परिशिष्ट (XIII)

मुख्य परीक्षा अन्तर्गत प्रश्न पत्र–2 का पाठ्यक्रम

SUBJECT : ENGLISH LANGUAGE & LITERATURE

A. Detailed study of a literary age (19th century).

This part will cover the study of English literature from 1798 to 1900 with special reference to the works of Wordsworth. Coleridge, Shally, Keats, Lamb, Hazlitt, Thackeray, Dickens, Tennyson, Robert Browning Arnold, George Eliot, Caryle Ruskin, Pater.

B. Evidence of first – hand reading will be required. The questions will be designed to test not only the candidate's knowledge of the authors prescribed but also their understanding of the main literary trends during the period. Questions having a bearing on the social and cultural background of the period may be included.

C. This part will require first-hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

1.	Shakespeare	:	As you like it; Henry IV Parts I, II : Hemlet, The Tempest.
2.	Milton	:	Paradise Lost.
3.	Jane Austen	:	Emma
4.	Wordsworths	:	The Prelude
5.	Dickens	:	David Copperfield.
6.	George Eliot	:	Middlemarch
7.	Hardy	:	Jude the Obscure.
8.	Yeats	:	Easter 1916.
	The Second coming	:	Byzantium.
	A Prayer for my Daughter	:	Leada and the Swan
	Sailing to Byzantium	:	Menu.
	The Tower: Among School Children:		Lapois Lazudili.
9.	Eliot	:	The Waste Land
10.	D.H. Lawrence	:	The Rainbow

विषय : संस्कृत शषा और साहित्य

(SANSKRIT LANGUAGE & LITERATURE)

1. संस्कृत भाषा का उद्भव और विकास (भारतीय यूरोपीय से मध्य भारतीय आर्य भाषाओं तक) केवल सामान्य रूप रेखा।

2. साहित्य के इतिहास का साधारा ज्ञान साहित्य समीक्षा के प्रमुख सिद्धान्त। महाकाव्य नाटक, गद्य काव्य, गीतिकाव्य और संग्रह–ग्रंथ आदि साहित्यिक विधाओं का उद्भव और विकास।

3. प्राचीन भारतीय संस्कृति और दर्शन जिसमें वर्णाश्रम व्यवस्था, संस्कार और प्रमुख दार्शनिक प्रवृत्तियों पर विशेष बल दिया जाए।

4. निम्नलिखित कृतियों का सामान्य अध्ययन

    (क)   काठोपनिषद्

    (ख)   भगवद्गीता

    (ग)   बुद्धचरितम (अश्वघोष)

    (घ)   स्वप्न बासवदत्तम्– (भाष)

    (ड़)   अभिज्ञानशाकुन्तलम (कालिदास)

    (च)   मेघदूतम् (कालिदास)

    (छ)   रघुवंशम (कालिदास)

    (ज)   कुमारसंभवम् (कालिदास)

    (झ)   मृच्छकटिकम् (शुदक)

    (ञ)   किरातार्जुनीयम (भारवि)

    (ट)   शिशुपाल वधम् (माध)

    (ठ)   उत्तर रामचरितम् (भवभूति)

    (ड)   मुद्राराक्षस (विशाखा दत्त)

    (ढ़)   नेषधचरितम् (श्रीहर्ष)

    (ण)   राज तरंगिणी (कल्हण)

    (त)   नीतिशतकम्   (भतृहरि)

    (थ)   कादम्बरी (वाणभट्ट)

    (द)   हर्षचरितम् (वाणभट्ट)

    (ध)   दशंकुमारचरितम (दण्डी)

    (न)   प्रबोध चन्द्रोदयम् (कृप्ले मिश्र)

5. **चुनी हुई निम्नलिखित पाठ्य सामग्री के मौलिक अध्ययन का प्रमाणः–पाठ्यग्रन्थ : केवल इन्ही
    ग्रंथों से प्रश्न पूछे जायेंगे।**

    1. कठोपनिषद् एक अध्याय – तृतीय बल्ली (श्लोक 10 से 15 तक)।

    2. भगवद्गीता अध्याय 2 (श्लोक 13 से 25 तक)।

    3. बुद्धचरित तृतीय सर्ग (श्लोक 1 से 10 तक)।

    4. स्वप्न वासवदत्तम् (पृष्ठ अंक)।

    5. अभिज्ञान शाकुन्तलम (चतुर्थ अंक)।

    6. मेघदूतम (प्रारंभिक श्लोक 1 से 10 तक)।

    7. किंरतार्जुनीयम् (प्रथम सर्ग)।

    8. उत्तर रामचरितम् (तृतीय अंक)।

9. नीतिशतकम् (श्लोक 1 से 10 तक)।

10. कादम्बरी (शुकनासोपपेश)।

11. कौटिल्य अर्थशास्त्र – प्रथम अधिकरण, प्रथम प्रकरण–दूसरा अध्याय शीर्षक विधासमृददेसाह, तत्र अनविकसिकी स्थापना तथा सातवाँ प्रकरण–ग्यारहवाँ अध्याय शीर्षक गू धूरशेत्पतिप निर्धारित संस्करण और पी कांगल कौटिल्य अर्थशास्त्र भाग (1) एक आलोचनात्मक संस्करण मोतीलाल बनारसी दास दिल्ली –1986)।

विषय : भौतिक शास्त्र (Physics)

A. MECHANICS, THERMAL PHYSICS AND WAVES AND OSCILLATIONS

1. **Mechanics :** Conservation Laws, Collisions, impact parameter, scattering cross-section, centre of mass and lab systems with transformation of physical quantities, Rutherford Scattering. Motion of a rocket under constant force field. Rotating frames of reference, Coriolis force, Motion of rigid bodies, Angular momentum, Torque and procession of a top, Gyroscope, Central forces, Motion under inverse square law, Kepler's Laws, Motion of Satellites (including geostationary). Galilean Relativity, Special Theory of Relativity, Michelson-Morley Experiment, Lorentz Transformations - addition theorem of velocities, Variation of mass with, Velocity, Mass- Energy equivalence. Fluid dynamics, streamlines, 40emagnetiz, Bernoullis Equation with simple applications.

2. **Thermal Physics :** Laws of thermodynamics, Entropy, Carnot's cycle. Isothermal and Adiabatic Changes, Thermodynamic Potentials Maxwell's relations. The Clausius-Clapeyren equation reversible cell, Joule-Kelvin effect etc. fan Boltazmann Law, Kinetic Theory of Gases, Maxwell's Distribution Law of velocities, Equipartition of energy, Specific heats of gases. Mean Free path, Brownian Motion. Black Body radiation, specific heat of solid-Einstean & Dbye theories, wein's Law, Planck's Law. Solar Constant. Thermalionization and Stellar spectra-production of law temperatures using adiabatic 40emagnetization and dilution refrigeration, Concept of negative temperature.

3. **Waves and Oscillations :** Oscillations, Simplo harmonic motion, stationary and travelling waves, Damped harmonic motion. Forced oscillation & Resonance. Wave equation, Harmonic Solutions, Plane and Spherical waves. Superposition of waves, Phase and Group velocities, Beats Huygen's principle. Interference. Differaction-Fresnee and Fraunhofer. Diffraction by straight edge, Single and multiple slits, Resolving power of grating and Optical Istiments. Ravleigh Criterion. Polarization; Production and Detection of polarized light (linera. circular and elliptical). Laser sources (Helium-Neon, Ruby, and semiconductor diode). Concept of spatial and temporal coherence. Diffraction as a Fourier transformation. Fresnel and Fraunhofer diffraction by rectangular and circular apertures, Holography, theory and applications.

B. ELECTRICITY & MAGNETISM, MODERN PHYSICS AND ELECTRONICS

1. **Electricity & Magnetism :** Coulmb's Law, Electric field. Gauss's Law. Electric-potential, Possion and Laplace equations for a homogeneous dielectric, uncharged conducting Plane. Magnetic Shell Magnetic induction and field strength. Blot-Savart law and applications. Electro-magnetic induction, Faraday's Lenz's laws, Self and mutual inductances. Alternating currents. L.C.R circuits series and parallel resonance circuits, quality factor. Kirchoffs laws with application. Maxwell's equations and electromagnetic waves, Transverse nature of electromagnetic waves. Poynting vector, magnetic fields in matter—dia, para, ferro antiferro and ferri magnetism (qualitative approach only).

2. **Modern Physics :** Bohr's theory of hydrogen atom. Electron spin, Optical and X-ray Spectra. Stern- Gerlach experiment and spatial quantization. Vector model of the atom, spectral terms, fine structure of spectral lines. J-J and L-S coupling. Zeeman effect, paull's exclusion principle, spectral terms of two equivalent and non-equivalent electrons. Gross and fine structure of electronic band Spectra. Raman effect Photoelectric effect. Compton effect, debroglie waves. Wave particle duality and uncertainty principle. Schrodinger wave equation with application to (i) particle in a box. (ii) motion across a step potential, One dimensional harmonic oscillator Eigen values and Eigen functions. Uncertainty Principle Radio activity, Alpha, beta and gamma radiations. Elementary theory of the alpha decay. Nuclear binding energy. Mass Spectroscopy, Semi empirical mass formula. Nuclear fission and fusion. Elementary Reactor physics. Elementary particles and their classification. Strong, and Weak Electromagnetic interactions. Particle accelerators ; Cyclotron. Linear accelerations, Elementary ideas of Super conductivity.

3. **Electronics :** Band theory of Solids : Conductors, insulators and semiconductors, Intrinsic and extrinsic semiconductors. P-N junction. Thermist of, Zenner diodes and transistors for rectification, amplification, oscillation modulation and detection of r.f. waves. Transistor receiver. Television Logic Gates.

विषय : रसायन शास्त्र (Chemistry)

1. **Atomic structure, Periodic properties and chemical bonding —** Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation, significance of Ψ and Ψ^2, quantum numbers, radial and angular wave functions and probability distribution curves, shapes of S, p, and d orbitals, Aufbau and Pauli's exclusion principles, Hund's rule, electronic configuration classification of elements as s, p, d and f-blocks.

Periodic tables and periodic properties (atomic and ionic radii, ionization energy, electron affinity, electro-negativity) and their trends in periodic table, Their applications in chemical bonding.

Covalen bonding. V.B. Theory, VSEPR Theory, M O. Theory, homonuclear and heteronuclear diatomic molecules, bond order and magnetic properties.

Resonance, hydrogen bonds and vimder Waals forces. Ionic solids - Born-Haber cycle, Fajaris rule.

2. **Gaseous states** — Postulates of kinetic theory of gases, deviation from ideal behavior of van der Waal's equation of state. Critical temperature, pressure and volume. Liquification of gases, Critical constants and vander Waals constants, the law of corresponding states, reduced equation of state Molecular velocities — r:m.s. velocity, average velocity, most probable velocity. Maxwell's distribution of molecular velocities.

3. **Solid State** — Space lattice, Unit cell. Laws of crystallography. X-ray diffraction by crystals. Bragg's equation coordination number radius ratio rule, detects in crystals and their magnetic and electric behavior semi-conductors and super conductors

4. **Thermodynamics** — Law of thermodynamics, work, heat, energy. State functions — E, H, S and G and their significance criteria for chemical equilibrium and spontaneity of reactions. Variations of free energy with T, P and V Gibbs Helmhotts equation. Entropy changes in gases for reversible and irreversible processes. Hess law Bond energy.

5. **Chemical kinetics and catalysis** — Order and molecularity, chemical kinetics and its scope, rate of a reaction, factors influencing rate of reaction. Rate equations of zero, first and second order reactions. Pseudo order, half life and mean life. Determination of order of reactions. Theories of chemical kinetics — collision theory, transition state theory, Arrhenius equation, concept of activation energy, effect of temperature on rate constant.

   Catalysis, characteristics of catalysed reactions, theories of catalysis, examples.

6. **Electrochemistry** — Electronic conduction in electrolytic solutions, specific, equivalents and molar conductance, effect of dilution on them, cell constant, experimental method of determining conductance.

   Migration of ions and Kohlrausch, law. Arrhenius theory of electorlytic dissociation and its limitations, weak and strong electrolytes Ostwald's dilution law, its uses and limitations Debye - Huckel Onsager's equation (elementary treatment) Transport number - definition, determination by Hittor method.

   Galvanic cells, electrodes and electrode reactions, Nernst equation, E.M.F. of cells, Hydrogen electrode, electrochemical series, concentration cell and their applications p^H. Buffer solutions theory of buffer action,

7. **Transition and inner transition metals and complexes** — General characteristics of d-block elements, co-ordination components - nomenclature, isomerism and bonding in complexes V.B. theory and crystal field theory. Werners theory, eAN metal carbonyls, cyclopentadienys, olefin and acetylene complexes.

   Compounds with metal-metal bonds and metal atom clusters.

   General chemistry of f-block elements Lanthanides and actinides - ionic radic, separation, oxidation states, magnetic and spectral properties.

8. **Non-aqueous solvents** — Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liqued NH3 and liquid SO_2.

9. **Photochemistry** — Interaction of radiation with matter, difference between thermal and photochemical processes. Lawa of photochemistry — Grothus-Drapper law, stark-Einstein law, Jablonski diagram. Fluerescence. phosphorescence, Quantum yield Photoelectric cells.

10. **Hard and soft arids and bases** — Classification of acids and bases as hard and soft, Pearson's HSAB concept, acid-base strength and hardness and softness, symbiosis, theoretical basis of hardness and softness, symbiosis, theoretical basis of hardness and softness, electronegativity and hardness and softness.

11. **Structure and Binding** — Hybridization, bond lengths and bind angles bond energy, localized and delocalized chemical bond, van der Waals interactions, inclusion compounds, clatherates, charge transfer complexes, resonance, hyperunjugation, aromaticity, inductive and field effects, hydrogen bonding.

12. **Mechanism of organic reactions** — Homolytic and heterolytic bond breaking, types of reagents - carbocations. and nucleophiles, types of organic reactions, Reactive intermediates - Carbocations, carbanions, free radicals, carhbenes, arynes and nitrenes (with examples) Different types of addition, substitution and elimination reactions - SN^1, SN^2, SN^i, E_1, E_2, E_{1cb} etc.

13. **Stereochemistry of Organic Compounds** — Isomerism, Optical isomerism - elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity properties of enantiomers, chiral and achiral moleculers with tar stereogenic centres, diastereomers. threo and erythro diastereomers, meso compounds, resolution of enantiomers. inversion, retention and racemizarion.

    Relative and absolute configuration requence rule, D & L and R & S nomenclature.

    Geometric isomerism: Determination of configuration of geometric isomers - E & Z nomenclature, geometric isomerism ot oximes and alecyclic compounds. Configuration and confurmation, conformations of ethane, butane and cyclohexane.

14. **Organometallic Compounds** — Organometallic compounds of Mg. Li & Zn their formation, preparation, structure and systhetic applications.

15. **Organic Synthesis via enolates** — Acidity of α-llydrogens, preparation, properties and synthetic applications of diethyl malonate and eithyl acctoacetate, keto-enol tautomeins.

16. **Carbohydrates** — Classification and nomenclature Monosacharides, mechanism of asazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses and ketoses, Anomers and epimers Formation of glycosides, ethers and esters Ring structure of glucose and fructose mechanism of mutarotation.

17. **Polymers** — Addition or chain growth polymerization. Free radical vingt polymerization, ionic vingl polymerizations, Ziegler - Natta polymerization and vinigl polymers. Condensation or step-growth polymerization, Polyesters, polyamider, phenol-formaldelyde resins, urea-formaldelyde resins, epoxy.resins and polyurethanes.

    Natural and synthetic rubbers. Inorganic polymeric systems - silicones and phosphazenes, nature of bonding in triphosphazenes

18. **Study of following types of organic compounds:**

a. Alkanes and cycloalkanes — Preparation of alkanes - wartz reactions Kolbe reaction, Corey - House reaction etc physical and chemical properties, free-radical halogenation of alkanes - reactivity and selectivity.

Cycloalkanes : Nomenclature, formation, properties - Baeger's strain theory

b. Alkenes, cyclocalkenes, Diencs & Alkynes — Mechanism of dehydration of alcohols, and delydrogenation of alkyl halides, regioselectivity in alcohol dehydration. The saytzeff rule, Hofmanu elimination Mechanisn involved in hydrogenation, electrophilic and free radical additions, markownikoffs rule, kharasch effect, hydroboration - oxidation, oxymercuration - reduction, Epoxidation, Ozonolysis, hydration, hydroxyltion and oxidation with KMnOu. Polymenization.

Substitution at the allylic and vinylic positions of alkenes. Uses Dienes: Classificatin, preparation, properties Alkyness : Preparation, properties, acidic reactions of alkynes, mechanism of electrophilic and nucleophilic addition reactions, hydroboration - oxidation, metal-ammonia reductins, oxidation and polymerization.

c. Arenes and Aromaticity — Aromaticity : The Huckel rule, arematic ions, M.O. diagram, anti-aromatic, Aromatic electrophilic substitution — Mechanism, role of σ and π complexes. Mechanism of nitration, halogenters sulphonation, mercuration and Friedel Crafts reaction. Energy profile diagram, activating and deactivating substituents, orientation, ortho-para ratio. Side-chain reactions of benzene derivatives. Birch reduction.

19. **Study of some reactions —** Pinacol - pinacotone rearrangement, aldol reaction, perkin reaction. Cannizzaro's reaction, Mannich reaction, Clemmensen reduction, claisen rearrangement, Peimer Tiemann reaction, Friedel crafts reaction, Fries rearrangement. Reformatsky reaction.

20. **Spectroscopy —** Basic principles of the following type of spectroscopy and their applications in determining structures.

    a.   UV -   Visible spectroscopy

    b.   IR -   "

    c.   NMR -   "

    d.   Mass -   "

    e.   ESR -   "(cemplexes)

SUBJECT : MATHEMATICS

1. **Linear Algebra**: Vector space, Linear dependence and independence, Subspace, bases, dimension, Finite dimensional vector spaces.

Matrices: Cayley- Hamilton theorem, eigenvalues and Eigen vectors, matrix of transformation, row and colum reduction, echelon form, rank, equivalence, congruence and similarity. Reduction to canonical forms. Orthogonal and unitary reduction of quadratic and hermitian forms, positive definite quadratic forms.

2. **Calculus** : Real numbers, bounded sets, open and closed sets, real, sequences, limits, continuity, differenticibility, mean value theorems, Taylor's theorem with remainders, indeterminate form, maxima and minima, asymptotes, functions of several variables, continuity, differentiability, partial deriavatives, maxima and minima, Lagranges methods of multipliers, jacobian, Raimann's definition of definite integrals. Indefinite integrals, infinite & improper integrals, beta & beta gamma functions, double and tripe integrals (evaluation techniques only), areas, surface and volumes, centre of gravity.

3. **Analytic geometry**: Cartesian and polar co-ordinates in two and three dimensions, second degree equations in two and three dimensions, reduction to canonical forms, straight lines, shortest distance between two skew lines plane, sphere, cone, cylinder, paraboloid, ellipsoid, hyperboloid of one and two sheets and their properties.

4. **Ordinary differential equations**: Formulation of differential equation, order and degree, equations of first order and first degree, integrating factors, equations of first order but not of first degree, calariaut's equation, singular solution.

Higher order linear equations with constant coefficients, complementary functions and particular integrals, general solution, Euler-Cauchy equation.

Second order linear equations with variable coefficients, determination of complete solution when one solution is known, method of variation of parameters.

5. **Dynamics, Statics and Hydrostatics**: Degree of freedom and constraints, rectilinear motion, simple harmonic motion, motion in a plane projectile, constrained motion, work and energy, conservation of energy, motion under impulsive forces, kepler's law, orbit under central forces, motion of varying mass, motion under resistance.

Equilibrium of a system of particles, work and potential energy, friction, common catenary, principle of virtual work, stability of equilibrium, equilibrium of forces in three dimensions.

Pressure of heavy fluids, equilibrium of fluids under a given system of forces, Bernoulli's equation, center of pressure, thrust on curved surfaces, equilibrium of floating bodies, stability of equilibrium, metacenter, pressure of gases.

6. **Vector analysis**: Scalar and vector fields, triple products, differentiation of vector function of scalar variable, gradient, divergence and curl in Cartesian, cylindrical and spherical co-ordinates and their physical interpretation. Higher order derivatives, vector identities and vector equations.

Application to geometry: Curves in spaces, curvature and torsion, Serret-Frenet formulae Gauss and Stoke's theorem, Green's identities.

7. **Algebra**: Groups, Sub groups, normal subgroups, homomorphism of groups, quotient groups basic isomorphism theorem, Sylow's theorem, permutation groups, Cayley theorem. Rings and ideals, principal ideal Domains, Unique Factorisation Domains and Euclidean Domains, and Euclidean Domains, field extensions, finite fields.

8. **Complex Analysis**: Analytic function, Cauchy-Riemann equations, Cauchy's theorem Cauchy's integral formula, power series, taylor's series, Laurent's series, Singularities, Cauchy Rasidue theorem, Contour integration, Conformal mapping, Bilinear transformation.

9. **Operations Research**: Linear programming problems, basic solution, basic feasible solution and optimal solution. Graphical method and simplex method of solution, Duality, Transportation and assignment problems.

   Analysis of steady state and transient solution for queueing system with poisson arrivals and exponential service time.

   Deterministic replacement models, sequencing problem with two machines and n jobs, 3 machines and n jobs (special case).

10. **Mathematical Modeling**

    (a) Difference and differential equation growth models: Single species population models, Population growth an age structure model. The spread of technological innovation.

    (b) Higher order linear models - A Model for the detection of diabetes.

    (c) Nonlinear population growth models: prey- predator models, Epidemic growth models.

    (d) An Application in environment: Urban wastes water management planning models.

    (e) Models from political science: Proportional representation (cumulative and comparison voting) models.

11. **Partial differential equations**: Curves and surfaces in three dimensions, formulation of partial differential equations, solutions of equations, solutions of equation of type $dx/P=dy/Q=dz/R$; orthogonal trajectories, pfaffian differential equations, partial differential equations of the first order, solution by Cauchy's method of characteristics, charpit's method of solution, linear partial differential equations of the second order with constant coefficients, equations of vibrating string, heat equation, Laplace equations.

12. **Probability**: Notion of probability: Random experiment, Sample space, axioms of probability, Elementary properties of probability, equally likely outcome problems.

    Random variables: Concept, cumulative distribution function, discrete and continuous random variables, expectations, mean, variance, moment generating function.

    Discrete distribution: Binomial, geometric, poisson.

    Continuous distribution: Uniform, Exonential, Normal, Conditional probability, and conditional expectation, Bayes theorem, independence, computing expectation by conditioning.

    Bivariate random variables: Joint distribution, Joint and Conditional distributions.

    Functions of random variables: Sum of random variables, the law of large number and central limit theorem, approximation of distributions.

13. **Mechanics and fluid dynamics**: Generalised co-ordinates, holonomic and non-holonomic systems D'Alembert's principle and Langrage's equation, Hamilton equations, moment of inertia, motion of rigid bodies in two dimensions.

Equation of continuity, Euler's equations of motion for inviscid flow, stream-lines, path of a particle, potential flow. Two dimensional and axisymytric motion, sources and sinks, votex motion, flow past a cylinder and a sphere, method of images, Navier- Stocke's equation, for a viscous fluid.

14. **Discrete Mathematics**: Introduction to graph theory: graphs and degree sum theorem, connected graph, bi-partite graphs, trees, Eulerian and Hammiltonian graph, plane graph and Euler's theorem, planar graphs, 5-color theorem, marriage theorem.

15. **Logic** : Logical connectives negation, quantifiers, compound statement, Truth table, Tautologies, Boolean algebra- Lattices, geometrical lattices and algebraic structures, duality, distributive and complemented lattices, boolean lattices and boolean algebras, boolean functions and expressions, design and implementation of digital networks, switching circuits.

SUBJECT : COMMERCE

1. **Accounting, Auditing and taxation**

   a) **Accounting as a financial information system**- Impact of behavioral sciences-Methods of accounting of changing price levels with particulars reference to current Purchasing Power (CPP) accounting Advanced problems of company accounts- Amalgamation absorption and reconstruction of companies- Accounting of holding companies-Valuation of shares and goodwill. Controllership functions-property control legal and management.

   b) **Important provisions of the Income Tax Act. 1961**- Definition – charge of Income tax – Exemptions Depreciation and Investment allowance-Simple problems of computation of income under the various heads and determination of assessable income – Income tax authorities.

   c) **Nature and functions of Cost Accounting** – Cost classification – Techniques of segregating semi-variable costs into fixed and variable components – Job costing – FIFO and weighted average methods or calculating equivalent units of production – Reconciliation of cost and financial accounts – Marginal Costing – Cost-volume- profit relationship; Algebraic formulae and graphical representation-Shut-down point-Techniques of cost control and cost reduction-Budgetary control-flexible Budget – Standard costing and variance analysis responsibility accounting-Bases of charging overheads and their inherent fallacy costing for pricing decisions .

   d) **Significance of the attest function**- Programming the audit-works-Valuation and verification of assets, fixed, wasting and current assets – Verification of liabilities – Audit of limited companies – appointment status, power, duties and liabilities of the auditor – Auditor's report-Audit of share capital and transfer of shares – Special point in the audit of banking and insurance companies.

2. **BUSINESS FINANCE AND FINANCIAL INSTITUTIONS.**

   a) **Concept and scope of Financial Management**: Financial goals of corporations – Capital budgeting; Rules of the thumb and Discounted cash flow approaches – Incorporating uncertainty in investment decisions – Designing an optimal capital structure – Weighted average cost of capital and the controversy surrounding the Modigliani and miller model, sources – of raising short-term, intermediate and long-term finance – Role of public and convertible debentures – Norms and guidelines regarding debt-equity rations, - Determinants of an optimal dividend policy-optimizing models of James E.walter and John Lintner-Forms of dividend payment – Structure of working capital and the variable affecting the level of difference of components – Cash flow approach of forecasting working capital needs – Profiles of working capital in Indian industries – Credit management and credit policy – Consideration to tax in relation to financial planning and cash flow statements.

   b) **Organisation and deficiencies of Indian money Market structure of assets and liabilities of commercial banks** – Achievements and failures of nationalisation – Regional rural banks – Recommendations of the Tandon (P.L.) study group on following of bank credit, 1976 and their revision by the chore (K.B.), committee, 1979 – An assessment of the monetary and credit policies of the Reserve bank of India – Constituents of the Indian Capital Market – Functions and working of All India term Financial institutions (IDBI, IFCI, ICICI, and IRCI) – Investment policies of the Life Insurance corporation of India and the Unit Trust of India – Present state of stock exchanges and their regulation.

   c) **Provision of the Negotiable Instruments Act, 1881.**

   d) **Crossings and endorsements with particular reference to statutory protection to the paying and collecting bankers** – Salient Provision of the Banking Regulation Act, 1949 with regard to chartering, supervision and regulation of banks.

3. **Organization Theory and Industrial Relations.**

a) **ORGANISATION THEORY:**

   i) **Nature and concept of organization**: Organization goals Primary and secondary goals Single and Multiple goals, ends – means chain-Displacement, succession, expansion and multiplication of goals – Formal organization: Type, Structure-Line and Staff, functional matrix, and project – Informal organization – functions and limitations.

   ii) **Evolution of organisation theory**: (classical, Neo-classical and system approach – Bureaucracy Nature and basis of power, sources of power, power structure and politics-Organisation behaviour as a dynamic system: technical social and power systems interrelations and interactions – Perception-Status system: Theoretical and empirical foundations of Maslow, Megergore, Horzberg, Likert, Vroom, porter and Lawler, Odam and Human Models of motivation. Morale and productivity- Leadership; Theories and styles- Management of Conflicts in organization – Transactional Analysis – Significance of culture to organisatons. Limits of rationality simon- March approach. Organisation change, adaptation, growth and development-Organisation control and effectiveness.

4. **INDUSTRIAL RELATIONS:**

Nature and scope of industrial relations, Industrial labour in India and its commitment – Theories of unionism- Trade union movement in India – Growth and structure-Role of outside leadership-Workers education and other problems-Collective bargaining-approaches conditions, limitation and its effectiveness in Indian conditions-Workers participation in management: philosophy, rational, present day state of affairs and its future prospects.

Prevention and settlement of industrial disputes in India: preventive measures, settlement machinery and other measures in practice- industrial relations in public enterprises- Absenteeism and labour turn-over International Labour Organisation and India- Role of personnel department in the organization- Executive development, personnel policies, personnel audit and personnel research.

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(परीक्षा नियंत्रक)