic and ionic radii, ionization energy, electron affinity and electronegativity definition, methods of determination trends in periodic table and applications in predicting and explaining behaviour

Coordination compounds
Introduction, Wener's coordination theory, naming of coordination compounds,.Stereochemistry, Geometrical isomerism and optical isomerism in compounds having coordination number 4 and 6.
Bonding in metal complexes

Chemical bonding
Valence bond theory and its limitations.
Molecular Orbital Theory.
Weak interactions; Hydrogen bonding and Van der waals forces.
Fundamental aspects of organic chemistry, inductive effect, electrometric effect, resonance, hyperconjugation, types of reagents, electrophiles and nucleophiles, types of organic reactions. Reaction intermediates – carbocations, carbanions, free radicals, carbenes (with examples)
Mechanisms and stereochemistry of nucleophile substitution reactions of alkyl halides, SN2 and SN1 reactions with energy diagram. The elimination- Addition mechanism (benzyne mechanism) and nucleophilic aromatic substitution reactions.

UNIT II

Physical properties and molecular structure
Optical activity, Polarization, orientation of dipoles in an electric field, dipole moment, magnetic properties.

Solutions
Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient, Dilute solution, Osmotic pressure, its law and measurements. Elevation of boiling point and depression of freezing point.
Chemical kinetics
Scope, rate of reaction, influencing factors such as concentration, temperature, pressure, solvent etc. , theories of chemical kinetics, Arrhenius Equation, Concept of Activation energy.
Acids and Bases, pH, buffer action, pK. Acids and Bases strengths, acidity and basicity of solvents. Acid-base reaction

Recommended books:
1. Organic Chemistry by I. L Finar, Pearson Education, 6th Education, (2006).
2.Organic Chemistry by Morrison and Boyd Pearson Education, 6th Education, (2006).
3. Inorganic Chemistry by J.D Lee, DVAN, London, (1984).
4. Inorganic Chemistry by Puri, Sharma, & Kalia published by Vallabh Publications (2005-06).

BIN-1056 CHEMISTRY I (Practical Course)

Max Marks 25 (20+5)

Inorganic qualitative analysis: Four ions.
Volumetric analysis
Iodimetry, iodometry, redox titrations using ceric sulphate, potassium dichromate and potassium permanganate
Complexometric titrations using EDTA of Ca^{++}, Mg^{++} and Zn^{++}.

BIN-1007 INTRODUCTION TO BIOCHEMISTRY

Theory : 60
Int. ass. : 15
Time : 3 Hours

Objective
Introduction to Biochemistry exposes the students to study chemistry of biomolecules.

General Instruction

- The question paper will have seven questions, and each question have 12 marks. The first question would be compulsory having sub-parts covering the entire syllabus in the form of short and objective type questions.
- The remaining six questions will be set out of the Units I and II consisting of three questions from each unit.
- A candidate is required to attempt **five questions** in all by selecting two questions, from each unit and the **first compulsory question**.

UNIT - I

Chemical Foundations:
Water. Chemistry of water, ionization of water, equilibrium constant and concepts of weak acid and base, pH, pI, pKa, Henderson-Hasselbach equation and concepts of buffers in biology in brief.

Nucleic acids. Bases, nucleosides and Nucletides. Overview of DNA structure: DNA double helix: Semi conservative replication, Denaturation and renaturation, closed circular DNA and supercoiled DNA. Introduction to RNA.Central dogma of molecular biology. Triplet Coding, Open Reading Frames (ORFs), Concepts of Introns, Exons, Splice Variants.

UNIT – II

Amino acids and Proteins. General properties. Classification and characteristics. Acid-base properties of amino acids. Essential and Non-standard amino acids.
Introduction to Proteins & Protein Structure: Primary, Secondary, Tertiary and Quarternary Structure.

Enzymes:
General properties, specificity, classification, efficiency, regulation of enzyme activity (rate, concentration, time, pH, temperature), enzyme kinetics---rate equations, steady state, Michaelis – Menten equation.

Carbohydrates. Definition, classification and structure of monosaccharides, Disaccharides, polysaccharides, and glycoconjugates- proteoglycans, glycoproteins and glycolipids. Structural and functional roles of carbohydrates.

Recommended Books:

1. Plummer DT (1990): An introduction of Practical Biochemistry. 3rd Edition Tata Mc Graw Hill Publishers

2. Bansal DD, Khardori R and Gupta MM (1985) Practical Biochemistry, Standard Publication, Chandigarh
3. Rawn JD (1989) Biochemistry, Neil Patterson Publishers
4. Nelson DL and Cox MM. Lehninger Principles of Biochemistry, 4th edition, CBS Publishers and Distributors, New Delhi, 1984
5. Stryer L (2002) Biochemistry , 5th edition, WH Freeman and Company, New York
6. Zubay GL, Parson WW and Vance DE (1995) Principles of Biochemistry: Student Study Art Notebook, WC Brown Publishers
7. Robert Horton, Laurence A Moran, Gray Scrimgeour, Marc Perry, David Rawn (4th Edition) (2001) Principles of Biochemistry, Prentice Hall

BIN-1057 INTRODUCTION TO BIOCHEMISTRY – PRACTICAL

Max Marks:25 (20+5)

1. Verification of Beer Lambert law for p-nitrophenol or cobalt chloride
2. Determination pKa value of p-nitrophenol
3. Estimation of carbohydrate in given solution by Anthrone method
4. Protein estimation by Lowry's method
5. Separation of lipids by Thin layer chromatography

BIN- 1008 PHYSICS

Theory : 60
Int. ass. : 15
Time : 3Hours

Objectives: -

Physics is one of the important basic sciences. Introduction to basic course of Physics will enhance the grasping of subject.

General Instruction

- The question paper will have seven questions, and each question have 12 marks. The first question would be compulsory having sub-parts covering the entire syllabus in the form of short and objective type questions.
- The remaining six questions will be set out of the Units I and II consisting of three questions from each unit.
- A candidate is required to attempt **five questions** in all by selecting two questions, from each unit and the **first compulsory question**.

UNIT – I

Science, Physics and Life Sciences- An introduction to apparent differences and the underlying overlap (atomic nature of matter). Units of measurement and ranges (from the smallest to the largest known) for different physical quantities viz. mass, length, time, current, temperature, luminosity, etc. with suitable examples from bio/physical sciences.

Coulomb's law for point charges; electric field due to point charge and electric dipole (on axial line and equator line- Qualitative only), electric flux; Gauss's theorem and its applications (line of charge and sheet of charge).

Electric potential due to point charge, group of charges and dipole (on axial line and equatorial line), potential difference as line integral of electric field- Qualitative only ,capacitance; series and parallel arrangements, energy stored in the electric field of capacitor, current, currant density, equation of continuity, Ohm'slaw in vector form.

UNIT – II

Interference of waves, phase and path differences, theory of interference fringes, Young's experiment, coherent sources.

Diffraction of light, rectilinear propagation, Resolving power of telescope and microscope, Compound Microscope (Principle, construction, ray diagram , only formula for magnifying power- No derivation), fluorescent microscope(concept only). Polarization, introduction,

Quantum theory of light, X-rays diffraction, electron microscope, Uncertainty Principle (statement only), applications of Uncertainty Principle (particle in a box, existence of electron in Nucleus and atom).

Radioactivity and its laws; half-life and mean life, uses of radioactivity.

Reference Books:

1. H.S. Hans & S.P. Puri : Mechanics (Tata Mcgraw Hill 1984)
2. Electricity and Magnetism : Berkeley physics course vol. II.
3. AjoyGhatak : Optics (Tata Mcgraw Hill 2004)
4. Jenkins & White : Fundamental of optics (Tata Mcgraw Hill 1991)
5. D.P. Khandelwal : Text book of optics and atomic physics (Himalaya Pub. 2005)
6. Arthur Beiser: Modern Physics (Tata Mcgraw Hill 1981)

BIN-1058 PHYSICS – PRACTICAL

Max Marks:25 (20+5)

1. Introduction and practice the concepts of proper measurement, data recording, and data presentation; stress to be laid on use of proper units, least count, error & its propagation, graph plotting & least square fitting. (Simple measuring devices available in the lab may be used to create basic data).
2. Resolving power of Telescope/Microscope.
3. Rotation of the plane of polarization of a solution using a Polarimeter.
4. Use of C.R.O. as a display & measuring device.
5. Capacitance by flashing and quenching of a neon lamp.

Reference Books:

1. Laboratory Manual of Physics for Undergraduate classes by D. P.Khandelwal
2. B.Sc. Physics Practicals by C. L. Arora.