National Education Society for Tribal Students
New Delhi

Detailed syllabus for the posts of Post Graduate Teachers (PGTs)

Syllabus -PGTs

- **General awareness**

  General knowledge and Current affairs with special emphasis in the field of education.
- **Reasoning Ability**

  Puzzles & Seating arrangement, Data sufficiency, Statement based questions (Verbal. reasoning), Inequality, Blood relations, Sequences and Series, Direction Test, Assertion and Reason, Venn Diagrams.
- **Knowledge of ICT**

  Fundamentals of Computer System, Basics of Operating System, MS Office, Keyboard Shortcuts and their uses, Important Computer Terms and Abbreviations, Computer Networks, Cyber Security, and Internet.
- **Teaching aptitude**

  Teaching-Nature, Characteristics, Objectives and Basic requirements, Learner's characteristics, Factors affecting teaching, Methods of Teaching, Teaching Aids and Evaluation Systems.
- **Experiential activity-based pedagogy and case study based**
- **National Education Policy (NEP)- 2020**
- **General English**

  Verb, Tenses, Voice, Subject-Verb Agreement, Articles, Comprehension, Fill in the Blanks, Adverb, Error Correction, Sentence Rearrangement, Unseen Passages, Vocabulary, Antonyms/Synonyms, Grammar, Idioms & Phrases
- **General Hindi**

  संधि, समास, विलोम शब्द, पर्यायवाची शब्द, सामान्य असुद्धियाँ, वाक्यांशों के लिए एक शब्द, मुहावरे- लोकोक्तियां, अपठित गद्यांश पर आधारित प्रश्न |

- **Subject specific syllabus:**

PGT-Mathematics

Sets:

Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets. Subsets of a set of real numbers especially intervals (with notations). Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement.

Relations & Functions:

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (upto R x R x R). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions.

Trigonometric Functions

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin 2x + \cos 2x = 1$, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing $\sin(x \pm y)$ and $\cos(x \pm y)$ in terms of sinx, siny, cosx & cosy and their simple applications. Identities related to sin2x, cos2x, tan2 x, sin3x, cos3x and tan3x.

Complex Numbers and Quadratic Equations

Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane

Linear Inequalities

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representationon the number line.

Permutations and Combinations

Fundamental principle of counting. Factorial n. (n!) Permutations and combinations, derivation of Formulae for nPr and nCr and their connections, simple applications.

Binomial Theorem

Historical perspective, statement and proof of the binomial theorem for positive integral indices.
Pascal's triangle, simple applications.

Sequence and Series

Sequence and Series. Arithmetic Progression (A. P.). Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M.

Straight Lines

Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis,point -slope form, slope-intercept form. Distance of a point from a line.

Conic Sections

Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

Introduction to Three-dimensional Geometry

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance betweentwo points.

Limits and Derivatives

Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmicfunctions. Definition of derivative relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

Statistics

Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data.

Probability

Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with other theories of earlier classes. Probability of an event, probability of 'not', 'and' and 'or' events.

Relations and Functions

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions.

Inverse Trigonometric Functions

Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.

Matrices

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. On commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniquenessof inverse, if it exists; (Here all matrices will have real entries).

Determinants

Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

Continuity and Differentiability

Continuity and differentiability, derivative of composite functions, chain rule, derivative of inverse trigonometric functions, derivative of implicit functions. Concept of exponential and

logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives.

Applications of Derivatives

Applications of derivatives: rate of change of bodies, increasing/decreasing functions, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).

Integrals

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^{2+bx+c}}}$$

$$\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^{2+bx+c}}} dx, \int \sqrt{a^2 \pm x^2}\, dx, \int \sqrt{x^2 - a^2}\, dx$$

$$\int \sqrt{ax^2 + bx + c}\, dx,$$

Fundamental Theorem of Calculus. Basic Properties of definite integrals and evaluation of definite integrals;

Applications of the Integrals

Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)

Differential Equations

Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type: dy /dx +py = q, where p and q are functions of x or constants. dx/ dy + px = q, where p and q are functions ofy or constants.

Vectors

Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar,position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product ofvectors.

Three - dimensional Geometry

Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines.

Linear Programming

Introduction, related terminology such as constraints, objective function, optimization,

graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

Probability

Conditional probability, multiplication theorem on probability, independent events, total probability,
Bayes' theorem, Random variable and its probability distribution, mean of random variable.

PGT- Physics

Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units, significant figures. Dimensions of physical quantities, dimensional analysis and its applications.

Motion in a Straight Line

Frame of reference, Motion in a straight line, Elementary concepts of differentiation and integration for describing motion, uniform and non- uniform motion, and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs, Relations for uniformly accelerated motion.

Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors. Motion in a plane, cases of uniform velocity and uniform acceleration, projectile motion, uniform circular motion.

Laws of Motion:

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second lawof motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion- vehicle on a level circular road, vehicle on a banked road.

Work, Energy and Power:

Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power, Notion of potential energy, potential energy of a spring, conservative forces: non-conservative forces,motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.

Motion of System of Particles and Rigid Body & System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and Centre of mass motion, Centreof mass of a rigid body; centre of mass of a uniform rod, Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications, Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects.

Gravitation:

Kepler's laws of planetary motion, universal law of gravitation, Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite.

Mechanical Properties of Solids

Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity, Poisson's ratio; elastic energy.

Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications -hydraulic lift and hydraulic brakes, effect of gravity on fluid pressure, Viscosity, Stokes' law, terminal velocity, streamline

and turbulent flow, critical velocity, Bernoulli's theorem and its simple applications, Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Thermal Properties of Matter

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity. Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law.

Thermodynamics

Thermal equilibrium and definition of temperature, zeroth law of thermodynamics, heat, work and internal energy, First law of thermodynamics, Second law of thermodynamics: gaseous state ofmatter, change of condition of gaseous state -isothermal, adiabatic, reversible, irreversible, and cyclicprocesses.

Behavior of Perfect Gases and Kinetic Theory of Gases :

Equation of state of a perfect gas, work done in compressing a gas, Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules;degrees of freedom, law of equi-partition of energy and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Oscillations and Waves:

Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their application, Simple harmonic motion (S.H.M) and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum -its time period. Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats.

Electric Charges and Fields:

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 a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell-field inside and outside.

Electrostatic Potential and Capacitance:

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

Current Electricity:

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, V-I characteristics (Linear & Non-Linear), electrical

energy and power, electrical resistivity and conductivity, temperature dependence of resistance, Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's rules, Wheatstone bridge.

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 infinitely long straight wire. Straight solenoid, force on a moving charge in uniform magnetic and electric fields. 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; Current loop as a magnetic dipole and its magnetic dipole moment, moving coil galvanometer - its current sensitivity and conversion to ammeter and voltmeter.

Magnetism and Matter

Bar magnet, bar magnet as an equivalent solenoid (qualitative treatment only), magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis (qualitative treatment only), torque on a magnetic dipole (bar magnet) in a uniform magnetic field (qualitative treatment only), magnetic field lines. Magnetic properties of materials- Para- , dia- and ferro - magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties.

Electromagnetic Induction and Alternating Currents

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction, Alternating Current Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LCR series circuit, resonance, power in AC circuits, powerfactor, wattless current, AC generator, Transformer.

Electromagnetic Waves

Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

Ray Optics and Optical Instruments Ray Optics:

Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker’s formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism. Optical instruments: 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 wave fronts, Proof 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 maxima.

Dual Nature of Radiation and Matter:

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light, Experimental study of photoelectric effect Matter waves-wave nature of particles, de-Broglie relation.

Atoms & Nuclei:

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom, Expression for radius of nth possible orbit, velocity and energy of electron in its orbit, hydrogen line spectra, Composition and size of nucleus, nuclear force Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

Semiconductor Electronics:

Energy bands in conductors, semiconductors and insulators, Intrinsic and extrinsic semiconductors- p and n type, p-n junction Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.

PGT-Chemistry

Basic Concepts of Chemistry

General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

Structure of Atom

Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertaintyprinciple, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.

Classification of Elements and Periodicity in Properties

Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.

Chemical Bonding and Molecular Structure

Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), Hydrogen bond.

Chemical Thermodynamics

Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat capacityand specific heat, measurement of ΔU & ΔH, Hess's law of constant heat summation, enthalpy of bond of dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics, Introduction of entropy as a state function, Gibb's energy change for spontaneous and nonspontaneous processes, criteria for equilibrium. Third law of thermodynamics.

Equilibrium

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).

Redox Reactions

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, interms of loss and gain of electrons and change in oxidation number, applications

of redox reactions.

Organic Chemistry -Some Basic Principles and Techniques

General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond, inductive effect, electrometric effect, resonance and hyper conjugation. molytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

Classification of Hydrocarbons

Aliphatic Hydrocarbons:
Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.
Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene. Carcinogenicity and toxicity.

Solutions

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.

Electrochemistry

Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.

Chemical Kinetics

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.

d and f Block Elements

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first-row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$. **Lanthanoids** – Electronic configuration, oxidation states, chemical reactivity

and lanthanoid contraction and its consequences. **Actinoids -** Electronic configuration, oxidation states and comparison with lanthanoids.

Coordination Compounds

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

aloalkanes and Haloarenes.

Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions. **Haloarenes:** Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Alcohols, Phenols and Ethers

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration,uses with special reference to methanol and ethanol. **Phenols:** Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols. **Ethers:** Nomenclature, methods of preparation, physical and chemical properties, uses.

Aldehydes, Ketones and Carboxylic Acids

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses. **Carboxylic Acids:** Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Amines

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

Biomolecules

Carbohydrates - Classification (aldoses and ketoses), monosaccahrides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates. **Proteins -**Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure. **Vitamins -** Classification and functions. Nucleic Acids: DNA and RNA.

PGT -Biology

The Living World

Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature

Biological Classification

Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

Plant Kingdom

Classification of plants into major groups; Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded – Angiosperms, Plant Life Cycle and Alternation of Generations)

Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and at a few examples of each category).

Morphology of Flowering Plants

Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of families: Solanaceae

Anatomy of Flowering Plants

Anatomy and functions of tissue systems in dicots and monocots.

Structural Organisation in Animals

Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervousand reproductive) of frog.

Cell-The Unit of Life

Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system- endoplasmic reticulum, ribosomes, golgi bodies, lysosomes, vacuoles; mitochondria, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.

Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates,lipids, nucleic acids; Enzymes - properties, enzyme action.

Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Photosynthesis in Higher Plants

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.

Respiration in Plants

Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated;

amphibolicpathways; respiratory quotient.

Plant - Growth and Development

Seed germination; phases of plant growth and plant growth rate; conditions for growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Breathing and Exchange of Gases

Introduction to respiratory organs in animals; Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volumes; disorders related to respiration - asthma, emphysema, occupationalrespiratory disorders.

Body Fluids and Circulation

Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension,coronary artery disease, angina pectoris, heart failure.

Excretory Products and their Elimination

Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure andfunction; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH, diabetes insipidus; micturition; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

Locomotion and Movement

Types of movement – amoeboid, ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

Neural Control and Coordination

Neuron and nerves; Nervous system in humans - central nervous system and peripheral nervous system; generation and conduction of nerve impulse; visceral nervous system.

Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, thymus, adrenal, pancreas, gonads; hormones of heart, kidney and gastrointestinal tract;mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease.

Sexual Reproduction in Flowering Plants

Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; outbreeding devices; pollen-pistil interaction; double fertilization; post fertilization events -development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation.

Human Reproduction

Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo

development up to blastocyst formation, implantation; pregnancy and placenta formation ; parturition ; lactation .Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods; medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT

Principles of Inheritance and Variation

Heredity and variation, Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; linkage and crossing over; Sex determination - in human being, birds and honey bee; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans – thalassemia; chromosomal disordersin humans; Down's syndrome, Turner's and Klinefelter's syndromes.

Molecular Basis of Inheritance

Structure of DNA and RNA; DNA packaging; Search for genetic material and DNA as genetic 8 material; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Human genome project; DNA fingerprinting.

Evolution

Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); adaptive radiation; Darwin's theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; human evolution

Human Health and Diseases

Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.

Biotechnology - Principles and Processes

Genetic Engineering (Recombinant DNA Technology).

Biotechnology and its Application

Application of biotechnology in health and agriculture: genetically modified organisms - Bt crops; Human insulin, gene therapy; molecular diagnosis; transgenic animals; biosafety issues, biopiracy and patents.

Organisms and Populations

Population interactions - mutualism, competition, predation, parasitism, commensalism; population attributes - growth, birth rate and death rate, age distribution.

Ecosystem

Ecosystem, productivity and decomposition; energy flow; pyramids of number, biomass, energy.

Biodiversity and Conservation

Biodiversity - Concept, levels, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves,national parks, wildlife, sanctuaries and Ramsar sites.

PGT- Computer Science

Computer Systems and Organisation

- Basic Computer Organisation: Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB)
- Types of software: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software
- Operating system (OS): functions of operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic
  circuits
- Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion betweennumber systems.
- Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF32)

Computational Thinking and Programming

- Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, decomposition
- Familiarization with the basics of Python programming: Introduction to Python, features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments
- Knowledge of data types: number (integer, floating point, complex), boolean, sequence (string,list, tuple), none, mapping (dictionary), mutable and immutable data types
- Operators: arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators (is, is not), membership operators (in, notin)
- Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output
- Errors: syntax errors, logical errors, runtime errors
- Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value,sort 3 numbers and divisibility of a number
- Iterative statements: for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc
- Strings: introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()

- Lists: introduction, indexing, list operations (concatenation, repetition, membership &

slicing),traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(),index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linearsearch on list of numbers and counting the frequency of elements in a list

- Tuples: introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: finding the minimum, maximum, mean ofvalues stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple
- Dictionary: introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del(), clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); suggested programs : count thenumber of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them
- Introduction to Python modules: Importing module using 'import ' and using from statement, Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean, median,mode)

Society, Law and Ethics

- Digital Footprints
- Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
- Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
- Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
- Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying.
- Safely accessing web sites: malware, viruses, trojans, adware
- E-waste management: proper disposal of used electronic gadgets
- Indian Information Technology Act (IT Act)
- Technology & Society: Gender and disability issues while teaching and using computers

Computational Thinking and Programming - 2

- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable(global scope, local scope)
- Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths
- Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file
- Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab,ab+), close a binary file, import pickle module, dump() and load() method,

read, write/create, search, append and update operations in a binary file

- CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader( )

Computer Networks

- Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)
- Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)
- Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber- optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)
- Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card).
- Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)
- Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP, wireless/mobile communication protocol such as GSM, GPRS and WLL
- Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting.

Database Management

- Database concepts: introduction to database concepts and its need
- Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count), groupby, having clause, joins: cartesian product on two tables, equi-join and natural join
- Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications.

Introduction to Computer System

- Introduction to computers and computing: evolution of computing devices, components of acomputer system and their interconnections, Input/Output devices.
    - Computer Memory: Units of memory, types of memory – primary and secondary, data deletion, its recovery and related security concerns. Software: purpose and types – system andapplication software, generic and specific purpose software.

Introduction to Python

- Basics of Python programming, Python interpreter - interactive and script mode, the structureof a program, indentation, identifiers, keywords, constants, variables, types of operators, precedence of operators, data types, mutable and immutable data types, statements, expressions, evaluation of expressions, comments, input and output

statements, data type conversion, debugging, control statements: if-else, for loop Lists: list operations - creating, initializing, traversing and manipulating lists, list methods and built-in functions.: len(), list(), append(), extend(), insert(), count(), find(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum()

- Dictionary: concept of key-value pair, creating, initializing, traversing, updating and deleting elements, dictionary methods and built-in functions: len(), dict(), keys(), values(), items(), get(),update(), clear(), del()

Database concepts and the Structured Query Language

- Database Concepts: Introduction to database concepts and its need, Database Management System. Relational data model: concept of attribute, domain, tuple, relation, candidate key, primary key, alternate key, foreign key.
- Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, creating a database using MySQL, Data Types
- Definition Commands: CREATE TABLE
- Data Query Commands: SELECT-FROM- WHERE
- Data Manipulation Commands: INSERT

Emerging Trends

Artificial Intelligence, Machine Learning, Natural Language Processing, Immersive experience (AR, VR), Robotics, Big data and its characteristics, Internet of Things (IoT), Sensors, Smart cities, Cloud Computing and Cloud Services (SaaS, IaaS, PaaS); Grid Computing, Block chain technology.

Data Handling using Pandas

- Introduction to Python libraries- Pandas, Matplotlib.
- Data structures in Pandas - Series and Data Frames.
- Series: Creation of Series from – ndarray, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing and Slicing.
- Data Frames: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing;
- Importing/Exporting Data between CSV files and Data Frames.
- Data Visualization Purpose of plotting; drawing and saving following types of plots using Matplotlib – line plot, bar graph, histogram Customizing plots: adding label, title, and legendin plots.

Database Query using SQL

- Math functions: POWER (), ROUND (), MOD ().
- Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (),LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
- Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (),DAYNAME ().
- Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*).
- Querying and manipulating data using Group by, Having, Order by.

Introduction to Computer Networks

- Introduction to networks, Types of network: LAN, MAN, WAN.
- Network Devices: modem, hub, switch, repeater, router, gateway

- Network Topologies: Star, Bus, Tree, Mesh.
- Introduction to Internet, URL, WWW, and its applications- Web, email, Chat, VoIP.
- Website: Introduction, difference between a website and webpage, static vs dynamic webpage, web server and hosting of a website.
- Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.

Societal Impacts

- Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open-source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.
- E-waste: hazards and management.
- Awareness about health concerns related to the usage of technology.

PGT-Commerce

Accountancy

Introduction to Accounting

- Accounting- concept, meaning, as a source of information objectives, advantages and limitations, types of accounting information; users of accounting information and their needs. Qualitative Characteristics of Accounting Information. Role of Accounting inBusiness.
- Basic Accounting Terms- Business Transaction, entity, Capital, Drawings. Liabilities (Non-Current and Current). Assets (Non-Current, Current); Fixed assets (Tangible and Intangible),Expenditure (Capital and Revenue), Expense, Revenue, Income, Profit, Gain, Loss, Purchase, Sales, Goods, Stock, Debtor, Creditor, Voucher, Discount (Trade discount and CashDiscount)

Theory Base of Accounting

- Fundamental accounting assumptions: GAAP: Concept
- Business Entity, Money Measurement, Going Concern, Accounting Period, Cost Concept,Dual Aspect, Revenue Recognition, Matching, Full Disclosure, Consistency, Conservatism, Materiality and Objectivity System of Accounting. Basis of Accounting: cash basis and accrual basis
- Accounting Standards: Applicability in IndAS
- Goods and Services Tax (GST): Characteristics and Advantages.

Recording of Business Transactions

- Voucher and Transactions: Source documents and Vouchers, Preparation of Vouchers,Accounting Equation Approach: Meaning and Analysis, Rules of Debit and Credit.
- Recording of Transactions: Books of Original Entry- Journal
- Special Purpose books
- Cash Book: Simple, cash book with bank column and petty cashbook
- Purchases book
- Sales book
- Purchases return book
- Sales return book
- Journal Proper
- Ledger: Format, Posting from journal and subsidiary books, Balancing of accounts
- Bank Reconciliation Statement:
  - Need and preparation, Bank Reconciliation, Statement with Adjusted Cash Book
- Depreciation, Provisions and Reserves
  - Depreciation: Meaning, Features, Need, Causes, factors
  - Other similar terms: Depletion and Amortisation
  - Methods of Depreciation:

  i. Straight Line Method (SLM)

  ii. Written Down Value Method (WDV)

- Difference between SLM and WDV;
- Advantages of SLM and WDV Accounting treatment of depreciation
  i. Charging to asset account

ii. Creating provision for depreciation/accumulated depreciation account
iii. Treatment for disposal of asset

- Provisions and Reserves: Difference
- Types of Reserves: i. Revenue reserve ii. Capital reserve iii. General reserve iv. Specificreserve v.Secret Reserve
- Difference between capital and revenue reserve

Trial balance and Rectification of Errors

- Trial balance: objectives and meaning &preparation
- Errors: types-errors of omission, commission, principles, and compensating; their effect onTrial Balance. Detection and rectification of errors; preparation of suspense account.

Financial Accounting - II

- Financial Statements Meaning, objectives, and importance; Revenue and Capital Receipts; Revenue and Capital Expenditure;
- Deferred Revenue expenditure.
- Trading and Profit and Loss Account: Gross Profit, Operating profit and Net profit. Preparation.
- Balance Sheet: need, grouping and marshalling of assets and liabilities. Preparation.
- Adjustments in preparation of financial statements with respect to closing stock, outstanding expenses, prepaid expenses, accrued income, income received in advance, depreciation, bad debts, provision for doubtful debts, provision for discount on debtors, Abnormal loss, Goodstaken for personal use/staff welfare, interest on capital and managers commission.
- Preparation of Trading and Profit and Loss account and Balance Sheet of a sole proprietorship with adjustments.

Accounting for Partnership Firms

- Partnership: features, Partnership Deed. Provisions of the Indian Partnership Act 1932 in the absence of partnership deed.
- Fixed v/s fluctuating capital accounts. Preparation of Profit and Loss Appropriation account- division of profit among partners, guarantee of profits.
- Past adjustments (relating to interest on capital, interest on drawing, salary and profit sharing ratio). Goodwill: meaning, nature, need, factors affecting and methods of valuation -average profit, super profit and capitalization.

Accounting for Partnership firms - Reconstitution and Dissolution.

- Change in the Profit Sharing Ratio among the existing partners - sacrificing ratio, gaining ratio, accounting for revaluation of assets and reassessment of liabilities and treatment of reserves, accumulated profits and losses. Preparation of revaluation account and balance sheet.
- Admission of a partner - effect of admission of a partner on change in the profit sharing ratio,treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, treatment of reserves, accumulated profits and losses, adjustment of capital accounts and preparation of capital, current account and balance sheet.

Retirement and death of a partner

- effect of retirement / death of a partner on change in profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, adjustment of accumulated profits, losses and reserves, adjustment of

capital accounts and preparation of capital, current account and balance sheet. Preparation of loan account of theretiring partner.

- Calculation of deceased partner's share of profit till the date of death. Preparation of
  deceased partner's capital account and his executor's account.

Dissolution of a partnership firm:

- Meaning of dissolution of partnership and partnership firm, types of dissolution of a firm. Settlement of accounts - preparation of realization account, and other related accounts: capital accounts of partners and cash/bank a/c (excluding piecemeal distribution, sale to a company and insolvency of partner(s)).

Accounting for Share Capital

- Features and types of companies
- Share and share capital: nature and types.
- Accounting for share capital: issue and allotment of equity and preferences shares. Public subscription of shares - over subscription and under subscription of shares; issue at par andat premium, calls in advance and arrears (excluding interest), issue of shares for consideration other than cash.
- Concept of Private Placement and Employee. Stock Option Plan (ESOP), Sweat Equity.
- Accounting treatment of forfeiture and reissue of shares. Disclosure of share capital in the Balance Sheet of a company.

Accounting for Debentures

- Debentures: Meaning, types, Issue of debentures at par, at a premium and at a discount. Issue of debentures for consideration other than cash; Issue of debentures with terms of redemption; debentures as collateral security-concept, interest on debentures. Writing off discount / loss on issue of debentures.

Financial statements of a Company:

- Meaning, Nature, Uses and importance of financial Statement.
- Statement of Profit and Loss and Balance Sheet in prescribed form with major headings andsub headings (as per Schedule III to the Companies Act, 2013)
- Financial Statement Analysis: Meaning, Significance Objectives, importance and limitations.
- Tools for Financial Statement Analysis: Cash flow analysis, ratio analysis.
- Accounting Ratios: Meaning, Objectives, Advantages, classification and computation.
- Liquidity Ratios: Current ratio and Quick ratio.
- Solvency Ratios: Debt to Equity Ratio, Total Asset to Debt Ratio, Proprietary Ratio and Interest Coverage Ratio. Debt to Capital Employed Ratio.
- Activity Ratios: Inventory Turnover Ratio, Trade Receivables Turnover Ratio, Trade Payables Turnover Ratio, Fixed Asset Turnover Ratio, Net Asset Turnover Ratio and Working Capital Turnover Ratio.
- Profitability Ratios: Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio and Return on Investment.

Cash Flow Statement

- Meaning, objectives Benefits, Cash and Cash Equivalents, Classification of Activities andpreparation

<u>Business Studies</u>

Foundation of Business

- Meaning and features

Evolution and Fundamentals of Business

History of Trade and Commerce in India: Indigenous Banking System, Rise of Intermediaries,Transport, Trading Communities: Merchant Corporations, Major Trade Centres, Major Importsand Exports, Position of Indian Sub-Continent in the World Economy. Business–meaning andCharacteristics, Business- profession and employment-Concept, Objectives of business Classification of business activities - Industry and Commerce, Industry-types: primary, secondary, tertiary Meaning and subgroups, Commerce-trade: (types-internal, external; wholesale and retail)and auxiliaries to trade; (banking, insurance, transportation, warehousing, communication, and advertising) – meaning, Business risk-Concept

Forms of Business organizations

Sole Proprietorship-Concept, merits and limitations, Partnership-Concept, types, merits and limitation of partnership, registration of a partnership firm, partnership deed. Types of partners. Hindu Undivided Family Business: Concept. Cooperative Societies-Concept, merits, and limitations. Company - Concept, merits and limitations; Types: Private, Public and One Person Company – Concept. Formation of company - stages, important documents to be used in formation of a company. Choice of form of business organization

Public, Private and Global Enterprises

Public sector and private sector enterprises – Concept. Forms of public sector enterprises: Departmental Undertakings, Statutory. Corporations and Government Company. Global Enterprises – Feature. Public private partnership – concept

Business Services

Business services – meaning and types. Banking: Types of bank accounts - savings, current, recurring, fixed deposit and multiple option deposit account. Banking services with particular reference to Bank Draft, Bank Overdraft, Cash credit. E-Banking meaning, Types of digital payments. Insurance – Principles. Types – life, health, fire and marine insurance – concept. Postal Service-Mail, Registered Post, parcel, Speed Post, Courier-meaning

Emerging Modes of Business

E-business: concept, scope and benefits

Social Responsibility of Business and Business Ethics

Concept of social responsibility. Case of social responsibility. Responsibility towards owners, investors, consumers, employees, government and community. Role of business in environment protection. Business Ethics - Concept and Elements.

Finance and Trade-Sources of Business Finance

Concept of business finance. Owners' funds- equity shares, preferences share, retained earnings. Borrowed funds: debentures and bonds, loan from financial institution and commercial banks, public deposits, trade credit, Inter Corporate Deposits (ICD).

Small Business and Enterprises

Entrepreneurship Development (ED): Concept, Characteristics and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund start-up. Intellectual Property Rights and Entrepreneurship. Small scale enterprise as defined by MSMED Act 2006 (Micro, Small and Medium Enterprise Development Act). Role of small business in India with special reference to rural areas. Government schemes and agencies for small scale industries: National Small Industries Corporation (NSIC) and District Industrial

Centre (DIC) with special reference to rural, backward areas.

Internal Trade

Internal trade - meaning and types services rendered by a wholesaler and a retailer. Types of retail-trade-Itinerant and small scale fixed shops retailers. Large scale retailers-Departmental stores, chain stores – concept. GST (Goods and Services Tax): Concept and key-features.

International trade:

Concept and benefits. Export trade – Meaning and procedure. Import Trade - Meaning and procedure. Documents involved in International Trade; indent, letter of credit, shipping order, shipping bills, mate's receipt (DA/DP). World Trade Organization (WTO) meaning and objectives.

Nature and Significance of Management

Management - concept, objectives, and importance. Management as Science, Art and Profession. Levels of Management. Management functions-planning, organizing, staffing, directing and controlling. Coordination- concept and importance.

Principles of Management

Principles of Management- concept and significance. Fayol's principles of management.
Taylor's
Scientific management- principles and techniques.

Business Environment

Business Environment- concept and importance Dimensions of Business Environment-Economic, Social, Technological, Political and Legal. Demonetization - concept and features.

Planning

Concept, importance and limitation. Planning process. Single use and standing plans.
Objectives,Strategy, Policy, Procedure, method Rule, budget and Programme.

Organising

Concept and importance. Organising Process. Structure of organisation- functional and divisional concept. Formal and informal organisation- concept. Delegation: concept, elements and importance. Decentralization: concept and importance.

Staffing

Concept and importance of staffing. Staffing as a part of Human Resource Management concept. Staffing process. Recruitment process. Selection – process. Training and Development - Concept and importance, Methods of training - on the job and off the job - vestibule training, apprenticeship training and internship training.

Directing

Concept and importance. Elements of Directing. Motivation - concept, Maslow's hierarchy of needs, Financial and non-financial incentives. Leadership - concept, styles - authoritative, democratic and laissez faire. Communication - concept, formal and informal communication;barriers to effective communication, how to overcome the barriers.

Controlling

Controlling - Concept and importance. Relationship between planning and controlling.
Steps inprocess of control.

Financial Management

Concept, role and objectives of Financial Management. Financial decisions: investment, financing and dividend- Meaning and factors affecting. Financial Planning - concept and importance. Capital Structure – concept and factors affecting capital structure. Fixed and Working Capital - Concept and factors affecting their requirements.

Financial Markets

Financial Markets: Concept. Money Market: Concept. Capital market and its types (primary and secondary). Stock Exchange - Functions and trading procedure. Securities and Exchange Board of India(SEBI)-objectives and functions

Marketing

Marketing – Concept, functions and philosophies. Marketing Mix – Concept and elements. Product - branding, labelling and packaging – Concept. Price - Concept, Factors determining price. Physical Distribution – concept, components and channels of distribution. Promotion – Concept and elements; Advertising, Personal Selling, Sales Promotion and Public Relations

Consumer Protection

Concept and importance of consumer protection. The Consumer Protection Act, 2019: Meaning ofconsumer. Rights and responsibilities of consumers Who can file a complaint? Redressal machinery Remedies available. Consumer awareness - Role of consumer organizations and Non- Governmental Organizations (NGOs)

PGT- Economics

Introduction

Meaning, scope, functions and importance of statistics in Economics

Collection, Organisation and Presentation of data

- Collection of data - sources of data - primary and secondary; how basic data is collected with concepts of Sampling; methods of collecting data; some important sources of secondary data:Census of India and National Sample Survey Organisation.
- Organisation of Data: Meaning and types of variables; Frequency Distribution.
- Presentation of Data: Tabular Presentation and Diagrammatic Presentation of Data: (i) Geometric forms (bar diagrams and pie diagrams), (ii) Frequency diagrams (histogram, polygon and Ogive) and (iii) Arithmetic line graphs (time series graph).

Statistical Tools and Interpretation

- Measures of Central Tendency- Arithmetic mean, median and mode
- Correlation – meaning and properties, scatter diagram; Measures of correlation - Karl Pearson's method (two variables ungrouped data) Spearman's rank correlation.
- Introduction to Index Numbers - meaning, types - wholesale price index, consumer price index and index of industrial production, uses of index numbers; Inflation and index numbers.

Introduction to Microeconomics

- Meaning of microeconomics and macroeconomics; positive and normative economics
- What is an economy? Central problems of an economy: what, how and for whom to produce;concepts of production possibility frontier and opportunity cost.

Consumer's Equilibrium and Demand

- Consumer's equilibrium - meaning of utility, marginal utility, law of diminishing marginal utility, conditions of consumer's equilibrium using marginal utility analysis.
- Indifference curve analysis of consumer's equilibrium-the consumer's budget (budget set andbudget line), preferences of the consumer (indifference curve, indifference map) and conditions of consumer's equilibrium.
- Demand, market demand, determinants of demand, demand schedule, demand curve andits slope, movement along and shifts in the demand curve; price elasticity of demand - factors affecting price elasticity of demand; measurement of price elasticity of demand – percentage-change method and total expenditure method.

Producer Behaviour and Supply

- Meaning of Production Function – Short-Run and Long-Run
- Total Product, Average Product and Marginal Product.
- Returns to a Factor
- Cost: Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed cost, average variable cost and marginal cost-meaning and their relationships.
- Revenue - total, average and marginal revenue - meaning and their relationship.
- Producer's equilibrium-meaning and its conditions in terms of marginal revenue marginal cost. Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply - percentage-change method.

Forms of Market and Price Determination under Perfect Competition with simple applications.

- Perfect competition - Features; Determination of market equilibrium and effects of shifts indemand and supply.
- Simple Applications of Demand and Supply: Price ceiling, price floor.

National Income and Related Aggregates

- Basic concepts in macroeconomics: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation.
- Circular flow of income (two sector model); Methods of calculating National Income - Value Added or Product method, Expenditure method, Income method.
- Aggregates related to National Income: Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product (GDP) and Net Domestic Product (NDP) - at market price, at factor cost; Real and Nominal GDP.
- GDP and Welfare

Money and Banking

- Money – meaning and functions, supply of money - Currency held by the public and net demand deposits held by commercial banks.
- Money creation by the commercial banking system.
- Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Control of Credit through Bank Rate, CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Determination of Income and Employment

- Aggregate demand and its components.
- Propensity to consume and propensity to save (average and marginal).
- Short-run equilibrium output; investment multiplier and its mechanism.
- Meaning of full employment and involuntary unemployment.
- Problems of excess demand and deficient demand; measures to correct them - changes ingovernment spending, taxes and money supply.

Government Budget and the Economy

- Government budget - meaning, objectives and components.
- Classification of receipts - revenue receipts and capital receipts;
- Classification of expenditure – revenue expenditure and capital expenditure.
- Balanced, Surplus and Deficit Budget – measures of government deficit.

Balance of Payments

- Balance of payments account - meaning and components;
- Balance of payments – Surplus and Deficit
- Foreign exchange rate - meaning of fixed and flexible rates and managed floating.
- Determination of exchange rate in a free market, Merits and demerits of flexible and fixedexchange rate. Managed Floating exchange rate system

Development Experience (1947-90) and Economic Reforms since 1991:

- A brief introduction of the state of Indian economy on the eve of independence. Indianeconomic system and common goals of Five Year Plans.
- Main features, problems and policies of agriculture (institutional aspects and new agricultural strategy), industry (IPR 1956; SSI – role & importance) and foreign trade.
- Economic Reforms since 1991:

Features and appraisals of liberalisation, globalisation and privatisation (LPG policy); Concepts of demonetization and GST

Current challenges facing Indian Economy

- Human Capital Formation: How people become resource; Role of human capital in economicdevelopment; Growth of Education Sector in India
- Rural development: Key issues - credit and marketing - role of cooperatives; agriculturaldiversification; alternative farming - organic farming
- Employment: Growth and changes in work force participation rate in formal and informalsectors; problems and policies
- Sustainable Economic Development: Meaning, Effects of Economic Development on Resources and Environment, including global warming

Development Experience of India:

- A comparison with neighbours
- India and Pakistan
- India and China
- Issues: economic growth, population, sectoral development and other Human DevelopmentIndicators

PGT - Geography

Geography as a Discipline

- Geography as an integrating discipline, as a science of spatial attributes
- Branches of Geography: Physical Geography and Human Geography

The Earth

- Origin and evolution of the earth
- Interior of the earth Earthquakes and volcanoes: causes, types and effects
- Distribution of oceans and continents : Wegener's continental drift theory and plate tectonics

Landforms

- Geomorphic processes: weathering; mass wasting; erosion and deposition; soil-formation
- Landforms and their evolution- Brief erosional and depositional features

Climate

- Atmosphere- composition and structure; elements of weather and climate
- Solar Radiation-Insolation-angle of incidence and distribution; heat budget of the earth-heating and cooling of atmosphere (conduction, convection, terrestrial radiation and advection); temperature- factors controlling temperature; distribution of temperature-horizontal and vertical; inversion of temperature
- Atmospheric circulation and weather systems - Pressure-pressure belts; winds-planetary, seasonal and local; air masses and fronts; tropical and extra tropical cyclones
- Water in the atmosphere-Precipitation- evaporation; condensation-dew, frost, fog, mist and cloud; rainfall-types and world distribution
- World Climate and Global Concerns

Water (Oceans)

- Basics of Oceanography
- Oceans - distribution of temperature and salinity
- Movements of ocean water-waves, tides and currents; submarine reliefs

Life on the Earth

- Biosphere - importance of plants and other organisms; biodiversity and conservation

India-Physical Environment

- India : Location, space relations, India's place in the world

Physiography

- Structure and Relief; Physiographic Divisions
- Drainage systems: Concept of river basins, watershed; the Himalayan and the Peninsularrivers

Climate, Vegetation and Soil

- Weather and climate - spatial and temporal distribution of temperature, Indian monsoon:mechanism, onset and withdrawal
- Natural vegetation-forest types and distribution; wild life; conservation; biosphere reserves

Hazards and Disasters: Causes, Consequences and Management

- Floods, Cloudbursts
- Droughts: types and impact
- Earthquakes and Tsunami Cyclones: features and impact
- Landslides

Fundamentals of Maps

- Geo spatial data, Concept of Geographical data matrix; Point, line, area data
- Maps - types; scales-types; construction of simple linear scale, measuring distance; findingdirection and use of symbols
- Map projection- Latitude, longitude and time, typology, construction and properties of projection: Conical with one standard parallel and Mercator's projection.

Topographic and Weather Maps

- Study of topographic maps (1 : 50,000 or 1 : 25,000 Survey of India maps); contour cross section and identification of landforms-slopes, hills, valleys, waterfall, cliffs; distribution of settlements
- Satellite imageries, stages in remote sensing data- acquisition, platform and sensors and dataproducts, (photographic and digital)

People

- The World Population- distribution, density and growth
- Population change - Components of population change, Demographic Transition
- Human development-concept; selected indicators, international comparisons
- Population: distribution, density and growth; composition of population - linguistic, religious; sex, rural-urban and occupational-regional variations in growth of population

Human Activities

- Primary activities - concept and changing trends; gathering, pastoral, mining, subsistence agriculture, modern agriculture; people engaged in agricultural and allied activities - some examples from selected countries
- Secondary activities- concept; manufacturing: types - household, small scale, large scale; agrobased and mineral based industries;
- Tertiary activities - concept; trade, transport and tourism; services; people engaged in tertiaryactivities
- Quaternary activities- concept; people engaged in quaternary activities - case study from selected countries

Human Settlements

- Rural settlements - types and distribution
- Urban settlements - types, distribution and functional classification

Transport, Communication and Trade

- Land transport - roads, railways; trans- continental railways Water transport- inland waterways; major ocean routes
- Air transport- Intercontinental air routes Oil and gas pipelines
- Satellite communication and cyber space- importance and usage for geographical information; use of GPS
- International trade- bases and changing patterns; ports as gateways of international

trade;role of WTO in international trade

Resources and Development

- Land resources- general land use; agricultural land use; geographical conditions and distribution of major crops (Wheat, Rice, Tea, Coffee, Cotton, Jute, Sugarcane and Rubber); agricultural development and problems
- Water resources-availability and utilization- irrigation, domestic, industrial and other uses; scarcity of water and conservation methods-rain water harvesting and watershed management
- Mineral and energy resources- distribution of metallic (Iron ore, Copper, Bauxite, Manganese); non-metallic (Mica, Salt) minerals; conventional (Coal, Petroleum, Natural gas and Hydroelectricity) and non-conventional energy sources (solar, wind, biogas) and conservation
- Planning in India- target group area planning(case study); idea of sustainable development (case study)

Transport, Communication and International Trade

- Transport and communication-roads, railways, waterways and airways: oil and gas pipelines; Geographical information and communication net works
- International trade- changing pattern of India's foreign trade; sea ports and their hinterlandand airports

Geographical Perspective on selected issues and problems

- Environmental pollution; urban-waste disposal
- Urbanization, rural-urban migration; problems of slums
- Land degradation

PGT - History

Writing and City Life

Iraq, 3rd millennium BCE

- Growth of towns
- Nature of early urban societies
- Historians' Debate onuses of writing

An Empire across Three Continents

Roman Empire, 27BCEto600 CE

- Political evolution
- Economic Expansion
- Religion-culture foundation
- Late Antiquity
- Historians' view on the Institution of Slavery

NOMADIC EMPIRES

The Mongol, 13th to 14th century

- The nature of nomadism
- Formation of empires
- Conquests and relations with other states
- Historians' views on nomadic societies and state formation

The Three Orders.

Western Europe 13th - 16th century

- Feudal society and economy
- Formation of state
- Church and society
- Historians' views on decline of feudalism

Changing Cultural Traditions

Europe 14th -17th century

- New ideas and new trends in literature and arts
- Relationship with earlier ideas
- The contribution of West Asia
- Historians' viewpoint on the validity of the notion 'European Renaissance

Displacing Indigenous People

North America and Australia, 18th to 20th century

- European colonists in North America and Australia
- Formation of White Settler societies
- Displacement and repression of local people
- Historians' viewpoint on the impact of European settlement on indigenous
  population

Paths to Modernization

East Asia, late 19th to 20th century

- Militarization and economic growth in Japan
- China and the communist alternative

- Historians' Debate on the meaning of modernization

BRICKS, BEADS AND BONES

The Harappan Civilization

- Broad overview: Early urban centers
- Story of discovery: Harappan civilization
- Excerpt: Archaeological report on a major site

KINGS, FARMERS AND TOWNS:

- Early States and Economies (c. 600 BCE-600 CE)
- Broad overview: Political and economic History from the Mauryan to the Gupta period
- Story of discovery: Inscriptions and the Decipherment of the script. Shifts in theUnderstanding of political and economic history.
- Excerpt: Ashokan inscription and Gupta period land grant

KINSHIP, CASTE AND CLASS

Early Society Societies (C. 600 BCE-600 CE)

- Broad overview: Social Histories: Using the Mahabharata
- Issues in social history, including caste, class, kinship an d gender
- Story of discovery: Transmission and publications of the Mahabharat
- Excerpt: from the Mahabharata, illustrating how it has been used by historians.

THINKERS, BELIEFS AND BUILDINGS

Cultural Developments (c. 600 BCE - 600 CE)

- Broad overview: A History of Buddhism: Sanchi Stupa a) A brief review of religious histories of Vedic religion, Jainism, Vaishnavism, Shaivism (Puranic Hinduism) b) Focus on Buddhism.
- Story of discovery: Sanchi stupa. Excerpt: Reproduction of sculptures from Sanchi.

THROUGH THE EYES OF TRAVELLERS

Perceptions of Society (tenth to seventeenth century)

- Broad Overview: outlines of social and cultural life as they appear in traveller's account.
- Story of their writings: A discussion of where they travelled, what they wrote and forwhom they wrote.
- Excerpts: from Al Biruni, Ibn Battuta, Francois Bernier.

BHAKTI -SUFI TRADITIONS:

Changes in Religious Beliefs and Devotional Texts (eighth to eighteenth centuries)

- Broad overview: a. Outline of religious developments during this period saints. b.Ideas and practices of the Bhakti-Sufi
- Story of Transmission: How Bhakti-Sufi compositions have been preserved.
- Excerpt: Extracts from selected Bhakti-Sufi works

AN IMPERIAL CAPITAL: VIJAYANAGARA(fourteenth to sixteenth centuries)

- Broad Over View: New Architecture: Hampi a. Outline of new buildings during Vijayanagar period-temples, forts, irrigation facilities. b. Relationship between architecture and the political system

- Story of Discovery: Account of how Hampi was found.
- Excerpt: Visuals of buildings at Hampi

PEASANTS, ZAMINDARS AND THE STATE:

Agrarian Society and the Mughal Empire (c. sixteenth-seventeenth centuries)

- Broad overview: The Aini-Akbari a. Structure of agrarian relations in the 16th and17th centuries. b. Patterns of change over the period.
- Story of Discovery: Account of the compilation and translation of Ain I Akbari
- Excerpt: from the Ain-i-Akbari.

COLONIALISM AND THE COUNTRYSIDE: Exploring Official Archives

- Broad overview: Colonialism and Rural Society: Evidence from Official Reports a) Life of zamindars, peasants and artisans in the late18thcentury b). Permanent Settlement, Santhals and Paharias
- Story of official records: An account of why official Investigations in to rural societieswere undertaken and the types of records and reports produced.
- Excerpts: From Fifth Report

REBELS AND THE RAJ: 1857 Revolt and its Representations

- Broad overview: a. The eventsof1857-58. b. Vision of Unity c. How these events wererecorded and narrated. Focus: Lucknow
- Excerpts: Pictures of 1857.
- Extracts from contemporary accounts.

MAHATMA GANDHI AND THE NATIONALIST MOVEMENT:

- Civil Disobedience and Beyond Broad overview: a. The Nationalist Movement 1918 -
  48. b. The nature of Gandhian politics and leadership.
- Focus: Mahatma Gandhi and the three movements and his last days as “finest hours”
- Excerpts: Reports from English and Indian language newspapers and other contemporary writings.

FRAMING THE CONSTITUTION:

- The Beginning of a New Era Broad overview: The Making of the Constitution an overview: a. Independence and then new nation state. b. The making of the Constitution
- Focus: The Constituent Assembly Debates
- Excerpts: from the debates

PGT - English

- **Reading:**
  Unseen passage (Factual, descriptive or literary) to assess comprehension, interpretation inference and vocabulary, Unseen case-based passage with verbal/visual inputs like statistical data, charts etc., Note Making and Summarization based on a passage.
- **Creative Writing Skills**:
  Notice, Formal/Informal Invitation and Reply, Letters based on verbal/visual input, Article/ Report Writing, descriptive and analytical in nature, based on verbal inputs. Classified Advertisements, Poster, Writing a Speech in 120-150 words based on verbal/ visual clues related to some contemporary / age-appropriate topic, Debate on contemporary topical issues based on visual/verbal inputs
- **Grammar**:
  Questions on Gap filling (Tenses, Clauses), Questions on re-ordering/transformation of sentences.
- **Literature:**
  Shakespeare's works. Romantic period (e.g. Shelley, Wordsworth, Keats, Coleridge etc) 19th and 20th Century American and English Literature (e.g. Robert Frost, Hemmingway, Whitman, Hawthorne, Emily Dickinson , Bernard Shaw, Arthur Miller etc.)

  Modern Indian Writing in English (e.g. Anita Desai, Vikram Seth, Nissin Ezekiel, K N Daruwala, Ruskin Bond, R K Narayan, Mulk Raj Anand, Khushwant Singh etc) । Modern writing in English from other parts of the world e.g. Latin America / Africa / Australia / South Asia.

पी.जी.टी- हिन्दी

खंड क - इतिहास एवं साहित्य

हिन्दी साहित्य के इतिहास का विस्तृत अध्ययन:-

(1) **आदिकाल से रीतिकाल**

इसके अन्तर्गत कालगत परिस्थितियाँ एवं साहित्य पर उसका प्रभाव, प्रत्येक युग के साहित्य की प्रमुख प्रवृत्तियाँ, प्रमुख रचनाकार एवं उनकी रचनाएँ, साहित्यिक विशेषताएँ, भाषा शैली

(क) **आदिकाल -** चंदबरदाई, अमीर खुसरो, विद्यापति

(ख) भक्तिकाल -

(ı) निर्गुण भक्तिधारा ज्ञानमार्गी शाखा, प्रेममार्गी शाखा कबीर, दादू, रैदास, नानक, जायसी, कुतुबन ।

(ıı) सगुण भक्तिधारा - राम भक्तिशाखा, औष्ण-भक्ति शाखा तुलसीदास, केशव, सूरदास, मीराबाई, अष्टछाप के कवि

(ग) **रीतिकाल–**

रीतिबद्ध, रीतिसिद्ध, रीतिमुक्त काव्य.....देव, घनानंद, बिहारी, मतिराम, सेनापति, भूषण, पद्माकर

(II) <u>आधुनिक काल</u>

युगीन परिस्थितियाँ, साहित्यिक पृष्ठभूमि, मुख्य विचारधारा, मुख्य साहित्यकार, साहित्यिक रचनाएँ, विशेषताएँ, भाषा-शैली (क) भारतेन्दुयुग भारतेन्दु - हरिश्चंद्र, बालमुकुन्दगुप्त. बदरीनारायण चौधरी प्रेमधन

(ख) द्विवेदीयुग महावीर प्रसाद द्विवेदी, – श्रीधर पाठक, अयोध्यासिंह उपाध्याय हरिऔध, मैथिलीशरण गुप्त

(ग) छायावाद जयशंकर प्रसाद, महादेवी वर्मा, सुमित्रानन्दन पंत, सूर्यकान्त त्रिपाठी निराला

(घ) प्रगतिवाद पंत निराला, नरेन्द्र शर्मा, केदारनाथ अग्रवाल, नागार्जुन

(ङ) प्रयोगवाद मुक्तिबोध, नेमिचंद्र जैन, भारतभूषण अग्रवाल, – प्रभाकर माचवे, गिरिजा कुमार माथुर, रामविलास शर्मा, अज्ञेय

(च) नई कविता भवानी प्रसाद मिश्र, नरेन्द्र शर्मा, धूमिल, धर्मवीर भारती, शंभुनाथ सिंह

<u>गद्य साहित्य का विस्तृत अध्ययन</u>

गद्य एवं अन्य विधाओं का प्रारम्भ, विकास, प्रमुख प्रवृत्तियाँ, प्रमुख साहित्यकार, रचनाएँ, साहित्यिक विशेषताएँ, भाषाशैली। निबंध, कथासाहित्य उपन्यास और कहानी, नाटक, एकांकी, रेखाचित्र, संस्मरण, यात्रा-वृतांत, आत्मकथा, जीवनी, पत्र, डायरी, आलोचना, रिपोतार्ज आदि इन सभी विधाओं का विस्तृत परिचय |

2. हिंदी साहित्य

(काव्य साहित्य पर आधारित प्रश्न)

निम्नलिखित कवियों की प्रसिद्ध काव्य-रचनाओं में से लिए गए काव्यांशों पर आधारित सप्रसंग व्याख्या, भाव-सौंदर्य, शिल्प सौन्दर्य पर एक वस्तु निष्ठ प्रश्न एवं दो विष्य परक प्रश्न -

(ι) सप्रसंग व्याख्या, भाव सौन्दर्य - विषय परक - प्रश्न

(ιι) शिल्प सौन्दर्य वस्तुनिष्ठ प्रश्न

अमीर खुसरो, विद्यापति, सूरदास, तुलसीदास, कबीरदास, जायसी, मीराबाई, रसखान, धनानंद, बिहारीलाल, भारतेन्दु, मैथलीशरण गुप्त, दिनकर, जयशंकर प्रसाद, महादेवी वर्मा, निराला, पंत, हरिवंशराय बच्चन, मुक्तिबोध, रघुवीर सहाय, केदारनाथ सिंह, भवानीप्रसाद मिश्र, अज्ञेय इत्यादि (संकेत एम. ए. तक के पाठ्यक्रम में पढ़ी - उपरोक्त कवियों की प्रसिद्ध कविताएँ)

निम्नलिखित गद्य लेखकों की प्रसिद्ध रचनाओं में से व्याख्या से संबंधित अंश, आशय स्पष्टीकरण एवं भाषा प्रश्न शैली पर आधारित प्रश्न

(ι) सप्रसंग व्याख्या एवं आशय स्पष्टीकरण पर आधारित दो विष्य परक प्रश्न

(ιι) भाषाशैली पर आधारित

भारतेन्दु, रामचंद्र शुक्ल, प्रेमचंद, जैनेन्द्र कुमार, हजारीप्रसाद द्विवेदी, धर्मवीर भारती, रामविलास शर्मा, निर्मल वर्मा, फणीश्वर नाथ रेणु, कृष्णा सोबती, भीष्म साहनी, शेखर जोशी, विष्णु खरे, ममता कालिया

3. कवियों और लेखकों के व्यक्तित्व एवं औतित्व पर आधारित एक प्रश्न जिसके पाँच भाग होंगे - यह प्रश्न हिन्दी साहित्य के प्रसिद्ध कवियों एवं लेखकों के जीवन-परिचय, साहित्यिक रचनाएँ एवं भाषाशैली पर आधारित होंगे।

खंड ख - व्याकरण एवं रचना

1. व्याकरण

(क) शब्द-विचार एवं शब्द भंडार - शब्द भेद अर्थ, रचना, स्रोत तथा प्रयोग की दृष्टि से शब्द भंडार - पर्यायवाची, विपरीतार्थक, एकार्थी, अनेकार्थी शब्द-युग्म शब्द निर्माण - उपसर्ग, प्रत्यय, समास

(ख) पद-विचार - पदबंध, पद-परिचय, संज्ञा, सर्वनाम, विशेषण, क्रिया, क्रिया विशेषण, पदबंध-भेद, प्रयोग, पद-परिचय

(ग) वाक्य- विचार- वाक्य संरचना, वाक्य भेद - अर्थ एवं रचना की दृष्टि से, वाक्य- परिवर्तन, वाक्य-संश्लेषण, वाक्य - विश्लेषण

(घ) सन्धि - स्वर सन्धि, व्यंजन सन्धि, विसर्ग सन्धि

2. अपठित बोध -

(क) काव्यांश पर आधारित प्रश्न, भाव सौन्दर्य, शिल्प -- सौन्दर्य

(ख) गद्यांश (साहित्यिक / वर्णनात्मक)

3. (ı) समसामयिक विषय,

(ıı) वर्णनात्मक विषय

(ııı) सर्जनात्मक विषय

(ıv) साहित्यिक विषय

4. काव्यशास्त्रीय अध्ययन

(ı) साहित्य का अर्थ, स्वरूप, उद्देश्य

(ıı) साहित्य की विविध विधाएँ

(ııı) रस-मीमांसा सभी रसों का ज्ञान, काव्य की आत्मा के रूप में रस मीमांसा

(ıv) शब्द शक्ति अभिधा, लक्षणा, व्यंजना -

(v) काव्य-गुण प्रसाद, माधुर्य, ओज -

(vi) काव्य- -दोष विस्तृत जानकारी -

(vii) छंद ज्ञान वर्णिक, मात्रिक

(viii) अलंकार शब्दालंकार, अर्थालंकार, उभयालंकार एवं नए अलंकार

खण्ड ग – लेखन कौशल और पत्रकारिता

1. पत्रकारिता से संबंधित विषय

(ı) प्रिंट माध्यम (समाचार और संपादकीय)

(ii) रिपोर्ट

(iii) आलेख

(iv) फीचर लेखन

(v) साक्षात्कार

(vi) रेडियो व दूरदर्शन के लिए लेखन?

(vii) विज्ञापन लेखन

(viii) उद घोषणा

(ix) स्वागत भाषण

(x) संगोष्ठी संचालन

2. व्यावहारिक लेखन पर एक विषयपरक प्रश्न

(i) व्यावहारिक हिन्दी का स्वरूप

(ii) प्रयोजनमूलक हिन्दी और उसके विविध आयाम

(iii) कार्यालयी हिन्दी और उसके विविध आयाम

(iv) प्रतिवेदन, अर्थ, प्रमुख तत्व, विशेषताएँ, प्रकार प्रतिवेदन लेखन

(v) कार्यसूची कार्यसूची तैयार करने का नमूना

(vi) कार्यवछत्ता स्वरूप, निर्माण

3. सर्जनात्मक लेखन एवं मौलिक अभिव्यक्ति पर एक विषयपरक प्रश्न कविता, कहानी, लघुकथा, डायरी लेखन आदि के रूप में –

(ı) दिए गए विषय पर कविता, लघुकथा संबंधी मौलिक रचना

(ıı) कहानी का कविता में रूपान्तरण

(ııı) अनुभवों के आधार पर लेखन

4. विभिन्न दक्षताओं के विकास हेतु एक विषयपरक प्रश्न

(ı) वार्तालाप की दक्षता के विकास हेतु संवाद लेखन ।

(ıı) कोई भी समसामयिक विषय द्वारा कहानी/कविता लेखन ।

Post Graduate Teachers (Third Language)

मराठी शिक्षक भरतीसाठी अभ्यासक्रम (Syllabus for the Recruitment of Marathi Teachers)

- गद्य साहित्य (PROSE LITERATURE) :-

1. मराठी भाषा उदय व विकास (MARATHI LANGUAGE RISE AND DEVELOPMENT)
2. मराठी वाङमय निर्मितीची प्रेरणा व स्वरूप (INSPIRATION AND NATURE OF MARATHI LITERATURE)
3. मराठी कादंबरी: एक वाङमय प्रकाराचा अभ्यास (STUDY OF NOVEL IN MARATHI VANGAMAYA)
4. मराठी निबंध, नाटक, लघुनिबंध वाङमय प्रकाराचा अभ्यास (STUDY OF ESSAY, DRAMA, LAGHUNIBANDHA IN MARATHI LITERATURE)
5. चरित्र, आत्मचरित्र, आत्मकथन इ. वाङमय प्रकाराचा अभ्यास (STUDY OF CHARACTER, BIOGRAPHIES, AUTOBIOGRAPHY ETC. IN LITERATURE).
6. मराठी गद्य वाङमयीन प्रकारांचे कालखंड (ERA OF MARATHI PROSE LITERATURE).

- पद्य साहित्य (POETRY LITERATURE):-

1. मराठीतील प्राचीन काव्य - स्वरूप व प्रकार (THE NATURE AND TYPE OF ANCIENT POETRY IN MARATHI)
2. मराठीतील अर्वाचीन काव्य -स्वरूप व व्याप्ती (THE NATURE AND SCOPE OF MODERN MARATHI POETRY).
3. मराठी काव्यातील टप्पे व आंदोलने (STEPS AND MOVEMENTS IN MARATHI POETRY).
4. मराठीतील संत साहित्याचा अभ्यास (STUDY OF SAINT LITERATURE IN MARATHI)
5. १९७५ नंतरच्या कालखंडातील काव्य (PERIODS OF POETRY AFTER 1975)

- मराठी भाषा विज्ञान व व्याकरण (MARATHI LINGUISTICS AND GRAMMAR) :-

1. भाषेचे स्वरूप आणि भाषिक परिवर्तन (NATURE OF LANGUAGE AND LINGUISTIC CHANGE)
2. मराठी बोलीभाषांचा अभ्यास (STUDY OF MARATHI DIALECTS)
3. मराठीवर इतर भाषांचा परिणाम (OTHER LANGUAGES RESULTS/ EFFECTS ON MARATHI LANGUAGE)
4. वर्णविचार (VARNAVICARA)
5. संधी (SANDHI)
6. शब्दांच्या जाती (PARTS OF SPEECH)
7. विभक्ती (VIBHAKTI)
8. समास (SAMAS)
9. काळ (TENSES)

10. प्रयोग (VOICE) PRAYOG
11. वाक्यविचार, पदपरिस्फोट (VAKYAVICHAR AND PADPARISFOT)
12. शब्दसिदधी (SHABDASHIDDHI)
13. वाक्यसंश्लेषण, वाक्यरूपांतर (TRANSFORMATION OF SENTENCES)
14. भाषेचे अलंकार (BHASHECHE ALANKAR)
15. वृत्ते (VRUTTE)
16. शब्दशक्ती (SHABDASHAKTI)
17. वाक्प्रचार व म्हणी (PHRASES AND MHANI / SAYINGS)
18. लिंग (GENDER)
19. वचन (NUMBER)
20. विरामचिन्हे व शुदधलेखन (PUNCTUATION OF SENTENCES AND CORRECTION OF WORDS)

ଓଡିଆରେ ଶିକ୍ଷକ ନିଯୁକ୍ତି ପାଇଁ ସିଲାବସ୍ | (Syllabus for the Recruitment of Teachers in Odia)

କ. ଓଡିଆ ଗଦ୍ୟ ସାହିତ୍ୟ

A. Odia prose Literature

1. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ (History of Odia literature.)
2. ଓଡିଆ ଉପନ୍ୟାସ,ଗଳ୍ପ, ନାଟକ/ଏକାଙ୍କିକା,ପ୍ରବନ୍ଧ,ଭ୍ରମଣ କାହାଣୀ,ଜୀବନୀ ଓ ଆତ୍ମଜୀବନୀ (Odia novel, Short story, play/one act play, Essay (prabandha), Travelogue, Biography/Auto Biography.)

ଖ° ଓଡିଆ କବିତା ସାହିତ୍ୟ

B. Odia Poetry Literature

1. ଓଡିଆ କବିତାର ବିକାଶ (Development of Odia poetry.)
2. ପ୍ରା ଚୀ ନ କା ବ୍ୟ (Old Poetry.)
3. ଓଡିଆ ସାହିତ୍ୟର ମଧ୍ୟ ଯୁଗ (ରୀତି,ଭକ୍ତି) (Middle Era of Odia poetry (Riti,Bhakti))
4. ଆଧୁନିକ ଯୁଗ କାବ୍ୟ (ସବୁଜ, ପ୍ରଗତି ବାଦୀ) (Modern Era Poetry (Sabuja. Pragatibadi))
5. ଓଡିଆ ସାହିତ୍ୟର ଉତ୍ତର ଆଧୁନିକ ଯୁଗ କାବ୍ୟ (Post Modern Era poetry)

ଗ. ଓଡିଆ ଭାଷାର କ୍ରମ ବିକାଶ

C. Chronological Devlopment of Odia Language

1. ଓଡିଆ ଭାଷାର କ୍ରମ ବିକାଶ (Chronological development of Odia language)
2. ଓଡିଆ ଉପଭାଷା (Odia dialect.)

ଘ. ବ୍ୟାବହିରିକ ଓଡିଆ ବ୍ୟାକରଣ

D. Functional Odia Grammar

1. ଓଡିଆ ଧ୍ୱନି, ବର୍ଣ୍ଣ, ଲିପି, ଶବ୍ଦ, ପଦ, ବାକ୍ୟ,ପଦ ପ୍ରକରଣ । (Dhwani, Barna,Lipi,Sabda,Pada,Bakaya and Pada Prakarana.)
2. ବାକ୍ୟର ପରିବର୍ତ୍ତନ (Transformation of sentences.)
3. କାହାଣୀର ବ୍ୟବହାର (Usage of narration)
4. ତ୍ରୁଟି ସଂଶୋଧନ (Error correction)
5. ଆଣ୍ଟୋନାଇମ୍ (Antonym)
6. ସମାର୍ଥକ (Synonym)
7. ହୋମୋଫୋନ୍ (Homophone)
8. ସାନ୍ଧୀ (Sandhi)
9. ତଥାପି (Samasa)

10. ପ୍ରତ୍ୟୟ (Usage of suffix)
11. ଉପସର୍ଗ (Usage of prefix)
12. କୃଦନ୍ତ (Krudanta)
13. ତଦ୍ଧିତ (Taddhita)
14. ରୂଢି ପ୍ରୟୋଗ (Usage of Idioms)
15. ଲୋକବାଣୀ ପ୍ରୟୋଗ (Usage of proverbs)
16. ଏକ ପଦରେ ପ୍ରକାଶ କର (One word substitution)
17. ଛନ୍ଦ (Chhanda)
18. ଅଳଙ୍କାର (Alankara)

తెలుగు ఉపాధ్యాయ నియామక పరీక్షకై సిలబస్ రూపు రేఖలు (Syllabus for the Recruitment of Teachers in Telugu)

ఆ) ప్రాచీన సాహిత్యము:
(A) Classical literature

- తెలుగు సాహిత్య ప్రారంభము-వికాసము
- Introduction and Development of Telegu literature

- ప్రాఙ్నో, నన్నయ యుగము
- Pre-Nannaya period

- శివకవులు-పాలకుర్కిసోమన-నన్నెచోడుడు
- Shivapoets-Palk uriki Somana, nannechoda

- కవిత్రయము-ఆంధ్ర మహాభారతము
- Kavitrayam- AndhraMahabharata Rachana

- శ్రీనాధుడు-పోతన
- Sri nathudu,pothana

- ప్రబంధయుగము-అల్లసాని, నంది తిమ్మన, ధూర్జటి, రామరాజ భూషణుడు, తెనాలి రామకృష్ణ, శ్రీకృష్ణదేవరాయలు
- Prabanadha literature- Allasani, nanadi thimmana, dhurjati, ramarajabhushanudu, Thenali Ramakrishna, Shri Krishna devaraya

- ఒ్వపద కావ్యములు-గోనబుద్ధారెడ్డి
- Dvipada Lierature-Gonabuddareddy

- పదకవిత్వము-అన్నమయ్య-త్యాగరాజు-క్షేత్రయ్య-రామదాసు
- Padakavitam-Annamayya, Thyagaraja, Kshetrayya, Ramdas

- శతకసాహిత్యము-వికాసము-వర్గీకరణ-లక్షణములు -నీతి, భక్తి శతకములు
- Shataka Literature-Development-Classification- Characteristics

- కవిసమయాలు-
- Kavi Samayalu

- అవధానవిద్య
- Avadhana Vidya

ఆ) జానపద సాహిత్యము: ప్రారంభము - వికాసము- వర్గీకరణ--జానపదగేయములు- జానపదకళలు-జానపదుల సంస్కృతి - సంప్రదాయములు

(B) Folk Literature—Introduction-Development-Classification Folk arts, Folk culture and heritage

ఇ) ఆధునిక సాహిత్యము

(C) Modern Literature

- ఆధునిక కవిత్వ లక్షణములు - ప్రక్రియలు-ఖండకావ్యము -ముత్యాలసరము-గేయము-వచనకవిత్వము-గజల్-పాట-హైకూ-నానీలు
- Characteristics of modern poetry - Muthyalasaram, song, free verse, Gajal, Haiku, nani etc.

- వాదాలు – కాల్పనిక వాదము - అస్తిత్వ వాదము- ప్రతీకవాదము - భావచిత్రవాదము - హేతువాదము - చైతన్య స్రవంతి అనుభూతివాదము-మానవతావాదము –
- Ism-Romanticism, Symbolism, Imagism, Rationalism, Stream of consciousness, Humanism

- ఆధునిక కవిత్వములో ఉద్యమాలు - జాతీయోద్యమ కవిత్వము - భావకవిత్వము- అభ్యుదయ కవిత్వము-దిగంబర కవిత్వము-విప్లవ కవిత్వము
- Movements in Modern poetry- Nationalist movement, Progressive and revolutionary movements

- కవులు- గురజాడ,కందుకూరి,గిడుగు, రాయప్రోలు, విశ్వనాధ, దేవులపల్లి, దాశరధి, శ్రీశ్రీ, ఆరుద్ర, తిలక్, శేషేంద్ర, కుందుర్తి, తిరుపతివేంకట కవులు, సి.నారాయణరెడ్డి, కాళోజీ, వట్టికోట ఆళ్వార్ స్వామి
- Poets: Gurajada, Kandukuri, Gidugu, Rayaprolu, Vishvanatha, Devulapally, dasharadhi, ShriShri, Arudra, Tilak, Sheshendra, kundurti, thirupathi venkata kavulu, Narayana reddy, Kaloji, Vattikota Alwar Swami

- తెలుగుకథ - వికాసము-వర్గీకరణ
- Telugu Story-Development-classification

- తెలుగు నవల --వికాసము-వర్గీకరణ-లక్షణములు
- Telugu Novel-Development-classification-Characteristics

- తెలుగు నాటకము---వికాసము-వర్గీకరణ-లక్షణములు
- Telugu Drama--Development-classification-Characteristics

- వ్యాసము-లక్షణములు

- Essay Characteristics

- స్వీయ చరిత్ర/జీవిత చరిత్ర
- Autography/biography

- యాత్రారచనలు
- Travelogue

- ఈ) తెలంగాణ సాహిత్యము-తెలంగాణ కవులు, చరిత్ర, సంప్రదాయములు- పరిశీలన
- Telangana Literature/Telangana poets, History, Culture and Heritage

ఊ) భాషా చరిత్ర
(D) Linguistics
- ద్రావిడభాషలు-మాండలికములు
- Dravidian languages and dialects

- వాక్యము-పదము-రూపాంతరములు - ధ్వని పరిణామము
- Sentence-word-phonetics

ఋ) వ్యాకరణము
(E) Grammar
- బాలవ్యాకరణములో ప్రవేశము-అవగాహన
- Good understanding in Bala vyakaranam

- వర్ణమాల, ద్విత్వ, సంయుక్త, సంశ్లేషాక్షరములు
- Varnamala, dvitwa, samyukta, samshlishtaakshara

- లింగములు-వచనములు-అవ్యయములు-విభక్తి ప్రత్యయములు-భాషాభాగములు-క్రియలు—వాక్యములు
- Gender, singular, plural, Parts of speech, verbs, Sentences

- భాషాంశములు-పర్యాయ పదములు, నానార్థములు, ప్రకృతి వికృతులు
- vocabulary-synonyms, antonyms etc.

- జాతీయములు, సామెతలు
- Proverbs, idioms

- సంధులు-తెలుగు సంధులు - అకార, ఇకార, ఉకార, యడాగము, సరళాదేశ,త్రిక - ఇత్యాదులు సవర్ణదీర్ఘ, గుణ,యణా, వృద్ధి సంధులు
- Sandhi-Telugu and Sanskrit sandhi

- ఆకారం, ఇకార, ఉకార, యడగమ, త్రిక, సరళదేశ
- Akara, ikara, ukara, yadagama, thrika, saraladesha

- సవర్ణ, గుణ, యాన, వృద్ధి శాంతి
- Savarna, guna, yana, vriddhi Sandhi

- సమాసములు-తత్పురుష-కర్మధారయ-ద్వంద్వ-ద్విగు-బహివ్రీహి
- Samasamulu-Thatpurusha, karmadharya, dvandva, dvigu, bahuvreehi

- చందస్సు - వృత్తములు-జాతులు-ఉపజాతులు
- Prosody -vritta-jati-upajati

- ఆలంకారములు - ఉపమ, ఉత్ప్రేక్ష, రూపక,అతిశయోక్తి, అర్థాంతరన్యాస, శ్లేష
- Rhetoric-upama, utpreksha, athishayokti, shlesha etc.

ఋ) అధికార భాషగా తెలుగు, ప్రాచీన భాషగా తెలుగు, మాధ్యమిక భాషగా తెలుగు వ్యవహారిక భాష, ప్రామాణిక భాష
(F) Telugu as official language, classical language, Medium of instruction, functional language, standard language.

ౠ) భోధనాపద్ధతులు
(G) Pedagogical methods
- పద్య బోధనా మెళకువలు
- Techniques in poetry teaching

- గద్య బోధనా మెళకువలు
- Techniques in prose teaching

- వ్యాకరణ బోధనా మెళకువలు
- Techniques in grammar

- భాషానైపుణ్యములు -అభివృద్ధి
- Development of language skills

- సహపాఠ్య ప్రణాళికలో మాతృ భాషా బోధకుడి పాత్ర
- Role of Telegu teacher in co-Curricular activities

संस्कृतभाषायां शिक्षकानां नियुक्त्यर्थं पाठ्यक्रमः (Syllabus for the Recruitment of Teachers in Sanskrit)

खण्ड क - साहित्य परिचय (गद्य, पद्य एवं नाटक)

निम्न ग्रन्थों के निर्धारित अंको के आधार पर शब्दार्थ, सूक्तियों के भावार्थ, शब्द का व्याकरणात्मक टिप्पणी, चरित्र चित्रण, तथा ग्रन्थकर्ता के परिचय:
कादम्बरी, (कथामुखम), नलचम्पू (प्रथम उच्छवास), शिशुपाल बधम् (प्रथम सर्गी, अभिज्ञान शाकुन्तलम और मृच्छकटिकम, गद्यकाव्य, खण्डकाव्य, महाकाव्य एवं नाट्यकाव्य के उद्भव और विकास का सामान्यस परिचय |

खण्ड ख - संस्कृत वाडंमय में प्रतिविम्बित भारतीय दर्शन

इस खण्ड में श्रीमद्भागवद्गीता, तर्कभाषा, साख्यकारिका तथा वेदान्तसार के अनुसार प्रमुख दार्शनिक सिद्धान्तों का सामान्य परिचय |

खण्ड ग - काव्यशास्त्र

(साहित्य दर्पण एवं काव्य प्रकाश के अनुसार), काव्य लक्षण, प्रयोजन, शब्दवृत्तियां, ध्वनि, रस एवं निम्नलिखित अलंकारों का परिज्ञान-अनुप्रास, यमक श्लेष, उपमा, रूपक, उत्प्रेक्षा, सन्देह, शभ्रान्तिमानू, अतिशयोक्ति, स्वभोक्ति विरोभास तथा पारिसंख्या |

खण्ड घ - भाषा विज्ञान एवं व्याकरण

भाषा का उद्भव एवं विकास, ध्वनि परिवर्तन तथा अर्थपरिवर्तन, सभी गुणों की प्रतिनिधि घातुओं का दसों लकारों में रूप (लघु सिद्धान्त कौमुदी के आधार पर) सिद्धान्त कौमुदी के आधार पर सभी कारकों, विभक्तियों एवं समास का प्रक्रियात्मक ज्ञान। निम्नलिखित प्रत्ययों का प्रयोगात्मक ज्ञान-कृत-तव्यत, अनीयर, यत् धंश तृच..... क्त, क्तवतु, कत्वा, ल्ययू, शत् शानूच, तुमुन तद्धित-अक क्तुप, मतुप, ढक, ढकी, फक, ख, यत् एवं छास्त्री प्रत्यय-टाप डप्र, डीप डीन। विशेष - उक्त प्रत्यय लघुसिद्धान्त कौमुदी के आधार पर प्रेष्टव्य है |

खण्ड ड - रचना एवं पारिभाषिक पद

(क) संस्कृत सुभाषित एवं सूक्तियों का परिज्ञान, अशुद्धि परिमार्जन और वाक्य परिवर्तन |
(ख) नाटक में प्रयुक्त पारिभाषिक शब्दों का ज्ञान |

Syllabus for the Recruitment of Teachers in Santali

इकाई-1: जातिविज्ञान: Ethnology
जातिविज्ञान की परिभाषा और स्वरूप, मुख्य शाखाएँ, उपयोगिता और वैशिष्ट्य, सामाजिक व्यवस्था, आर्थिक व्यवस्था, धार्मिक व्यवस्था, आदिवासियों का सामान्य परिचय : संताल, मुण्डा, हो, खारिया, उराँव, बिरहोड़ महली, पहाड़िया, असुर, कोल, भूमिज।

इकाई-2: भाषाविज्ञान एवं व्याकरण : Linguistic and Grammar
भाषाविज्ञान की परिभाषा एवं प्रकार, भाषा उत्पत्ति के सिद्धान्त, भाषा की विशेषताएँ एवं प्रकृति, भाषा के विभिन्न रूप, भाषाओं का पारिवारिक वर्गीकरण, भाषाओं का आकृतिमूलक वर्गीकरण, ध्वनि विज्ञान, पद विज्ञान, वाक्य विज्ञान, अर्थ विज्ञान, लिपि विज्ञान। संताली व्याकरण : संज्ञा, सर्वनाम, लिंग, वचन, पुरूष, क्रिया, कारक, काल, विशेषण, सजीव-निर्जीव, प्रत्यय, विपरीतार्थक शब्द, अनेक शब्दों के बदले एक शब्द ।

इकाई-3: भारतीय साहित्य : Indian Literature
1. संस्कृत भाषा - साहित्य का सामान्य परिचय- वेद, पुराण, उपनिषद, रामायण, महाभारत, गीता।
2. हिन्दी भाषा - साहित्य का सामान्य परिचय : प्रसाद, महादेवी वर्मा, प्रेमचन्द, निराला, दिनकर ।
3. बंगला भाषा-साहित्य का सामान्य परिचय : रबीन्द्र नाथ ठाकुर, बंकिम चन्द्र चट्टपाध्याय, ताराशंकर बंदोपाद्याय, काजी नजरूल इस्लाम ।

इकाई-4: साहित्य सिद्धान्त: Theory of Literature
साहित्य की परिभाषा, उसके हेतु, तत्व, रूप, प्रक्रिया और प्रयोजन | साहित्य की विविध विधा - प्रबंध काव्य, काव्य, उपन्यास, कहानी, नाटक, एकांकी, निबंध, जीवनी, संस्मरण । शब्द-शक्ति, रस, छंद, अलंकार ।

इकाई- 5: लोक साहित्य : Folk Literature
लोक साहित्य की परिभाषा, स्वरूप, महत्व और प्रयोजन, संताली लोक साहित्य के विविध रूप और प्रकार - संताली लोक गीत, संताली लोक कथा, लोक गाथा, संताली लोकोक्तियाँ, संताली मुहावरें, संताली कहावत, संताली पहेलियाँ, 'कुदुम', संताली लोक संस्कृति, संताली पर्व-त्यौहार, संताली वाद्य यंत्र, संताली नृत्य ।

इकाई-6: संताली काव्य साहित्य : Santali Poetry Literature
1. संताली प्राचीन काव्य साहित्य: लोक गीत, लाँगडे, दोङ, बाहा, सोहराय, काराम, रिंज़ा ।
2. संताली मध्यकालीन काव्य साहित्य: ओनोड़हें बाहा ड़ालवाक्, आषाढ़ विन्ती, तिरयो तेताङ, भुरका इपिल, चाँद माला, गोसो बाहा, कोयोक् होर।
3. संताली आधुनिक काव्य साहित्य: ओनोहें मोहोक्, तोवा दारे, ताराल बासाल, शिशिर शिरिजोल, जिवी जाला, बाहा माला, ओन्तो बाहा माला।

इकाई-7: संताली गद्य साहित्य : Santali Prose Literature
1. नाटक : दाड़ेगे धोन, जुरीख़ातिर, संसार फेंद थारी दाका रे मेत् दा:, बादोली कोंडा ।
2. उपन्यास : हाड़मावाक आतो, आतो ओडाक्, बारुवेड़ा, ओजोय गाडा ढिपरे, नामालिय़ा, मानुमाती ।
3. कहानी : मायाजाल, आरसी, ग्रामिन, क़ाहनी माला, साँवता, घरोंच, आंचार, दुलाड़ चिन्हा ।
4. निबंध : संतालकोवा : आरीचाली आर आरसी, खेरवाल आरीबांदी, गानाङ माला, होड़ कोरेन मारे हापड़ाम को रेयाः काथा ।

इकाई -8: संताली पत्र पत्रिका : Santali Magazine
संताली पत्रिकाओं का उद्भव और विकास : होड़-सोम्बाद, पछिम बंगला, जुग सिरिजोल, सिली, तेतरे, सागेन सांकाम, फ़ागुन, मारसाल, पाँजा, तोड़े सुनाम आदि ।

इकाई-9: आदिवासी महापुरूष एवं साहित्यकार -
स्वतंत्रता सेनानी - बाबा तिलका माँझी, सिदो, कान्दू, चाँद, भायरो, भागीरथी माँझी, भादो हेम्बरम, डिबा किसुन, विरसा मुण्डा, वीर बधुभगत, तेलंगा खांड़िया, श्याम पारगाना ।

साहित्यकार - म़ाझी रामदास टुड् 'रेसका', धीरेन्द्र नाथ बास्के, साधु रामचाँद मुरमू, पं. रघुनाथ मुरमू, मंगल चन्द्र सोरेन, डमन हाँसदा, सोलेमान मुरमू, नाथानियल मुरमू, प्रो. कृष्ण चन्द्र टुडू, प्रो. दिगम्बर हाँसदा, ठाकुर प्रसाद मुरमू, आदित्य मित्र 'संताली', रेव. पी. ओ. बोडिंग, रेव. एल.ओ स्क्रफस्रुड, रेव. जरमिया फिलिप्स, हरिहर हॉसदा, ब़ाबू लाल मुरमू 'आदिवासी', भागवत मुरमू 'ठाकुर' डोमन साहु 'समीर' सुह्रद कुमार भौमिक ।

इकाई-10: संतालो का इतिहास : History of the Santal
संतालो का उद्भव एवं विकास, गोत्र विभाजन, मानव सृजन कथा, सृष्टीकथा, गाड़ विभाजन, जन्म संस्कार, विवाह संस्कार, मृत्यु संस्कार, पर्व एवं त्यौहार, संतालो का लोक जीवन, पेशा, शिकार, परम्पारगत शासन व्यवस्था, सामाजिक व्यवस्था, आर्थिक व्यवस्था, धार्मिक व्यवस्था।

বাংলা

১। পাঠ্যপুস্তক নির্ভর প্রশ্ন:

ত্রিপুরা মধ্যশিক্ষা পর্ষদ প্রকাশিত উচ্চতর মাধ্যমিক বাংলা সাহিত্য সংকলন 'সাহিত্য মালঞ' (একাদশ ও দ্বাদশ - শ্রেণি) দুটি গ্রন্থের পাঠ্যসূচি অনুযায়ী কবিতা, গদ্য, নাটক ও ছোটগল্প অবলম্বনে প্রশ্ন থাকবে।
(ক) প্রশ্নের বিষয়: রচয়িতার পরিচয়, বিষয়বস্তুর স্বরূপ, রসবৈশিষ্ট্য নির্ধারণ, চরিত্র বৈশিষ্ট্য নিরূপণ (কাহিনি ভিত্তিক রচনার - ক্ষেত্রে পূর্ব বর্ণিত বিষয়গুলি অন্তর্ভূক্ত হবে)।
(খ) পাঠ্যাংশ থেকে উদ্ধৃত অংশের ভিত্তিতে টীকা, ব্যাখ্যা এবং ভাষাগত বৈশিষ্ট্যের প্রশ্ন থাকবে।

২। বাংলা সাহিত্যের ইতিহাস:

(ক) প্রাচীন ও মধ্যযুগ (১০-ম থেকে ১৮-শ শতক):

- প্রাচীন ও মধ্যযুগের আর্থ - সামাজিক প্রেক্ষাপটে বাংলা সাহিত্যের উন্মেষ, উদ্ভব, বিকাশ ও প্রভাব।

- বাংলা কাব্যের উদ্ভব ও প্রকাশকাল; বিভিন্ন কাব্যধারা ও তার প্রধান প্রধান কবির পরিচয়; কাব্য বিষয়ের বৈচিত্র্য ও বিবিধ বৈশিষ্ট্য; ঐতিহাসিক গুরুত্ব ও সাহিত্যমূল্য।

বিষয়: বাংলা ভাষার উদ্ভব, চর্যাপদ, শ্রীকৃষ্ণকীর্তন, বৈষ্ণব পদাবলী, অনুবাদ কাব্য (রামায়ণ, মহাভারত ও ভাগবত), মঙ্গলকাব্য, চৈতন্য-জীবনীকাব্য, নাথসাহিত্য, আরাকান রাজসভার সাহিত্য, শাক্ত পদাবলী, ময়মনসিংহ গীতিকা, বাউলগান।

(খ) আধুনিক যুগ (১৯-শ থেকে ২০-শ শতক):

- যুগসন্ধি ও আধুনিক যুগপর্বের প্রধান প্রধান ঐতিহাসিক ঘটনা এবং বাংলা সাহিত্যে তার প্রভাব।

রচয়িতার জীবন ও সৃজনকর্মের বিশিষ্টতা, গ্রন্থের নাম, প্রকাশকাল, বিষয়বস্তু, চরিত্র-নির্মাণ (আখ্যান নির্ভর রচনার ক্ষেত্রে)।

- সাময়িকপত্রের ক্ষেত্রে - প্রথম প্রকাশকালঞ্চ, ঐতিহাসিক গুরুত্ব, সম্পাদকের নাম।

বিষয়: গদ্য, প্রবন্ধ সাহিত্য, সাময়িকপত্র ('দিগদর্শন' থেকে 'কবিতা' পত্রিকা অবধি), কাব্যসাহিত্য, নাট্যসাহিত্য, কথাসাহিত্য ।

৩। সাহিত্যের রূপ-রীতি:

- কাব্য: আখ্যানকাব্য, মহাকাব্য, গীতিকবিতা, সনেট।
- প্রবন্ধ: সংজ্ঞা - স্বরূপ, রম্যরচনা ও সমালোচনা সাহিত্য।
- নাটক: ট্র্যাজেডি, কমেডি, প্রহসন, পৌরাণিক নাটক, ঐতিহাসিক নাটক, সামাজিক নাটক, একাঙ্ক নাটক, রূপক-সাংকেতিক নাটক, কাব্যনাট্য, নাট্যকাব্য ।
- উপন্যাস: নভেল ও রোমান্স, ঐতিহাসিক উপন্যাস, সামাজিক উপন্যাস, আঞ্চলিক উপন্যাস, রাজনৈতিক উপন্যাস, মনস্তাত্ত্বিক উপন্যাস, আত্মজীবনীমূলক উপন্যাস, কাব্যোপন্যাস ।
- ছোটোগল্প: ছোটোগল্পের বিবিধ বৈচিত্র্য ।

৪। বাংলা ভাষাতত্ত্ব :
(ক) বাংলা ভাষার উদ্ভব : ভাষা এবং উপভাষার সম্পর্ক, বাংলার উপভাষা , সাধু ও চলিত ভাষা (বৈশিষ্ট্য , পার্থক্য ও রূপান্তর)

(খ) ধ্বনিতত্ত্ব: বাংলার স্বরধ্বনি ও ব্যঞ্জনধ্বনির পরিচয় ও উচ্চারণস্থান, বাংলার ধ্বনি-পরিবর্তনের কারণ এবং কয়েকটি বিশিষ্ট নিয়ম - (স্বরভক্তি, অপিনিহিতি, অভিশ্রুতি, স্বরসঙ্গতি, সমীভবন, বর্ণবিপর্যয়, বিষমীভবন, নাসিক্যীভবন, ধ্বনিলোপ, স্বরাগম, বর্ণদ্বিত্ব, লোকনিরুক্তি, অল্পপ্রাণীভবন, মহাপ্রাণীভবন, ঘোষীভবন, অঘোষীভবন, সমাক্ষরলোপ, সাদৃশ্য, জোড়কলম শব্দ, শ্রুতিধ্বনি) ।

(গ) শব্দভান্ডার - শব্দের বিভিন্ন শ্রেণিবিভাগ (তৎসম, অর্ধতৎসম, তদ্ভব, দেশি, বেদেশি বা আগন্তুক ও সংকর শব্দ)।

(ঘ) শব্দার্থতত্ত্ব - শব্দের অর্থ পরিবর্তনের প্রধান প্রধান কারণ ও বিভিন্ন ধারা (অর্থ-বিস্তার, অর্থ-সংকোচ, অর্থসংক্রম বা অর্থ সংশ্লেষ)।

৫। কাব্য নির্মাণশৈলী:

(ক) **ছন্দ:** সংজ্ঞা , বিচার , দল / অক্ষর, কলা বা মাত্রা, ছেদ, যতি, পর্ব, পর্বাঙ্গ, লয়, পংক্তি, চরণ ও স্তবক। নামান্তর সহ অক্ষরবৃত্ত, মাত্রাবৃত্ত ও স্বরবৃত্ত ছন্দ।

(খ) **অলঙ্কার:**

- শব্দালঙ্কার - অনুপ্রাস, যমক, শ্লেষ, বক্রোক্তি ।

অর্থালঙ্কার - উপমা, রূপক, উৎপ্রেক্ষা, ব্যাজস্তুতি, অতিশয়োক্তি, অপহ্নুতি, সমাসোক্তি, ব্যতিরেক, বিরোধ, নিশ্চয়, সন্দেহ।

(গ) কাব্য-বিচারে ধ্বনিবাদী ও রসবাদীদের মতামত।

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