



UNIT 3: Inheritance (Extending Classes)

- Concept of inheritance
- Base Class, Derived Class
- Visibility modes
- Types of Inheritance
 - Single level inheritance
 - Multilevel inheritance
 - Multiple inheritance

UNIT 4: Pointers

- Concept of Pointer
- Declaration of Pointers
- Initialization of Pointers
- Dynamic memory allocation/deallocation operators: new, delete

UNIT 5: Data Structures

- One dimensional array
 - Traversal
 - Searching (Linear search, Binary search)
 - Sorting (Bubble sort)
- Stack
 - Definition of a stack
 - Operations on stack (Push and Pop)
- Queue
 - Definition of a queue
 - Operations on queue (Enqueue and Dequeue)

UNIT 6: Database and SQL

- Database and its advantages
- Rational data model
- Concept of Domain, Relation, Attribute, Tuple, Candidate key, Primary key, Alternate key
- SQL and its advantages
- Data types in SQL (NUMBER, CHAR, DATE)
- Data Definition Language and Data Manipulation Language
- SQL Commands:
 - DDL commands (CREATE, DROP, ALTER)
 - DML commands (SELECT, INSERT, UPDATE, DELETE)
- SQL functions: SUM(), AVG(), COUNT(), MIN(), MAX()



UNIT 7: Boolean Logic

- Boolean Operators: AND, OR, NOT
- Truth Table
- Basic Logic Gates: AND, OR, NOT, NAND, NOR
- Laws of Boolean Algebra: Cumulative law, Associative law, Distributive law, DeMorgan's law, Principle of Duality (Proving these laws using Truth Tables only)

UNIT 8: Networking and Cyber Security

- Networking and its advantages
- Types of Networks: PAN, LAN, MAN, WAN
- Transmission Media: Twisted pair cable, Coaxial cable, Optical fiber, Infra-Red, Satellite transmission.
- Network Topologies: Bus, Star, Ring
- Modem

- Cyber safety and security
 - Cyber Bullying: Preventive Measures
 - Computer Safety and Security
 - Internal Safety and Ethics
 - Safe Social Networking
 - Safe Email Practices
 - Dos and Don'ts for Cyber Safety



PRACTICALS:

➤ Programming in C++

1. WAP to implement function definition inside the class.
2. WAP to implement function definition outside the class.
3. WAP to implement concept of function overloading.
4. WAP to implement the concept of constructors.
5. WAP to implement concept of single level inheritance.
6. WAP to implement concept of multilevel inheritance.
7. WAP to initialize 1D array and display its elements.
8. WAP for linear search.
9. WAP for binary search.
10. WAP to sort an array using bubble sort.

➤ SQL Commands

1. Use SQL command to create a table with specified columns.
2. Use SQL command to insert data into a table.
3. Use SQL command to retrieve data from existing table.
4. Use SQL command to delete records from a table.
5. Use SQL command to drop an existing table.

➤ Practical file:

Practical file must contain the entire mentioned practical.

➤ Viva Voce:

Viva will be asked from syllabus covered.

➤ Distribution of 20 marks for External Practical:

- Programming (Logic, Syntax, Documentation/Indentation, Output) (07 marks)
- SQL commands (03 marks)
- Practical file (05 marks)
- Viva (05 marks)



INFORMATICS PRACTICES

Maximum Marks : 100

Theory : Marks 70

Time : 3 hours

Practicals : Marks 30. External : 20 marks, Internal : 10 marks

Topic	Marks
Computer Networking & OSS	20
Visual Basic Programming	15
Fundamentals of DBMS	20
Internet & Web Application Development	15

UNIT I: COMPUTER NETWORKING & OSS

A brief overview of Networking, Identifying computers over a network; Types of Network Address (MAC, IP); Domain Name Resolution; Types of Networks (PAN LAN, MAN, WAN); Networking Topologies (BUS, RING, STAR, TREE); Network Media – Guided (Twisted Pair, Fiber Optics, Co-axial), Unguided (Infrared, Radio, Microwave); Network Devices – Modem, Repeater, Hub, Switch, Gateway and their function; Network Technologies – Ethernet, Bluetooth, WiFi; Network Security – Brief Overview, Network Threats, Virus, Worms, Trojan Horse, Denial Of Service, Snooping; Network Security Measures – Anti-virus, Firewall, Intrusion Detection.

Open Source Concepts – Open Source Software Overview, Common Foss Examples (GNU/ LINUX, Firefox, Open Office).

UNIT II : VISUAL BASIC PROGRAMMING

Revision of Decision Structures (IF, IF-Then-Else, Select Case), Revision of Looping Structure (Do-While, While – Wend, For – Next); Functions – Inbuilt Functions (String – Space) (), chr(), Str(), Right(), Left(), Mid(), InStr(), Len(), LTrim(), RTrim(), UCase(), LCase(), String(), Number Function – Sgn(), Val(), Int(), Abs(), Fix(), Sqr(), Power(), Round(), Trunc(): Time Functions– Now(), Time(), Minute(), Month(), MsgBox(), InputBox(); Types of Forms (SDI & MDI).

UNIT III : FUNDAMENTALS OF DBMS

Introduction to Database, definition of Database. Table, Attribute, Tuple / Rows, Field, Data; Data Types & Data Integrity, Candidate Key, Alternate Key, Primary Key, Foreign Key; Constraints (Unique, NULL, Not NULL); Front End and Back End of a DBMS, Examples of Front End Software like Oracle, VB, Visual C++, Etc;



Types of SQL Commands – SQL Data types (Varchar2, Char, Number, Date, Long); SQL Operators (Arithmetic, Relational, Logical); Types of SQL Commands (DDL, DML); DDL Commands (Create, Alter, Drop), DML Commands (Select, Insert, Update, Delete including different Clauses); TCL Commands (Commit, RollBack, SavePoint).

SQL Functions – Brief Overview, Character & String Function; Character Function (Lower, Upper, InitCap), Character Manipulation Function (Concat, Substr, Length, Instr, LPad, Trim), Number Functions (Abs, Ceil, Exp, Len, Long, Mod, Power, Round, SQRT, Trunc, Floor); Date Functions (Months_Between, Add_Months, Next_Day, Last_Day); Conversion Functions (To_Date, To_Number, To_Char); Group Functions (Avg (), Count(), Max(), Min(), Sum()).

UNIT IV : INTERNET & WEB APPLICATION DEVELOPMENT

Introduction, hardware/Software requirement, Uses and facilities of Internet, ISP, WWW, Web Browser, Web Page & Types, Web Address, Search Engines, Web Applications, URL Address.

Introduction to HTML Scripting language, Page Structure, Head Section, Body Section, Base Font, Font, Text Links, Text Format, Text Size, Text Layout, Marquee, HTML Lists – Bulleted, Numbered, Lists, Images – GIF, JPG, Resizing, Body Around, Alternate Text, Spacing Around, Alignment; Background Color, Background Image; Html Tables, Basic Tags, Table Tags, Row/Cell Tags.

PRACTICALS

Time : 3 Hours

Marks 30

1. LAN Implementation of School Computer Lab. & Identifying different Network Devices used during the setup.
2. Establishing a PAN using PDU (Personal Data Units) any one of the wireless technologies given in the syllabus.
3. WAP to check whether a given number is Even/Odd.
4. WAP to print the Factorial of a given Number.
5. WAP to SWAP two given values.
6. WAP to find min/max of three given numbers.
7. WAP to print the Multiplication table of a given number.
8. WAP to generate the Fibonacci Series.
9. WAP to convert a given string from Lower Case to Upper Case or Vice Versa.



10. Create an Application using Scroll Barr Control and Text Boxes to mix different colors.
11. Students are supposed to workout 25 SQL queries based on one/two tables.
12. Create five Web Pages using different HTML Tags (Heading, Links, Marquee, Images, Background Color).



ENGLISH LITERATURE

Section A: Poems (from the prescribed text book)

(25 marks)

- | | |
|------------------------------------|-----------------------|
| 1. A Lecture upon a Shadow | John Donne |
| 2. Poems | William Blake |
| 3. Time and Time Again | A.K. Ramanujan |
| 4. Vaakhs | Lal Ded |
| 5. Shrukhs | Sheikh Nooruddin Wali |
| 6. A will in the Name of a New Man | Kehari Singh Madhukar |
| 7. The Wail | Naseem Shafaie |
| 8. A Last Memory of Delhi | Agha Shahid Ali |

Section B: Drama (from the prescribed text book)

(20 marks)

- | | |
|-------------------------|---------------|
| 1. <i>Broken Images</i> | Girish Karnad |
|-------------------------|---------------|

Section C: Essays (from the prescribed text book)

(25 marks)

- | | |
|-----------------------------|----------------|
| 1. Of Delay | Francis Bacon |
| 2. Freedom | G.B. Shaw |
| 3. Film-making | Ingmar Bergman |
| 4. Why the Novel Matters | D.H. Lawrence |
| 5. The Argumentative Indian | Amartya Sen |
| 6. On Science Fiction | Isaac Asimov |

Section D: Novel

(30 marks)

- | | |
|---------------------------------|------------|
| 1. <i>To Kill a Mockingbird</i> | Harper Lee |
|---------------------------------|------------|



Scheme of Assessment for ENGLISH LITERATURE

Maximum Marks: 100

Time: - 3 Hours

The paper shall have four (04) sections based on the textbook published by the J&K Board of School Education and the novel *To Kill a Mockingbird*.

(Section A) Poem (from the prescribed textbook) 25 Marks

1. Two reference to the context questions to be attempted out of four. (100 words) (2x4 = 8)
2. Three questions on poetic devices to be attempted out of six. (40 words) (3x3 = 9)
3. Two questions on theme, structure, background, technique etc to be attempted out of four. (100 words) (2x4 = 8)

(Section B) Drama 20 Marks

Prescribed text: Broken Images by Girish Karnad

4. One question on theme/plot/character/background/technique etc to be attempted out of two. (250 words) (1x10 = 10)
5. One question on incident/scene/character/situation etc to be attempted out of two. (200 words) (1x8 = 8)
6. Two objective type questions including MCQ's true/false, fill in the blanks etc. (1x2 = 2)

(Section C) Essays (from the prescribed textbook) 25 Marks

7. One question on theme/structure/background etc to be attempted out of two. (200 words) (1x8 = 8)
8. Two questions on technique/moral/literary devices etc to be attempted out of four excluding the essays on which Q.7 above is based. (150 words) (2x5 = 10)
9. One reference to the context question to be attempted out of two. (150 words) (1x5 = 5)
10. Two objective type questions including MCQ's, true/false, fill in the blanks etc. (2x1 = 2)

(Section D) Novel 30 Marks

Prescribed text: To Kill a Mockingbird by Harper Lee

11. One question on theme/plot/character/background/narration, etc to be attempted out of two questions. (300 words) (1x15 = 15)
12. Two questions on incident/scene/character/situation/technique/critical appreciation etc to be attempted out of four. (150 words) (2x5 = 10)
13. Five objective type question including MCQ's, true/false, fill in the blanks etc. (1x5 = 5)



PHYSICS

Maximum Marks: 100

Theory: Marks 70

Practicals: Marks 30

Time: 3 hour

I. Electrostatics	08 marks
II. Current Electricity	07 marks
III. Magnetic effects of current and magnetism	08 marks
IV. Electro-magnetic induction and alternating currents	08 marks
V. Electro-magnetic waves	03 marks
VI. Optics	14 marks
VII. Dual nature of matter and radiation	04 marks
VIII. Atoms and Nuclei	06 marks
IX. Electronic devices	07 marks
X. Communication system	05 marks

Unit I : Electrostatics

Electric charges; conservation of charge, coulomb's law – force between two point charges, forces between multiple charges, superposition principle and continuous charge distribution.

Electric field, electric field due to point charge, electric field lines, and electric dipole. electric field due to dipole, Torque on a dipole in uniform electric field.

Electric flux, statement of Gauss's theorem and its application to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside).

Electric potential, potential difference, electric potential due to point charge, a dipole and system of charges; equipotential surfaces, electric potential energy of a system of two point charges and of electric dipole in an electrostatic field.

Conductor and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor. Van de Graaff generator.

Unit-II : Current Electricity

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current. Ohm's law, electric resistance. V-I Characteristics, (linear, non-linear), electrical energy and power, electric resistivity and conductivity, carbon resistors, colour code for carbon resistors; Temperature dependence of resistance.

Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel. Elementary idea of secondary cells. Kirchoff's laws and their applications. Wheat stone bridge, meter bridge.



Potentiometer-principle and its application to measure potential difference and for comparing e.m.f. of two cells; measurement of internal resistance of a cell.

Unit-III : Magnetic Effects of Current and Magnetism

Concept of magnetic field, Oersted's experiment, Biot-Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinite long straight wire, straight and toroidal solenoids.

Force on a moving charge in a uniform magnetic and electric fields. Cyclotron. Force on a current carrying conductor in a uniform magnetic field. Force between two parallel current carrying conductors-definition of ampere.

Torque experienced by a current loop in uniform magnetic field, moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in uniform magnetic field, bar magnet as an equivalent solenoid, magnetic field lines, Earth's magnetic field and magnetic elements. Para, dia, and ferro-magnetic substances with examples. Electromagnets and factors affecting their strength, permanent magnets.

Unit IV : Electro-magnetic Induction and Alternating Currents

Electromagnetic induction, Faraday's laws, induced e.m.f. and current; Lenz's law. Eddy currents, self and mutual inductance.

Alternating currents, peak and rms value of alternating current/voltage. Reactance and impedance, LC oscillations (qualitative treatment only) & LCR circuits series, Resonance, power in A.C. circuits, wattless current, AC Generator and transformer.

Unit-V : Electro-magnetic Waves

Need for displacement current, Electro-magnetic waves and their characteristics (qualitative ideas only), transverse nature of electromagnetic waves.

Electromagnetic spectrum (radio-waves, micro-waves, infra-red, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

Unit VI : Optics

Ray Optics - Reflection of light; spherical mirrors; mirror formula, Refraction of light- total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lenses formula, lens-makers formula, Newton's relation: displacement method to find position of images (conjugate points), Magnification, power of lens, combination of thin lenses in contact. Combination of a lens and a mirror, Refraction and dispersion of light through a prism.

Scattering of light-blue colour of the sky and reddish appearance of the sun at sunrise and sunset. Elementary idea of Raman effect.

Optical instruments – Human eye, image formation and accommodation, correction of eye defects (myopia, hypermetropia, presbyopia and astigmatism) using lenses. Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Wave optics-wave front and Huygen's principle, reflection and refraction of plane wave at



a plane surface using wavefronts. Proofs of laws of reflection and refraction using Huygen's Principle, Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light.

Diffraction due to a single slit, width of central maximum. Resolving power of microscopes and astronomical telescopes. Polarization, plane polarized light, Brewster's law, uses of plane polarized light and polaroids.

Unit VII : Dual Nature of Matter and Radiation

Dual nature of radiation. Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation- particle nature of light.

Matter waves, wave nature of particles, de-Broglie relation, Davisson- Germer experiment (experimental details should be omitted; only conclusion should be explained).

Unit VIII : Atomic Nuclei

Alpha-particle scattering experiment, Rutherford's model of atom, Bohr's Model of atom; energy levels, Hydrogen spectrum. Continuous and characteristics of X-rays. Composition and size of nucleus; atomic masses, isotopes, isobars, isotones, Radioactivity (alpha, beta and gamma) particles/ rays and their properties, Radioactive decay law, Mass – energy relation, mass defect, binding energy/nucleon and its variation with mass no., nuclear fission and nuclear fusion.

Unit IX : Electronic Devices

Energy bands in solids, conductors, insulators and semiconductors, semiconductor diode, I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photo diode, solar cell and Zener diode; Zener diode as a voltage regulator, Junction transistors and its action; characteristics of a transistor, transistor as an amplifier (common emitter configuration and oscillator (common emitter). Logic gates (OR, AND, NOT), concept of NAND and NOR gates, Transistor as a switch.

Unit X : Communication System

Elements of communication system (block diagram only), Band width of signals (speech, T.V and digital data); bandwidth of transmission medium, propagation of electromagnetic waves in the atmosphere, sky and space wave propagation.

Need for modulation; Production and detection of an amplitude modulated wave.



Practicals : 30 marks

External: 20

Internal:10

Every student will perform at least 15 experiments (7 from section A & 8 from section B). The activities mentioned here should be for the purpose of demonstration. One project of three marks is to be carried out by the students.

Evaluation Scheme for Practical Examination:

- One experiment from each of the two sections = 10 marks
- One activity from each of the two sections (2 activities in total) = 2+2= 04 marks
- Record of one Investigatory Project and viva based on Project = 02 marks
- Practical Record of experiments and activities = 02 marks
- Viva-voce on experiments and activity = 02 marks

Total Marks = 20

Section – A

Experiments:

1. To determine resistance per cm. of a given wire by plotting a graph of pot. difference vs. current (Ohm's law).
2. To find resistance of a given wire using metre bridge and hence determine the specific resistance of its material.
3. To verify the laws of combination (series/parallel) of resistance using a metre bridge.
4. To compare the e.m.f of two given primary cells using potentiometre.
5. To determine internal resistance of a given primary cell using potentiometre.
6. To determine resistance of a galvanometre by using half deflection method and also find its figure of merit.
7. To convert the given galvanometre (of known resistance and figure of merit) into an ammetre and voltmetre of desired range and to verify the same.
8. To find the frequency of the a.c. mains with a Sonometre.

Activities:

1. To measure the resistance and impedance of an inductor with or without iron core.
2. To measure resistance voltage (AC/DC), current (AC) and check continuity of a given circuit using multi metre.
3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
4. To study the variation in potential drop with length of a wire for a steady current.
5. To draw the diagram of a given open circuit comprising at least a battery, rheostat, key;



ammeter and voltmeter. Make the components that are not connected in proper order and correct the circuit and also circuit diagram.

Section - B

Experiment:

1. To find the focal length of a convex mirror, using a convex lens.
2. To find the focal length of a concave lens using a convex lens.
3. To find the value of v for different values of u in case of a concave mirror and also to find its focal length.
4. To find the focal length of a convex lens by plotting a graph between u and v or between $1/u$ and $1/v$.
5. To determine angle of minimum deviation (d_m) for a given prism by plotting a graph between angle of incidence and angle of deviation (d_m).
6. To determine refractive index of a glass slab using a traveling microscope.
7. To find refractive index of a liquid using I) concave mirror II) convex lens and plane mirror.
8. To draw the characteristics of a common-emitter npn or pnp transistor and to find out the values of current and voltage gains.
9. To draw the I-V characteristics curve of a p-n junction in forward bias and reverse bias.
10. To draw the characteristic curve of a zener diode and to determine its reverse break down voltage.

Activities:

1. To study effect of intensity of light by varying distance of the source on an L.D.R.
2. To identify a diode, a LED, a transistor, and IC, a resistor and a capacitor from mixed collection of such items.
3. Use of multimeter to i) identify base of transistor ii) Distinguish between npn and pnp-transistors iii) see the unidirectional flow of current in case of a diode and an LED. iv) Check whether a given electronic component (e.g. diode, transistor or IC) is in working order.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe polarization of light using two polaroids.
6. To observe diffraction of light due to a thin slit.
7. To study the size and nature of the image formed by i) convex lens, ii) concave mirror, on a screen by using a candle and screen for different distances of the candle from the lens/mirror.
8. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.



Investigatory Projects:

1. To investigate whether the energy of a simple pendulum is conserved.
2. To determine the radius of gyration about the centre of mass of a scale used as a bar pendulum.
3. To investigate changes in the velocity of a body under the action of a constant force and determine its acceleration.
4. To compare effectiveness of different materials as absorbers of sound or heat.
5. To determine the wave length of laser beam by diffraction.
6. To study various factors on which the internal resistance, emf of a cell depends.
7. To construct a time switch and study dependence of its time constant on various factors.
8. To study infrared radiations emitted by different sources using photo-transistor.
9. To compare effectiveness of different materials and insulators.
10. To design an automatic traffic signal system using suitable combination of logic gates.
11. To study luminosity of various electric lamps of different powers and make.
12. To compare the Young's modulus of elasticity of different specimens of rubber and also draw their elastic hysteresis curve.

Book Suggested: A Textbook of Physics for class XII published by NCERT, New Delhi.



CHEMISTRY

Maximum Marks: 100

Theory: Marks 70

Practicals: Marks 30

Time: 3 hour

Unit I	Solid State	4 marks
Unit II	Solutions	5 marks
Unit III	Electrochemistry	5 marks
Unit IV	Chemical Kinetics	5 marks
Unit V	Surface Chemistry	4 marks
Unit VI	General Principles and Processes of Isolation of Elements	3 marks
Unit VII	p-Block Elements	8 marks
Unit VIII	d- and f- Block Elements	5 marks
Unit IX	Coordination Compounds	3 marks
Unit X	Haloalkanes and Haloarenes	4 marks
Unit XI	Alcohols, Phenols and Ethers	4 marks
Unit XII	Aldehydes, Ketones and Carboxylic Acids	6 marks
Unit XIII	Organic Compounds containing Nitrogen	4 marks
Unit XIV	Biomolecules	4 marks
Unit XV	Polymers	3 marks
Unit XVI	Chemistry in Everyday Life	3 marks

Unit-I: SOLID STATE

Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous solids and crystalline solids (elementary idea only), unit cell in two dimensional & three dimensional lattices, packing efficiency, calculation of density of unit cell, packing in solids, voids, number of atoms per unit cell in a cubic unit cell, point defects. Properties of solids (electrical, magnetic & dielectric), Band theory of metals, conductors, semi-conductors and insulators and n & p type semiconductors.

Unit-II: SOLUTIONS

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties: relative lowering of vapor pressure of a solution, Raoult's law, elevation of boiling point, depression in freezing point temperature and osmotic pressure), determination of molecular masses using colligative properties. Abnormal molecular mass, van't Hoff factor and calculations involving it..

Unit-III: ELECTROCHEMISTRY

Redox reactions, conductance in electrolytic solutions, specific conductivity, molar



conductivity, variation of conductivity with concentration, Kohlrausch's law and its applications Electrolysis and laws of electrolysis (elementary idea), dry cell- electrolytic cells and galvanic cells; lead accumulator, emf of a cell, standard electrode potential, Nernst equation and its application to chemical cells, relation between Gibb's energy change and emf of a cell, fuel cells, corrosion

Unit-IV: CHEMICAL KINETICS

Rate of reaction (average and instantaneous rate of a reaction), factors affecting rate of reactions: (concentration, temperature, catalyst), rate law, specific rate constant and order, molecularity of a reaction, integrated rate expression of zero and first order reactions and their derivations, half life period. Concept of collision theory (elementary idea, no mathematical derivation), Activation energy, Arrhenius equation.

Unit-V: SURFACE CHEMISTRY

Adsorption- physical and chemical adsorption, factors affecting adsorption of gases on solids; Catalysis: homogeneous and heterogeneous, activity & selectivity. Enzyme catalysis, Colloidal state: distinction between true solution, colloids and suspensions. Types of colloids- lyophilic and lyophobic, multimolecular, macromolecular and associated colloids (micelles), properties of colloids: Tyndall effect, Brownian movement, Electrophoresis, Coagulation, Emulsions-types of emulsions. Elementary idea about nanomaterials.

Unit-VI: GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Principles and methods of extraction: concentration, oxidation, reduction, electrolytic method & refining; occurrence & principles of extraction of aluminium, copper, zinc and iron.

Unit- VII: p-BLOCK ELEMENTS

Group 15 Elements: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; nitrogen: preparation, properties & uses. Compounds of nitrogen: preparation & properties of ammonia and nitric acid, oxides of nitrogen (structure only), Phosphorus – allotropic forms; compounds of phosphorus: preparation & properties of phosphine, halides (PCl_3 , PCl_5) and oxo- acids (elementary idea only).

Group 16 Elements: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; dioxygen: preparation, properties & uses. Classification of oxides; ozone. Sulphur- allotropic forms; compounds of sulphur: preparation, properties & uses of SO_2 and Sulphuric acid: industrial process of manufacture, properties and uses, other oxides and oxoacids of sulphur (structures only).

Group 17 Elements: General introduction, electronic configuration, oxidation states, trends in physical and chemical properties; compounds of halogens-preparation, properties and uses of Chlorine and hydrochloric acid, interhalogen compounds, oxoacids of halogens (structures only)

Group 18 Elements: General introduction, electronic configuration, occurrence, trends in physical & chemical properties & Uses.

Unit- VIII: d and f-BLOCK ELEMENTS

General introduction, electronic configuration, occurrence and characteristics of the transition metals, general trends in properties of first row transition metals (metallic character, IE, electrode



potential, oxidation state, ionic radii, catalytic properties, colored ions, complex formation, magnetic properties, interstitial compounds, alloy formation). Preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.

Lanthanides: electronic configuration, oxidation state, chemical reactivity and lanthanide contraction and its consequences.

Actinides- electronic configuration, oxidation states and comparison with lanthanoids.

Unit- IX: CO-ORDINATION COMPOUNDS

Co-ordination compounds: Introduction, ligands, co-ordination number, color, magnetic properties and shapes, IUPAC nomenclature of mononuclear co-ordination compounds. Bonding (Werner's theory, VBT and CFT); structural and stereoisomerisms, importance of coordination compounds in qualitative inclusion of analysis, extraction of metals and biological systems.

Unit-X: HALOALKANES AND HALOARENES

Haloalkanes: Nomenclature, nature of C-X bond, physical & chemical properties, mechanism of substitution reactions. Stability of carbocations, R-S and d-l configurations.

Haloarenes: Nature of C-X bond, substitution reactions (directive influence of halogens for monosubstituted compounds only), Stability of carbocations, R-S and D-L configurations

Uses and environmental effects of- dichloromethane, trichloromethane, tetrachloromethane, iodoform, freon, and DDT.

Unit- XI: ALCOHOLS, PHENOLS AND ETHERS

Alcohols: Nomenclature, methods of preparation, physical & chemical properties (of primary alcohols only), identification of primary, secondary & tertiary alcohols; mechanism of dehydration of alcohols, uses, some important compounds – methanol and ethanol.

Phenols: Nomenclature, methods of preparation, physical & chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical & chemical properties and uses.

UNIT- XII: ALDEHYDES, KETONES AND CARBOXYLIC ACIDS

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical & chemical properties & mechanism of nucleophilic addition reaction to C = O group, reactivity of alpha hydrogen in aldehydes, uses.

Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical & chemical properties and uses

UNIT- XIII: ORGANIC COMPOUNDS CONTAINING NITROGEN

Amines: Nomenclature, classification, structure, methods of preparation, physical & chemical properties, uses, identification of primary, secondary & tertiary amines.

Cyanides and Isocyanides: Structures of cyanide and isocyanide groups, nomenclature, preparation, physical properties and chemical reactions.



Diazonium Salts: Preparation and chemical reactions (mechanism of diazotization), and importance in synthetic organic chemistry.

UNIT- XIV: BIOMOLECULES

Carbohydrates: Classification (aldoses and ketoses), monosaccharides: Glucose, fructose: structure, preparation and chemical reactions; oligosaccharides (sucrose, lactose & maltose) Polysaccharides: (starch, cellulose and glycogen); importance.

Proteins: Elementary idea of amino acids: peptide bond, polypeptides and primary, secondary, tertiary and quaternary structure of proteins (Qualitative idea only). denaturation of proteins; enzymes, lipids & hormones, their classification & functions.

Nucleic Acids: DNA and RNA (purines and pyrimidines, nucleosides, nucleotides and fragments up to four nucleotides).

Vitamins: Classification and functions, sources and deficiency diseases.

UNIT- XIV: POLYMERS

Natural & synthetic polymers, methods of polymerization (addition and condensation), copolymerization, and some important polymers: natural and synthetic like polythene, nylon, Bakelite, polyesters and rubber. Biodegradable and non- biodegradable polymers.

Unit-XVI: CHEMISTRY IN EVERYDAY LIFE

- i) **Chemicals in medicine and health care-** analgesics, tranquillizers, antiseptics, disinfectants, antimicrobials, anti-fertility drugs, anti-histamines, antibiotics, antacids.
- ii) **Chemicals in food-** preservatives, artificial sweetening agents.
- iii) **Cleansing agents** – Soaps and detergents, cleansing action.

PRACTICALS

External: 20

Internal:10

Evaluation Scheme for Practical Examination:

- Volumetric analysis	=	06 marks
- Salt Analysis	=	06 marks
- Content based experiment	=	04 marks
- Class record, Project work and viva	=	04 marks
		Total = 20 marks

A. SURFACE CHEMISTRY

- i) Preparation of one lyophilic and one lyophobic sol
Lyophilic sol-starch, egg albumin and gum
Lyophobic sol-aluminium hydroxide, ferric hydroxide, arsenious sulphide.
- ii) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.



B. CHEMICAL KINETICS

- i) Effect of concentration and temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid.
- ii) Study of reaction rates of any one of the following:
 - a) Reaction of iodide ions with hydrogen peroxide at room temperature using different concentration of iodide ions.
 - b) Reaction between potassium iodate (KIO_3) and sodium sulphite (Na_2SO_3) using starch solution as indicator (clock reaction).

C. THERMOCHEMISTRY

Any one of the following experiments:

- i) Enthalpy of dissolution of CuSO_4 or KNO_3 .
- ii) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
- iii) Determination of enthalpy change during interaction (Hydrogen bond formation) between acetone & chloroform.

D. ELECTRO CHEMISTRY

- i) Variation of cell potential in $\text{Zn}/\text{Zn}^{2+} // \text{Cu}^{2+}/\text{Cu}$ with change in concentration of electrolytes (CuSO_4 or ZnSO_4) at room temperature.

E. CHROMATOGRAPHY

- i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values.
- ii) Separation of constituents present in an inorganic mixture containing two cations only (constituents having wide difference in R_f values to be provided)

F. PREPARATION OF INORGANIC COMPOUNDS

- i) Preparation of double salt of ferrous ammonium sulphate or potash alum.
- ii) Preparation of potassium ferric oxalate.

G. TEST FOR THE FUNCTIONAL GROUPS PRESENT IN ORGANIC COMPOUNDS

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (primary) groups.

H. Study of carbohydrates, fats and proteins in pure form and detection of their presence in given foodstuffs.

I. Determination of concentration/ molarity of KMnO_4 solution by titrating it against a standard solution of:

- i) oxalic acid
- ii) ferrous ammonium sulphate.



J. Qualitative Analysis

Determination of one cation and one anion in a given salt (insoluble salts to be excluded):

Cations: Pb^{2+} , Cu^{2+} , As^{3+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Zn^{2+} , Ni^{2+} , Co^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+

Anions: CO_3^{2-} , S^{2-} , SO_3^{2-} , SO_4^{2-} , NO_2^- , NO_3^- , Cl^- , Br^- , I^- , PO_4^{3-} , $\text{C}_2\text{O}_4^{2-}$, CH_3COO^-

PROJECT WORK

Wherever feasible may include

1) Model Preparation

2) Investigatory Project

- To prepare rayon thread from filter paper by cupra ammonium process.
- Determine the oxalate content of Guava fruits at different stages of ripening.
- Study of insecticides and pesticides in various fruits and vegetables.
- To determine the amount of casein present in different samples of milk from different sources.
- Preparation of soyabean milk and its comparison with natural milk.
- To determine the presence of adulterants in common foods such as sugar, butter, oil, red chilly paper, turmeric powder, rice.
- Prevention of rusting of iron by using cathode protection method.

3) Science Exhibits.

4) Participation in Science Fairs

Book Suggested: Textbook of Chemistry for class XII published by NCERT, New Delhi



BIOLOGY

Maximum Marks: 100

Theory: Marks 70

Practicals: Marks 30

Time: 3 hour

SECTION A (Botany)

Marks: 35

Unit-I: Reproduction in Flowering Plants

Marks:07

Asexual Reproduction: Vegetative propagation in plants, micropropagation.

Sexual Reproduction: Flower structure, Development of male & female gametophytes. Pollination: types, agencies & examples, Out breeding devices. Pollen- Pistil interaction, Double fertilization, Post fertilization events, Development of endosperm, embryo, seed and fruit. Special modes: apomixis and polyembryony, significance of seed & fruit formation.

Unit-II: Genetics

Marks 09

- Heredity and variation
- Mendelian inheritance, Deviations from Mendelism: incomplete dominance, co-dominance, Multiple alleles, Pleiotropy, Chromosomal theory of inheritance, Elementary idea of polygenic inheritance, Chromosomes & genes,
- Search for genetic material & DNA as genetic material: Structure of DNA & RNA, DNA packaging, DNA Replication (Semiconservative), Central dogma, Protein Biosynthesis: Transcription, translation, genetic code, Gene expression and regulation (lac-operon).

Unit-III: Biology and Human welfare

Marks: 07

- **Plant breeding:** Introduction, steps in plant breeding and application of plant breeding, and single cell protein, Biofortification.
- **Tissue culture:** Cellular totipotency, technique and application of tissue culture
- **Microbes in Human Welfare:** in household food processing, industrial production, sewage treatment, Production of energy (Biogas), biocontrol agent (Biopesticides) & Biofertilizers.
- Genetically Modified organism- Bt crops
- Biopiracy and patents.

Unit- IV: Ecology and Environment

Marks: 12

Meaning of ecology, environment, habitat and niche: Organisms and environment.

Population and ecological adaptations: Population Interactions-mutualism, competition, predation, parasitism. Population attributes-growth, birth rate and death rate, age distribution.

Ecosystems: Patterns, Components, energy flow, nutrient cycling (carbon and phosphorus), decomposition and productivity. Pyramids of number, biomass, energy. Ecological succession. Ecological Services: Carbon fixation, Pollination, Oxygen release.

Biodiversity and its conservation: Threats to, and need for biodiversity conservation. Hotspots, endangered organisms, extinction, Red Data Book. Biodiversity conservation-biosphere reserves, national parks and sanctuaries.



Environmental Issues: Air and water pollution and their control, solid waste management, agrochemicals and their effects, Radioactive waste management, Green house effect and global warming, Ozone depletion in stratosphere, Deforestation, Any three case studies as success stories addressing environmental issues.

SECTION B (Zoology)

35 Marks

Unit-I : Reproduction

Marks 11

- i) **Asexual Reproduction:** Uniparental, modes: binary fission, sporulation, budding, gemmule, fragmentation, regeneration.
- ii) **Human Reproduction-** Male and female reproductive systems, Microscopic anatomy of testis & ovary; Gametogenesis (spermatogenesis & oogenesis. Menstrual cycle), Fertilization, embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (elementary idea), Parturition (elementary idea) and Lactation (elementary idea).
- iii) **Reproductive Health:** Need for reproductive health & prevention of Sexually Transmitted Diseases (STD), Birth control- need & methods, Contraception and Medical Termination of Pregnancy (MTP), Amniocentesis, Infertility & assisted reproductive technologies: IVF, ZIFT, GIFT (Elementary idea for general awareness).

Unit-II: Genetics and Evolution

Marks 12

- Sex determination in humans, birds and honeybee.
- Inheritance pattern of Hemophilia and Color blindness in human beings.
- Mendelian Disorders in humans: Chromosomal disorders in humans, Down's syndrome, Turner's & Klinefelter's syndromes.
- Genome and Human Genome project.
- DNA fingerprinting.
- Origin of life: Theories & evidences with special reference to Darwin & Modern Synthetic theory of evolution, Hardy – Weinberg's principal. Adaptive radiation.
- Origin and evolution of Man.

Unit-III : Biology and Human Welfare

Marks 07

- **Health and Disease:** Basic concepts of immunology, vaccines; pathogens, parasites causing human diseases (Typhoid, Hepatitis, Malaria, Filariasis, Ascariasis, Common Cold, Amoebiasis, Ring Worm); Cancer, HIV and AIDS.
- **Insects & human welfare:** Silk, honey, lac.
- Adolescence, drug & alcohol abuse.
- Poultry, Dairy Farming

Unit IV: Biotechnology and its Application

Marks 05

- i) Genetic Engineering (Recombinant DNA technology), cloning
- ii) Applications in Health: Human insulin & vaccine production, gene therapy
- iii) Biosafety issues.



Practicals
External: 20

Time: 3 Hours
Internal: 10

Marks: 30

Botany based Practicals: 15 Marks

- i) Internal assessment: 05 marks
- ii) External assessment: 10 marks

Zoology based Practicals: 15 Marks

- i) Internal assessment: 05 marks
- ii) External assessment: 10 marks

List of Experiments

1. Study pollen germination on a slide.
2. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity of soil. Correlate with the kinds of plants found in them.
3. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organisms.
4. Study the presence of suspended particulate matter in air at the two widely different sites.
5. Study of plant population density by quadrat method.
6. Study of plant population frequency by quadrat method.
7. Prepare a temporary mount of onion root tip to study mitosis.
8. To study the effect of the different temperatures and three different pH on the activity of salivary amylase on starch.

Study/observation of the following (Spotting)

1. Flowers adapted to pollination by different agencies (wind, insect)
2. Pollen germination on stigma through a permanent slide.
3. Identification of stages of gamete development i.e. T.S. testis and T.S. ovary through permanent slides. (from any mammal)
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides.
6. Mendelian inheritance using seeds of different color / size of any plant.
7. Prepared pedigree charts of genetic traits such as rolling of tongue, blood groups, widow's peak, and color blindness.
8. Exercise on controlled pollination-Emasculation, tagging and bagging.
9. Identification of common disease causing organisms like Ascaris, Entamoeba, Plasmodium, Ringworm through permanent slides or specimens. Comment on symptoms of diseases that they cause.
10. Two plants and two animals found in xerophytic conditions. Comment upon their morphological adaptations.
11. Plants and animals found in aquatic conditions. Comment upon their morphological adaptations.

Book Prescribed: A Textbook of Biology for class XII published by NCERT, New Delhi.



BIOTECHNOLOGY

Maximum Marks=100

Theory=70 Marks

Practical=30 Marks

UNIT I :- Recombinant DNA Technology

15 Marks

- Introduction,
- Tools of DNA Technology,
- Vectors-plasmid, cosmid, phage, BAC and YAC, animal and plant viral vectors,
- Enzymes used in cloning-Restriction enzymes, DNA ligase and Alkaline phosphatase,
- Host cells, Marking recombinant DNA, Introduction of recombinant DNA into host cells,
- Identification of recombinants, DNA library (Elementary Idea)
- DNA isolation from bacteria, Plants and blood, Plasmid DNA isolation, Polymerase chain reaction,
- DNA probes DNA hybridization techniques-Southern and Northern blotting, DNA sequencing-chain termination method, Site directed mutagenesis.(Brief Idea)

UNIT II :- Protein Structure and Engineering

15 Marks

- Introduction to the world of protein,
- 3-D shape of proteins,
- Structure- function relationship in proteins-Chymotrypsin and Hemoglobin,
- Purification of proteins- salting out, chromatography, Dialysis, SDS-PAGE, Western blotting,
- Characterization of proteins- Two dimensional gel electrophoresis, Peptide mapping, Protein sequencing, Mass spectrometry,
- Protein based products- blood products and vaccines, enzymes, antibodies, hormones and growth factors, industrial enzymes, non catalytic proteins, nutraceutical proteins,
- Designing proteins- Improving laundry detergent Subtilisin, Creation of novel proteins, Improving nutritional value of cereals and legumes, Proteomics- basic idea.



UNIT III :- Genomics and Bioinformatics

10 Marks

Introduction, Genomics, Structural genomics and Functional genomics, Genome sequencing projects- Directed sequencing of Bacterial Artificial Chromosome (BAC) contigs, Random shotgun sequencing, Genome Similarity, SNPs and Comparative Genomics.

Introduction to Bioinformatics, Information sources- Major databases (NCBI, Entrez and EMBL), BLAST family of search tools, Analysis using Bioinformatics tools.

CELL CULTURE TECHNOLOGY

UNIT IV :- Microbial cell culture and applications

10 Marks

Introduction, Microbial culture techniques- Nutrient for microbial culture, Culture Procedures, Equipment for microbial culture, Types of microbial culture- Batch culture, Fed-batch culture and Continuous culture, Measurement and kinetics of microbial growth, Microbial growth measurement: quantifying cell concentration.

Scale-up of microbial processes, Isolation of microbial products, Strain isolation, improvement, metgenomics and preservation, Culture Collections Centers, Applications of microbial culture technology, Biosafety issues in Microbial Technology.

UNIT V :- Plant cell culture and applications

10 Marks

Introduction, Cell and Tissue Culture Techniques- Nutritional media, Types of cultures, Plant regeneration pathways, Applications of Cell and Tissue culture- Micro propagation, Virus-free plants, Artificial seeds, Embryo rescue, Haploids and Triploids, Somatic hybrids and cybrids, Production of Secondary metabolites, Somaclonal variation, In vitro plant germplasm conservation,

Gene transfer methods in plants- vector and non-vector mediated, Transgene analysis- a brief idea),

Transgenic plants with beneficial traits- Stress tolerance (biotic and abiotic), Delayed fruit ripening, Male sterility, Transgenic plants as bioreactors (Molecular farming), Metabolic engineering and secondary products, Biosafety issues in Plant Genetic Engineering.

UNIT VI :- Animal cell culture and applications

10 Marks

Introduction, Animal Cell Culture Techniques- Features of animal cell growth in culture, Primary Cell Cultures, Secondary Cell Cultures and cell lines, Types of cell lines, Finite Cell Lines, Continuous Cell Lines, Physical environment for culturing Animal Cells- Temperature, pH, Osmolality, Medium, Serum and Antibiotics, Vessels and Equipments, Characterization of Cell Lines, Storage and Revival of cells.



Methods of Gene Delivery into cells, Scale-up of Animal Culture Process, Applications of Animal Cell culture, Hybridoma Technology, Stem Cell Technology, Tissue engineering- a brief idea.

Practicals:

30 Marks

1. Precipitation of serum albumins and globulins by ammonium sulphate.
2. Separation of plant pigments/amino acids by paper chromatography
3. Isolation of genomic DNA from bacteria/plant/blood.
4. Analysis of genomic or plasmid DNA using agarose gel electrophoresis
5. Download a DNA, mRNA and a Protein sequence from NCBI, analyze and comment on it.
6. Culture bacteria by Streak Culture Technique.
7. Production and estimation of ethanol from microbial culture.
8. Preparation of explants for plant tissue culture.
9. Preparation of Murashige Skoog medium.
10. Synthesis of artificial seed.
11. Blood group typing.
12. Cell viability test by dye exclusion method.

Project work:

- a. Lab visits, sum up the list of equipments, facilities and conditions and their utilities.
- b. Interaction with a faculty/ Ph.D scholar during visit and submit a report on the work that is being carried out by the duo.
- c. Access the internet at www.ncbi.nlm.nih.gov or www.google scholar.com and download the articles form and any of the discipline pertaining to syllabus and critically comment on the download articles.
- d. Field visit to plant gene banks of IIM(Jammu/Srinagar or DRDO(Leh) or and Biotechnology departments of SKUAST Jammu/Kashmir or Universities of J&K/ Ladakh/Colleges.

Scheme of Evaluation

Internal Assessment: 10 Marks

Project work : 06 Marks

Viva: 04 Marks

External Assessment: 20 Marks

One Experiment 12 marks

Practical record: 04 Marks

Viva: 02 Marks

Attendance: 02 Marks.



MICROBIOLOGY

Maximum Marks: 100

Theory : 70 Marks

Time: 03 hr

Practical: 30 Marks

External : 20 Marks

Internal : 10 Marks

Unit I: Host Microbe Interaction

Marks 11

Chapter I: Host-microbe relationship and disease process: mutualism, commensalism and parasitism. Pathogen virulence, infection, pathogenicity and disease. Classification of diseases like infectious, non-infectious, congenital, communicable, non-communicable, contagious and zoonotic.

Chapter II: Epidemiology: Definition, Carrier state, Prevalence, Incidence of diseases, Case fatality, transmission of diseases by contact, water, food, soil and air. Sporadic, epidemic, endemic and pandemic.

Unit II: Bacterial Genetics

Marks 12

Chapter III: Historical background, DNA structure, replication, RNA types, plasmids and transposons, genetic code, protein synthesis (transcription, translation), *lac* operon, Mutation, recombination (conjugation, transduction and transformation).

Chapter IV: Gene cloning, definition and steps. Vectors (plasmid, bacteriophage, cosmid) .

Unit III: Immunology

Marks 12

Chapter V: Introduction and history of Immunology. Immunity: specific and non specific, innate and acquired. Antigens and haptens and their characteristics. Antibody (polyclonal and monoclonal).

Chapter VI: Organs and cells of immune system. Humoral and cell mediated immunity. Structures and classes of immunoglobulin, Phagocytosis, Complement system, Hypersensitivity, Vaccines, Interferons.

Unit IV: Applied Microbiology

Marks 20

Chapter VII: Environmental Microbiology

Air: Microorganisms found in air. Methods of controlling microorganisms in air.

Soil: Microorganisms in soil, Brief outline of bio- geochemical cycles (carbon, nitrogen, phosphorus and sulphur).

Water: Microflora of fresh water and marine environment, Water pollution, Presumptive coliform count. Bacteriological standards of safe drinking water. Sewage Treatment. Definition of biodegradation, bioremediation, biocontrol and biosafety. .



Chapter VIII: Food Microbiology

Microorganisms commonly found in food and food products, Food poisoning, Prevention of food borne diseases, Pasteurization of milk. Definition of fermentation.

Unit V: Diseases

Marks 15

Definition, Etiology, transmission, Pathogenesis, diagnosis and control of Human diseases (AIDS and tuberculosis), Animal diseases (Rabies and Brucellosis) and Plant diseases (Apple scab and Rice blast).

Practical

1. Sterilization by autoclave and hot air oven
2. Media preparation: Nutrient broth and agar
3. Demonstration of motility by hanging drop method.
4. Demonstration of colony characteristics
5. Lactophenol, cotton blue, staining of fungi.
6. Visit to govt. institutions (microbiology laboratories) for demonstration and working of refrigerator, deep freeze, bacteriological loop, ELISA reader, thermal cycler, fermenter etc.
7. Project work with ten page write up on any one : like collection and transport of clinical sample, serum separation, sample preservation, antibiotic sensitivity test.



TRAVEL, TOURISM AND HOTEL MANAGEMENT

Max Marks : 100

Time : 03 Hours

Part A: TRAVEL & TOURISM MANAGEMENT (ADVANCED)

- Unit I** Travel Agency & Tour Operator – Definition & Differentiation, Origin, History & Development, Types of Travel Agency – Group, Retail, Outbound, Inbound & Independent Tour Operations. **Marks 10**
- Unit II** Functions of Travel & Tour Operations: Ticketing, Reservations, Itinerary preparation, Tour packaging – Concept, Organisations & Agencies in Tour packaging, Various Types of Tour packages. **Marks 10**
- Unit III** Significance of Linkages, Networking & Coordination in travel trade, Coordination with Accommodation & Transport Sector, Public sector tourism organizations, Shopping enterprises, Various Concessions, Discounts & other Incentives offered by Hospitality, Transportation & other sectors of tourism to Travel agents & Tour operators. **Marks 10**
- Unit IV** Concept of Carrying Capacity, Meaning and Concept of Tourism Impacts, Types of Impacts; Physical, Socio-cultural, Economic, Tourism Organizations: PATA and IATA, MAP WORK: Location of important Tourist Destinations of J & K in the tourist map. **Marks 10**
- Unit V** Introduction and Concept of Marketing, Approaches to marketing, components of marketing -mix with special reference to tourism. **Marks 10**

Part B: HOTEL MANAGEMENT (ADVANCED)

- Unit I FRONT OFFICE** **Marks 10**
Front Office operations, Organization Chart, Staffing, Scheduling, Work Shifts, Job Specifications and Job Descriptions of Front Office Personnel.
- Unit II HOUSE KEEPING** **Marks 10**
Meaning and Definition of House keeping, Importance of House keeping, Responsibility of House keeping Department, a Career in House keeping Department.
- Unit III FOOD AND BEVERAGE** **Marks 14**
Introduction to Food & Beverage Industry, Types of Catering Establishments, Introduction to Food and Beverage Operations, F& B service areas in a Hotel, Restaurant, Coffee Shops, Room service, Bars, Banquet, Discotheques, Still rooms, Grill room, Snack bar, Executive Lounges, Business Centres and Night Clubs



Unit IV COMMUNICATION SKILLS

Marks 10

Verbal and Non-verbal, Telecommunication Skills ;Telephonic situations/ Queries Handlings, e-Telecommunication.

Unit V ACCOUNTING

Marks 06

Journal, Ledger and Cash book, Trading account, Profit & Loss Account and Balance sheet.

REFERENCES:

1. Travel Agency & Tour Operations: Concepts and Principles – Jagmohan Negi.
2. Tourism Development and its Impacts – S P Bansal, Sai Printographer, New Delhi
3. Tourism and Travel Concepts and Principles-Jagmohan Negi.
4. Front office training manual by Sudhir Andrews, Tata McGraw Hills