FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
SUBJECT- CHEMISTRY
PAPER-I (PHYSICAL CHEMISTRY)
CODE- BSCM(Y- 201A)

UNIT-I

Thermodynamics: Definition of thermodynamics, First Law of Thermodynamics, Seconds Law of Thermodynamics: Need for the law, different statements of the law. Carnot cycle and its efficiency, Carnot theorem. Thermodynamic scale of temperature. Concept of entropy : entropy as a state function, entropy as a function of V & T, entropy as a function of P & T, entropy change in physical change, Clausius inequality, entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases. Nernst heat theorem, statement and concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions ; Gibbs function (G) and Helmholtz function (Z) as thermodynamic quantities, A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change.

Thermochemistry: standard state, standard enthalpy of formation-Hess's Law of heat summation and its applications. Heat of reaction at constant pressure and at constant

UNIT-II

Phase Equilibrium : Statement and meaning of the terms - phase, component and degree of freedom, derivation of Gibbs phase rule, phase equilibria ofone component system - water, CO2 and S systems. Phase equilibria of two component system - solid -liquid equilibria, simple eutectic - Bi-Cd, Pb-Ag systems, desilverisation of lead.

Solid solutions - compound formation with congruent melting point (Mg-Zn) and incongruent melting point, (NaCl-H2O), Fecl3-H2O) and CuSO4-H2O) system. Freezing mixture, acetone-dry ice.

Liquid - liquid mixtures - Ideal liquid mixtures, Raoult's and Henry's law. Non-ideal system-azeotropes - HCl-H2O and ethanol - water systems.

Partially miscible liquids - Phenol-water, trimethylamine-water, nicotine-water systems. Lower and upper consolute temperature. Effect of impurity on consolute temperature. Immiscible liquids, steam distillation. Nernst distribution law – thermodynamic derivation, applications.

UNIT-III

Electrochemistry – I : Conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of equivalent and specific coductance with dilution. Migration of ions and Kohlrausch law Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law its uses and limitations. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Transport number, definition and determination by Hittorf method and moving boundary method.

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR

UNIT-IV

Electrochemistry - II : Types of reversible electrodes - gas - metal ion, metal-metal ion, metal - insoluble salt - anion and redox electrodes. Electrode reactions, Nernst equation, derivation of cell E.M.F. and single electrode potential, standard hydrogen electrode-reference electrodes- standard electrode potential, sign conventions, electrochemical series and its significance. Electrolytic and Galvanic cells - reversible and irreversible cells, conventional representation of electrochemical cells. EMF of a cell and its measurements. Computation of cell EMF. Calcuation of thermodynamic quantities of cell reactions (DG, DH and K), polarization, over potential and hydrogen overvoltage. Concentration cell with and without transport, liquid junction potential, application of concentration cells, valency of ions, solubility product and activity coefficient, potentiometric titrations. Definition of pH and pKa determination of pH usinghydrogen, quinhydrone and glass electrodes, by potentiometric methods.

Buffers - mechanism of buffer action, Henderson - Hazel equation. Hydrolysis of salts. Corrosion - types, theories and methods of combating it

UNIT-V

Surface Chemistry: Adsorption**,** adsorption and adsorption, types of Adsorption, Adsorption of gases and Liquids in solid adsorption, Freundlich and Langmuir adsorption isotherms surface area and determination of the surface area.

Catalysis: Characteristics of Catalyzed reactions, classification of Catalysis, application of Catalysis.

Suggested Readings:

1. **ADVANCED PHYSICAL CHEMISTRY, Gurdeep Raj, 2014.**

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
SUBJECT- CHEMISTRY
PAPER-II (INORGANIC CHEMISTRY)
CODE- BSCM(Y- 201B)

UNIT-I

Chemistry of Elements of First Transition Series: Characteristic properties of d-block elements. Properties of the elements of the first transition series, their binary compounds and complexes illustrating relative stability of their oxidation states, coordination number and geometry.

UNIT-II

Chemistry of Elements of Second and Third Transition Series: General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry.

UNIT-III

Oxidation and Reduction: Use of redox potential data-analysis of redox cycle, redox stability in water - Frost, Latimer and Pourbaix diagrams. Principles involved in the extraction of the elements.

Coordination Compounds: Warner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes.

UNIT-IV

Chemistry of Lanthanide Elements: Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide com pounds.

Chemistry of Actinides: General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, similarities between the later actinides and the later lanthanides.

UNIT-V

Acids and Bases: Arrhenius, Bronsted-Lowry, the Lux-Flood, solvent system and Lewis concepts of acids and bases.

Non-aqueous Solvents : Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference toliquid NH3 and liquid SO2

Suggested Readings:

1. **A Text-Book Inorganic Chemistry, G. S. Newth**
2. **Physical Inorganic Chemistry: A Coordination Chemistry Approach, 1996, S.F.A. Kettle**
3. **Industrial Inorganic Chemistry, Werner Büchner**

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
SUBJECT- CHEMISTRY
PAPER-III (ORGANIC CHEMISTRY)
CODE- BSCM(Y- 201C)

UNIT-I

Electromagnetic Spectrum : Absorption Spectra Ultraviolet (UV) absorption spectroscopy - absorption laws (Beer-Lambert law), molar absorptivity, presentation and analysis of UV spectra, types of electronic transition, effect of conjugation. Concept of chromophore and auxochrome. Bathochromic, hypsochromic, hyperchromic and hypochromic shifts. UV spectra of conjugated enes and enones.

Infrared (IR) absorption spectroscopy--molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds.

UNIT-II

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

Dihydric alcohols -- nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [Pb(OAc)4and HlO4] and pinacol-pinacolone rearrangement. Trihydric alcohols -- nomenclature and methods of formation, chemical reactions of
glycerol.

Phenols: Nomenclature, structure and bonding. Preparation of phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols --electrophilic aromatic substitution, acylation and carboxylation. Mechanisms of Fries rearrangement, Claisen rearrangement, Gaterman synthesis, Hauben-Hoesch reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction.

UNIT-III

Aldehydes and Ketones: Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1, 3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Witting reaction. Mannich reaction. Use of acetals as protecting group. Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolf f-Kishner, LiAlH4and NaBH4reductions. Halogenation of enolizable ketones. An introduction to α, β unsaturated aldehydes and ketones.

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR

UNIT-IV

Carboxylic Acids : Nomenclature, structure and bonding, physical prop erties, acidity of carboxylic acids, effects of substituents on acid strength. Preparation of carboxylic acids. Reactions of carboxylic acids. Hell-Volhard-Zelinsky reaction. Synthesis of acid chlorides, esters and amides. Reduction of carboxylic acids. Mechanism of decarboxylation. Methods of formation and chemical reactions of unsaturated monocarboxylic acids. Dicarboxylic acids: methods of formation and effect of heat and dehydrating agents.

UNIT-V

Organic Compounds of Nitrogen: Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanisms of nucleophilic substitution in nitroarenes and their reductions in acidic, neutral and alkaline media. Picric acid. Halonitroarenes : reactivity. Structure and nomenclature of amines, physical properties. Stereo chemistry of amines. Separation of a mixture of primary, secondary and tertiary amines. Structural features effecting basicity of amines. Amine salt as phase-transfer catalysts. Preparation of alkyl and aryl amines (reduction of nitro compounds nitriles), reductive amination of aldehydic and ketonic compounds. Gabriel-phthalimide reaction. Hofmann bromoamide reaction. Reactions of amines, electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid. Synthetic transformations of aryl diazonium salts, azo coupling..

Suggested Readings:

1. **ORGANIC CHEMISTRY, VOL. 1 - DR. SULTANAT**
2. **ADVANCED ORGANIC CHEMISTRY, VOL IV - S.P. BHUTANI**
3. **TEXTBOOK OF ORGANIC CHEMISTRY, VOL.III - V. K. AHLUWALIA**

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR

CHEMISTRY (PRACTICAL)

Inorganic Chemistry

- Analysis of inorganic mixture containing five radicals with at least on interfering radical.
- Determination of acetic acid in commercial vinegar using NaOH
- Redox titrations
- Estimation of hardness of water by EDTA.

Physical Chemistry Determination of transition temperature of given substance by thermometric method.

- To determine the enthalpy of neutralization of strong acid, strong base.
- Verification of Beer's- Lambert law.
- To study the phase diagram of two component system by cooling curve method.

Organic Chemistry (Any Two)

- Identification of an organic compound through the functional group analysis, determination of melting point and preparation of suitable derivatives.
- Use of paper chromatography/ Thin layer chromatography: determination of R1 Values, separation and identification of organic compounds.

a) Separation of green leaf pigments (Spinach leave may be used)
b) Separation of dyes.

SUBJECT- PHYSICS

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
PAPER-I (OPTICS)
CODE- BSCM(Y- 202A)

UNIT I

Geometrical optics:

Reflection and refraction, Fermat's principle, Refraction at a spherical surface, aplanatic points and its applications. Lens formula. Combination of thin lenses and equivalent focal length. Dispersion and dispersive power, chromatic aberration and achromatic combination, different types of aberration (Qualitative) and their remedy, Need for multiple lenses in eyepieces, Ramsden and Huygens eye-piece.

UNIT II

Interference of light:

The principle of superposition two slit interference, coherence requirement for the sources, optical path retardations, lateral shift of fringes, Rayleigh refractometer and other applications, localized fringes, thin films, Interference by a film with two non0 parallel reflecting surfaces. Newton's rings, Haidinger fringes (Fringes of equal inclination), Michelson interferometer, its application for precision determination of wavelength, wavelength difference and the width of spectral lines. Intensity distribution in multiple beam interference, fabry – perot interferometer and Etalon.

UNIT III

Diffraction:

Fresnel's theory of half period zone. Diffraction at straight edge. Rectilinear propagation. Diffraction at a slit, phasor diagram and integral calculus methods. Diffraction at a circular aperture and a circular disc, Rayleigh criterion of resolution of images. Resolving power of telescope and and microscope. Outline of phase contrast microscopy. Diffraction at N-parallel slits, Intensity distribution, plane diffraction grating, Resolving power of a grating and comparison with resolving power of prism and of a fabry parot etalon.

UNIT IV

Polarizations:

Transverse nature of light waves, Polarization of electromagnetic waves, Plane polarized light – production and analysis, Description of linear, circular and elliptical polarization Propagation of electromagnetic waves in anisotropic media, uniaxial and biaxial crystals, and symmetric nature of dielectric tensor, Double refraction, and Hagen's principle. Ordinary and extraordinary refractive indices. Fresnel's formula, light propagation in uniaxial crystal, Nicole prism, Production of circularly and elliptically polarized light, Babinet compensator and applications, optical rotation, optical rotation in liquids and its measurement through polarimeter.

UNIT V

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR

Laser and photo sensors:

A brief history of laser. Characteristics of laser light. Einstein prediction, Relationship between Einstein's coefficients (Qualitative discussion). Pumping schemes. Resonators, Ruby laser. He-Ne laser. Applications of laser. Principle of holography. Photodiodes, Phototransistors and photomultipliers.

SUGGESTED READIING;

- **FUNDAMENTAL OF OPTICS: F.A. JENKINS AND H.E. WHITE, 1976 MC GRAW HILL**
- **PRINCIPLES OD OPTICS: B. K. MATHUR 1995 GOPAL PRINTING**

SUBJECT- PHYSICS

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
PAPER-II (ELECTRO-STATICS, MAGNETO STATICS AND ELECTRODYNAMICS)
CODE- BSCM(Y- 202B)

UNIT I

Electrostatics: Coulombs law in vacuum expressed in vector forms. Calculations of electric field E for simple distributions of charge at rest, dipole and quadruple fields. Work done on a charge in an electrostatic field expressed as a line integral, conservative nature of the electrostatic field. Relation between electric field and electric potential ($E = -\nabla V$), torque on a diploe in a uniform electric field and its energy. Flux of the electric field. Gauss's law and its application for finding E for symmetric charge distributions. Capacitors. Conducting sphere in a uniform electric field. Point charge in front of a grounded infinite conductor. Dielectric parallel plate capacitor with a dielectric. Dielectric constant. Polarization and polarization vector P. Relation between displacement vector D. E and P molecular interpretation of claussius – mossotti equation.

UNIT II

Magneto statics: Force on a moving charge. Lorentz foree equation and definition of B, force on a straight conductor carrying current in a uniform magnetic field. Torque on a current loop, magnetic dipole moment, angular momentum and gyromagnetic ratio. Biot and savart's law, calculation of H for simple geometrical situations such as solenoid, Anchor ring, Ampere's law, $\nabla \times V = \mu_o J$, $\nabla . B = 0$. Field due to magnetic dipole, free and bound currents. Magnetization vector (M), relationship between B, H and M. derivation of the relation $\nabla \times M = J$ for non-uniform magnetization.

UNIT III

Current Electricity and Bio electricity: Steady current, current density J, non-stedy currents and continuity equation, Kirchhoff's laws and analysis of multiloop circuits growth and decay of current in LR and CR circuits. Decay constants, LCR circuits, AC circuits, complex numbers and their applications in solving AC circuits problems, complex impedance and reactance, series and parallel resonance, Q-factor, power consumed by an AC circuit, power factor, Y and Δ networks and transmission of electric power, Electricity observed in living systems, origin of bioelectricity.

UNIT IV

Motion of charged particles in Electric and magnetic fields: (Note: The emphasis here should be on the mechanical aspects and not on the details of the apparatus mentioned which are indicated as applications of principles involved.)

E as an accelerating field, electron gun, discharge tube, linear accelerator, E as deflecting velocity selector, Curvatures of tracks for energy determination for nuclear, Mass spectrograph and principle and working of cyclotron. Mutually perpendicular and parallel E & B fields positive ray parabolas, discovery of isotopes. Elements of Mass spectrographs. Principle of magnetic focusing (lenses).

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR

UNIT V

Electrodynamics: Electromagnetic induction, Faraday's Laws, Electromotive force, Integral and differential forms of Faraday's laws. Self and mutual inductance. Transformers. Energy in a static magnetic field. Maxwell's displacement current, Derivations of Maxwell's equations. Electromagnetic field energy density. Pointing vcctor, electromagnetic wave equation. Plane electromagnetic waves in vacuum and dielectric media. Reflection at a plane boundary of dielectrics, Fresnel's Laws, Polarization by reflection and total internal reflection. Waves in a conducting medium, Reflection and refraction by the ionosphere.

SUGGESTED READINGS :

- **PHYSICS VOLUME 2: D. HALLIDAY AND R. RESNICK**
- **INTRODUCTION TO ELECTRODYNAMICS : D. J. GRIFFITHS, 4TH EDITION PRINTICE HALL**

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
SUBJECT- PHYSICS
PRACTICAL

1. Study of interference using biprism.
2. Study of diffraction at straight edge.
3. Use of plane diffraction grating to determine D_1, D_2 lines of sodium lamp.
4. Resolving power of telescope.
5. Polarization by reflection and verification of Brewster's law,
6. Study of optical rotation in sugar solution.
7. Refractive index and dispersive power of prism using spectrometer.
8. Absorption spectrum of material using constant deviation spectrograph.
9. Beam divergence of He-Ne laser.
10. Determination of wavelength of laser by diffraction.
11. Determination of radius of curvature of Plano-convex lense by newton's rings.
12. Characteristics of Ballistic galvanometer.
13. Setting up and using an electroscope or electrometer.
14. Measurement of low resistance by carey-foster bridge or otherwise.
15. Measurement of inductance using impedance at different frequencies.
16. Measurement of capacitance using, impedance at different frequencies.
17. Response curve for LCR circuits and response frequencies.
18. Sensitivity of cathode-ray oscilloscope.
19. Use of a vibration magnetometer to study a field.
20. Study of magnetic field due to current using tangent galvanometer.
21. Study of decay of currents in LR and RC circuits.
22. Study of lissajous figures using CRO.
23. Verification of network theorems.

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
SUBJECT- MATHEMATICS
PAPER-I (ABSTRACT ALGEBRA)
CODE- BSCM(Y- 203A)

UNIT – I

Definition and basic properties of groups. Subgroups. Subgroups generated by a subset, Cyclic groups and simple properties.

UNIT-II

Coset decomposition. Lagrange's theorem and its corollaries including Fermat's theorem. Normal subgroups. Quotient groups.

UNIT –III

Homomorphism and Isomorphism of groups. Fundamental theorem of homomorphism. Transformation and Permutation group. Sn (various subgroups of Sn,n<5 to be studied). Cayley's theorem

UNIT – IV

Group Automorphism. Inner Automorphism. Group of Automorphisms. Conjugacy relation and Centraliser. Normaliser. Counting principle and class equation of a finite group. Cauchy's theorem for finite abelian groups and non- abelian groups.

UNIT -V

definition and basic properties of rings. Ring homomorphism subrings. Ideals and Quotient rings. Polynomial rings & its properties. Integral domain and Field.

Suggested Reading:

1. **I.N. Herstein- Topics in Algebra Wiley Eastern Ltd. New Delhi. 1977.**
2. **PB Bhattacharya. S.K. Jain and S R Nagpaul – Basic Abstract Algebra. Wiley Eastern. New Delhi.1977**

Reference Books:

1. **Shantinarayan- A text Book of Modern Abstract Algebra. S. Chand and Company. New Delhi.**
2. **Surjeet Singh – A Text Book of Modern Algebra.**

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
SUBJECT- MATHEMATICS
PAPER-II (ADVANCED CALCULUS)
CODE- BSCM(Y- 203B)

UNIT- I

Definition of a sequence. Theorem on limits of sequence. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison test. Cauchy's integral test. Cauchy's root test. Ratio tests, Raabe's tests. Logarithmic test. Alternating series. Leibnitz's test. Absolute and conditional convergence.

UNIT-II

Continuity of function of single variable, Sequential continuity, Properties of continuous functions. Uniform continuity. Chain rule of differentiability. Mean value theorems and their geometrical interpretations. Darboux's intermediate value theorem for derivatives.

UNIT –III

Limit and continuity of functions of two variables. Partial differentiation, Change of variables. Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. Jacobians.

UNIT-IV

Envelopes, Evolutes. Maxima and Minima of functions of two variables. Lagrange's multiplier method. Beta and Gamma Functions.

UNIT – V

Double and triple integrals. Volumes and surfaces of solids of revolution Dirichlet's integrals. Change of order of integration in double integrals.

Suggested Reading:

1. **R.R. Goldbeg- Real Analysis. Oxford & I.B.H. Publishing co. New Delhi**
2. **Gorakh Prasad- Differential Calculus. Pothishala Pvt. Ltd Allahabad.**
3. **Gorakh Prasad- Integral Calculus. Pothishala Pvt. Ltd. Allahabad.**

Reference Books:

1. **Gabreil Klaumber – Mathematical Analysis. Marcel Dekkar. Inc.New York.1975**
2. **T.M. Apostol- Mathematical Analysis. Narosa Publishing House. New Delhi. 1985**

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
SUBJECT- MATHEMATICS
PAPER-III (DIFFERENTIAL EQUATION)
CODE- BSCM(Y- 203C)

UNIT- I

Series solutions of differential equations. Power series method. Bessel and Legendre equations. Bessel's and Legendre's functions and their properties- recurrence and generating function. Orthogonality of functions.

UNIT- II

Laplace Transformation. Linearly of the Laplace transformation. Existence theorem for Laplace transforms. Laplace transforms of derivatives and integrals. Shifting theorems. Differentiation and integration of transforms.

UNIT-III

Inverse Laplace transforms. Convolution theorem. Application of Laplace transformation in Solving linear differential equations with constant coefficients.

UNIT-IV

Partial differential equations of the first order. Lagrange's solution. Some special types of equations which can be solved easily by methods other than the general method. Charpit's general method.

UNIT- V

Partial differential equations of second and higher orders. Classification of partial differential equations of second order. Homogeneous and non-homogeneous equations with constant constant coefficients. Partial differential equations reducible to equations with constant coefficients.

Text Books:

1. **Sharma and Gupta- Integral Transform. Pragati. Prakashan Meerut.**
2. **Sharma and Gupta- Differential Equation. Pragati. Prakashan Meerut.**
3. **Raysinghania-Differential Equation. Pragati. Prakashan Meerut.**

Reference Book:

1. **D.A. Murray- Introductory course in differential equation. Orient Longman. India 1967**
2. **G.F. Simnons – Differential Equations.Tata Megraw Hill. 1972.**
3. **E.A.Codington – An introduction to Ordinary differential equations. Prentice Hall of India. 1961**

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR
FOUNDATION COURSE (MORAL VALUE AND LANGUAGE-II)
Code: FC(Y--204A)

UNIT-I

हिन् दी भाषा:

1. वह तोड़ती पत थर)कविता - (सूर्यकांत त्रिपाठी निराला
2. दिमागी गुलामी)निबंध - (राहुल सांक्रत् यायन
3. वर्ण -विचार) स् वर -व् यंजन, वर्गीकरण, उच् चारण स् थान

UNIT-II

हिन् दी भाषा

1. नारीत व का अभिशाप)निबंध - (म हादेवी वर्मा
2. चीफ की दावत)कहानी - (भीष् म साहनी
3. विराम चिन् ह) -संकलित(

UNIT-III

हिन् दी भाषा: नैतिक मूल् य

1. शिकागो ८ याख् यान)व् याख् यान - (स् वामी विवेकानंद
2. धर्म और राष् ट्रवाद) -लेख (महर्षि अरविन् द
3. सादगी)आत् मकथा -(महात् मा गांधी
4. चित त जहां भय शून् य)कविता -(रवीन् द्रनाथ टैगोर

UNIT IV

English:

1. Tree: Tina Morris
2. Night of the Scorpion : Nissim Ezekiel
3. Idgah : Premchand (translated by Khushwant singh
4. Letter to God : G.L. Swanteh (translated by Donald a Yates
5. My Bank Account : Stephen Leacock
6. God sees the Truth but waits : Leo Tolstoy

UNIT V

English:

1. Short Essay on given topics
2. Correspondence skills (format & Informal letters and Application)
3. Translation of sentences/passage English to Hindi and Hindi to English.

Suggested Readings: Madhya Pradesh Hindi grant academy, Bhopal published book.

FACULTY OF SCIENCE AND COMPUTER SCIENCE
CLASS: B.Sc. (MATHEMATICS) SECOND YEAR

FOUNDATION COURSE (ENVIRONMENTAL STUDIES)

Code: FC(Y—204B)

UNIT I

Study of Environment and ecology: Definition and Importance of Environment and Ecology, Public participation and Public awareness.

UNIT II

Environmental Pollution : Air Pollution, water Pollution, noise Pollution, heat and nuclear pollution- Definition, Causes, effect and prevention of pollution, Disaster management – Flood, Earthquake, cyclones and landslides.

UNIT III

Environment and social problems: Sustainable development- Introduction, Energy problems of cities, solar energy, biogas and wind energy, Water conservation – rain-water harvesting.

UNIT IV

Role of mankind in conserving natural resources: Food resources – World food problem , Energy resources – increasing demand for energy.

UNIT V

Environment conservation laws: Conservation laws for air and water pollution, Wildlife conservation laws, Role of information technology in protecting environment & health.

Suggested Readings:

- **Madhya Pradesh Hindi grant academy, Bhopal published book.**