

KHELGAON PUBLIC SCHOOL

CLASS: XI

ANNUAL SYLLABUS

2022-2023

Sr. No	Subject	Syllabus
1	English	<p>Reading Comprehension through Unseen Passage</p> <p>I. One unseen passage to assess comprehension, interpretation inference and vocabulary. The passage may be factual, descriptive or literary.</p> <p>II. One unseen case-based passage with verbal/visual inputs like statistical data, charts etc. Note: The combined word limit for both the passages will be 600-750. Multiple Choice Questions / Objective Type Questions will be asked. (10+8 = 18 Marks)</p> <p>III. Note Making and Summarization based on a passage of approximately 200-250 words.</p> <p>Creative Writing Skills :</p> <p>i. Short writing task – Classified Advertisements up to 50 words. One out of the two given questions to be answered (3 Marks: Format : 1 / Content : 1 / Expression : 1)</p> <p>ii. Short writing task –Poster up to 50 words. One out of the two given questions to be answered.(3marks:Format : 1/Content :1/Expression: 1)</p> <p>iii. Writing a Speech in 120-150 words based on verbal / visual cues related to some contemporary / age-appropriate topic. iv. Writing a Debate based on visual/verbal inputs in 120-150 words. The theme should be contemporary topical issues. One out of the two given questions to be answered. (5 Marks: Format: 1 / Content: 2 / Expression: 2)</p> <p>Grammar</p> <p>i. Questions on Gap filling (Tenses, Clauses)</p> <p>ii. Questions on re-ordering/transformation of sentences</p> <p>Book-Hornbill: The Portrait of a Lady (Prose), A Photograph (Poem), “We’re Not Afraid to Die... if We Can All Be Together” (Prose) Discovering Tut: the Saga Continues, The Laburnum Top (Poem), The Voice of the Rain (Poem), Childhood (Poem), The Adventure, Silk Road (Prose), Father to Son.</p> <p>Book-Snapshots: The Summer of the Beautiful White Horse (Prose), The Address (Prose), Mother’s Day (Play), Birth (Prose), The Tale of Melon City.</p>
2	Hindi	<p>खंड अ (वस्तुपरक प्रश्न)</p> <p>1 अपठित गद्यांश अ- एक अपठित गद्यांश (अधिकतम 300 शब्दों का) (1अंक × 10 प्रश्न) ब- दो अपठित पद्यांशों में से कोई एक पद्यांश (अधिकतम 150 शब्दों का) (1अंक × 5 प्रश्न)</p> <p>2 पाठ्यपुस्तक अभिव्यक्ति और माध्यम की इकाई एक से पाठ संख्या 1 तथा 2 पर आधारित बहुविकल्पात्मक प्रश्न (1अंक × 5प्रश्न))</p> <p>3. पाठ्यपुस्तक आरोह भाग-1 से बहुविकल्पात्मक प्रश्न अ- अपठित काव्यांश पर पाँच बहुविकल्पी प्रश्न (1अंक × 5 प्रश्न) ब- पठित गद्यांश पर पाँच बहुविकल्पी प्रश्न (1अंक × 5 प्रश्न)</p> <p>4. पूरक पाठ्यपुस्तक वितान भाग-1 से बहुविकल्पात्मक प्रश्न अ- पठित पाठों पर दस बहुविकल्पी प्रश्न (1अंक × 10 प्रश्न)</p>

		<p style="text-align: center;">खंड- ब (वर्णनात्मक प्रश्न)</p> <p>5 पाठ्यपुस्तक अभिव्यक्ति और माध्यम से सृजनात्मक लेखन और व्यावहारिक लेखन पाठ संख्या 1, 2, 9, 10, 14, 15 तथा 16 पर आधारित</p> <p>अ- दिए गए चार अप्रत्याशित विषयों में से किसी एक विषय पर लगभग 120 शब्दों में रचनात्मक लेखन (6अंक × 1प्रश्न)</p> <p>ब- औपचारिक पत्र लेखन। (5अंक×1प्रश्न)(विकल्प सहित)</p> <p>स- डायरी लेखन, कथा-पटकथा विषयों पर लेखन पर आधारित दो प्रश्न (3अंक × 2प्रश्न) (विकल्प सहित) (लगभग 60शब्दों में)</p> <p>द- स्ववृत्त लेखन और रोजगार संबंधी आवेदन पत्र तथा शब्दकोश संदर्भ ग्रंथों की उपयोगी विधि और परिचय पर आधारित तीन में से दो प्रश्न (2अंक × 2प्रश्न) (विकल्प सहित) (लगभग 40 शब्दों में)</p> <p>6 पाठ्यपुस्तक आरोह भाग - 1</p> <p>अ- काव्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 60 शब्दों में) (3अंक × 2प्रश्न)</p> <p>ब- काव्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 40 शब्दों में) (2अंक × 2प्रश्न)</p> <p>स- गद्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 60 शब्दों में) (3अंक × 2प्रश्न)</p> <p>द- गद्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 40 शब्दों में) (2अंक × 2प्रश्न)</p> <p>7 (अ) श्रवण तथा वाचन (ब) परियोजना कार्य</p> <p>नोट - पाठ्यक्रम के निम्नलिखित पाठ हटा दिए गए हैं। आरोह भाग - 1 काव्य खंड- कबीर (पद 2)-संतो देखत जग बौराना, मीरा (पद 2)-पग घुंगरू बांधि मीरा नाची, रामनरेश त्रिपाठी-पथिक (पूरा पाठ), सुमित्रानंदन पंत-वे आँखें (पूरा पाठ) गद्य खंड- कृष्णनाथ-स्पीति में बारिश (पूरा पाठ), सैयद हैदर रजा-आत्मा का ताप (पूरा पाठ)</p>
3	Mathematics	<p>Unit-I: Sets and Functions</p> <p>1. 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.</p> <p>2. 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 $R \times R \times R$). 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.</p> <p>3. 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</p>

their graphs. Expressing $\sin(x \pm y)$ and $\cos(x \pm y)$ in terms of $\sin x$, $\sin y$, $\cos x$ & $\cos y$ and their simple applications. Deducing identities like the following: $\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}$, $\cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$, $\sin \alpha \pm \sin \beta = 2 \sin \frac{1}{2}(\alpha \pm \beta) \cos \frac{1}{2}(\alpha \mp \beta)$, $\cos \alpha + \cos \beta = 2 \cos \frac{1}{2}(\alpha + \beta) \cos \frac{1}{2}(\alpha - \beta)$, $\cos \alpha - \cos \beta = -2 \sin \frac{1}{2}(\alpha + \beta) \sin \frac{1}{2}(\alpha - \beta)$. Identities related to $\sin 2x$, $\cos 2x$, $\tan 2x$, $\sin 3x$, $\cos 3x$ and $\tan 3x$.

Unit-II: Algebra

1. 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

2. Linear Inequalities

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

3. 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.

4. Binomial Theorem

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

5. Sequence and Series

Sequence and Series. 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.

Unit-III: Coordinate Geometry

1. Straight Lines

Brief recall of two dimensional geometry from earlier classes. 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, two-point form, intercept form, Distance of a point from a line.

2. 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.

3. Introduction to Three-dimensional Geometry

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

Unit-IV: Calculus

1. 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 logarithmic functions. Definition of derivative relates it to slope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

Unit-V Statistics and Probability

1. Statistics

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

2. Probability

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.

Unit I: Physical World and Measurement

Chapter-2: 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.

Unit II: Kinematics

Chapter-3: 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 (graphical treatment).

Chapter-4: 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.

Unit III: Laws of Motion

Chapter-5: Laws of Motion Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of 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).

Unit IV: Work, Energy and Power

Chapter-6: 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.

Unit V: Motion of System of Particles and Rigid Body

Chapter-7: System of Particles and Rotational Motion Centre of mass of a two-particle system, momentum conservation and Centre of mass motion. Centre of 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 (no derivation).

Unit VI: Gravitation

Chapter-8: 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.

Unit VII: Properties of Bulk Matter

Chapter-9: Mechanical Properties of Solids Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity (qualitative idea only), Poisson's ratio; elastic energy.

Chapter-10: 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.

		<p>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.</p> <p>Chapter-11: 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.</p> <p>Unit VIII: Thermodynamics Chapter-12: 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 of matter, change of condition of gaseous state -isothermal, adiabatic, reversible, irreversible, and cyclic processes.</p> <p>Unit IX: Behavior of Perfect Gases and Kinetic Theory of Gases Chapter-13: Kinetic Theory 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 (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.</p> <p>Unit X: Oscillations and Waves Chapter-14: Oscillations 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 derivation of expression for its time period. Chapter-15: Waves Wave motion: 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.</p>
5	Chemistry	<p>Unit I: Some 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.</p> <p>Unit II: 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 uncertainty principle, 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.</p> <p>Unit III: 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.</p> <p>Unit IV: Chemical Bonding and Molecular Structure Valence electrons, ionic bond, covalent bond, bond parameters, Lewis's structure, polar character of covalent bond, covalent character of ionic bond, valence bond</p>

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.

Unit VI: 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 capacity and specific heat, measurement of ΔU and ΔH , Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non- spontaneous processes, criteria for equilibrium. Third law of thermodynamics (brief introduction).

Unit VII: 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).

Unit VIII: Redox Reactions

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

Unit XII: 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, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

Unit XIII: Hydrocarbons

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, the 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, the 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 the functional group in monosubstituted benzene. Carcinogenicity and toxicity.

6

Biology

Unit-I Diversity of Living Organisms

Chapter-1: The Living World Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature

Chapter-2: Biological Classification Five kingdom classification; Salient features

and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.
Chapter-3: 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*)
Chapter-4: Animal Kingdom Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and a few examples of each category).

Unit-II Structural Organization in Animals and Plant

Chapter-5: Morphology of Flowering Plants Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of family Solanaceae.
Chapter-6: Anatomy of Flowering Plants Anatomy and functions of tissue systems in dicots and monocots.
Chapter-7: Structural Organisation in Animals Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog.

Unit-III Cell: Structure and Function

Chapter-8: 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, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.
Chapter-9: Biomolecules Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzyme - types, properties, enzyme action. (*Topics excluded: Nature of Bond Linking Monomers in a Polymer, Dynamic State of Body Constituents – Concept of Metabolism, Metabolic Basis of Living, The Living State*)
Chapter-10: Cell Cycle and Cell Division Cell cycle, mitosis, meiosis and their significance.

Unit-IV Plant Physiology

Chapter-13: 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.
Chapter-14: 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; amphibolic pathways; respiratory quotient.
Chapter-15: Plant - Growth and Development Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Unit-V Human Physiology

Chapter-17: Breathing and Exchange of Gases Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.
Chapter-18: 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

		<p>circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.</p> <p>Chapter-19: Excretory Products and their Elimination Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.</p> <p>Chapter-20: Locomotion and Movement Types of movement - 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.</p> <p>Chapter-21: Neural Control and Coordination Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse.</p> <p>Chapter-22: Chemical Coordination and Integration Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease. Note: Diseases related to all the human physiological systems to be taught in brief.</p>
7	Accountancy	<p>Part A: Financial Accounting-I Unit 1- Theoretical Framework: Unit 2- Accounting Process</p> <p>Part B: Financial Accounting-II Unit-3: Financial Statements of Sole Proprietorship</p>
8	Business Studies	<p>Part A- Foundations of Business UNIT- 1.Nature and Purpose of Business 2. Forms of Business Organisations 3. Public, Private and Global Enterprises 4. Business Services 5. Emerging Modes of Business 6. Social Responsibility of Business and Business Ethics</p> <p>Part B Finance and Trade 7. Sources of Business Finance 30 20 8. Small Business 16 9. Internal Trade 30 20 10. International Business</p>
9	Economics	<p>Part A: Statistics for Economics In this course, the learners are expected to acquire skills in collection, organisation and presentation of quantitative and qualitative information pertaining to various simple economic aspects systematically. It also intends to provide some basic statistical tools to analyse, and interpret any economic information and draw appropriate inferences. In this process, the learners are also expected to understand the behaviour of various economic data.</p> <p>Unit 1: Introduction What is Economics? Meaning, scope, functions and importance of statistics in Economics</p> <p>Unit 2: 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.</p>

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).

Unit 3: Statistical Tools and Interpretation

For all the numerical problems and solutions, the appropriate economic interpretation may be attempted. This means, the students need to solve the problems and provide interpretation for the results derived. 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.

Part B: Introductory Microeconomics

Unit 4: Introduction

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.

Unit 5: 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 and budget 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 and its 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.

Unit 6: 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.

Unit 7: Forms of Market and Price Determination under Perfect Competition with simple applications.

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

10

History

Introduction to World History

Section A: Early Societies

Introduction, Writing and City Life

Section B: Empires

Introduction, An empire across three continents, Nomadic Empires

Section C: Changing Traditions Introduction

The Three Orders, Changing Cultural Traditions

Section D: Paths to Modernization

		<p>Introduction, Displacing Indigenous People, Paths To Modernization</p> <p>MAP WORK OF THE RELATED THEMES</p>
11	Geography	<p>Part A: Fundamentals of Physical Geography</p> <p>Unit 1: Geography as a Discipline Geography as an integrating discipline, as a science of spatial attributes Branches of Geography: Physical Geography and Human Geography</p> <p>Unit 2: 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</p> <p>Unit 3: Landforms Geomorphic processes: weathering; mass wasting; erosion and deposition; soil-formation Landforms and their evolution- Brief erosional and depositional features</p> <p>Unit 4: 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</p> <p>Unit 5: Water (Oceans) Basics of Oceanography Oceans - distribution of temperature and salinity Movements of ocean water-waves, tides and currents; submarine reliefs</p> <p>Unit 6: Life on the Earth Biosphere - importance of plants and other organisms; biodiversity and conservation</p> <p><i>Map work on identification of features based on 1 to 6 units on the outline Physical/Political map of the world.</i></p> <p>Part B: India-Physical Environment</p> <p>Unit 7: Introduction India : Location, space relations, India's place in the world</p> <p>Unit 8: Physiography Structure and Relief; Physiographic Divisions Drainage systems: Concept of river basins, watershed; the Himalayan and the Peninsular rivers</p> <p>Unit 9: 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</p> <p>Unit 10: Hazards and Disasters: Causes, Consequences and Management Floods, Cloudbursts Droughts: types and impact Earthquakes and Tsunami Cyclones: features and impact Landslides</p> <p><i>Map Work of features based on above units for locating and labeling on the outline Political/Physical map of India</i></p>
12	Political Science	<p>Part A: Indian Constitution at Work</p> <p>1. Constitution Constitution: Why and How, The Making of the Constitution, Fundamental Rights and Duties, Directive Principles of State Policy, constitutional Amendments.</p> <p>2. Election and Representation Elections and Democracy, Election System in India, Electoral Reforms.</p> <p>3. Legislature Why do we need a Parliament? Unicameral / Bicameral Legislature. Functions and Power of the Parliament, Parliamentary committees. Parliamentary Officials: Speaker, Deputy Speaker, Parliamentary Secretary.</p> <p>4. Executive What is an Executive? Different Types of Executive. Parliamentary Executive in India, Prime Minister and Council of Ministers. Permanent Executive: Bureaucracy.</p>

		<p>5. Judiciary Why do we need an Independent Judiciary? Structure of the Judiciary, Judicial Review, Judicial Activism, Judicial Over-reach.</p> <p>6. Federalism What is Federalism? Evolution & Growth of the Indian Federalism: Quasi Federalism, Cooperative Federalism & Competitive Federalism.</p> <p>7. Local Governments Why do we need Local Governments? Growth of Local Government in India, 73rd and 74th Amendments, Working and Challenges of Local Governments.</p> <p>Part B: Political Theory</p> <p>8. Political Theory: An Introduction What is Politics? Politics V/s Political Theory, Importance of Political Theory.</p> <p>9. Liberty Liberty V.s Freedom, Negative and Positive Liberty.</p> <p>10. Equality What is Equality? Significance of Equality. Various dimensions of Equality. How can we promote Equality?</p> <p>11. Justice What is Justice? Different dimensions of Justice, Distributive Justice.</p> <p>12. Rights What are Rights? Where do Rights come from? Legal Rights and the State. Kinds of Rights. Human Rights.</p> <p>13. Citizenship What is citizenship? Citizen and Citizenship, Citizen and Nation, Global Citizenship</p> <p>14. Nationalism Nations and Nationalism, Variants of Nationalism, Nationalism, Pluralism and Multiculturalism.</p> <p>15. Secularism What is Secularism? What is Secular State? The Western and the Indian perspectives to Secularism. Salient Features of Indian Secularism.</p>
13	Computer Science	<ul style="list-style-type: none"> ➤ 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, not in) ➤ 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(),

		<p>islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()</p> <ul style="list-style-type: none"> ➤ 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; linear search 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 of values 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 the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them
14	Physical Education	<p>Unit I Changing Trends & Career in Physical Education</p> <ul style="list-style-type: none"> ● Concept, Aims & Objectives of Physical Education ● Changing Trends in Sports- playing surface, wearable gears and sports equipment, technological advancements ● Career Options in Physical Education ● Khelo-India and Fit-India Program <p>Unit II Olympism</p> <ul style="list-style-type: none"> ● Ancient and Modern Olympics ● Olympism – Concept and Olympics Values (Excellence, Friendship & Respect) ● Olympics - Symbols, Motto, Flag, Oath, and Anthem ● Olympic Movement Structure - IOC, NOC, IFS, Other members <p>Unit III Yoga</p> <ul style="list-style-type: none"> ● Meaning & Importance of Yoga ● Introduction to Ashtanga Yoga ● Introduction to Yogic Kriyas (Shat Karma) <p>Unit IV Physical Education & Sports for CWSN</p> <ul style="list-style-type: none"> ● Concept of Disability and Disorder ● Types of Disability, its causes & nature (Intellectual disability, Physical disability) ● Aim & Objective of Adaptive Physical Education ● Role of various professionals for children with special needs (Counsellor, Occupational Therapist, Physiotherapist, Physical Education Teacher, Speech Therapist & Special Educator) <p>Unit V Physical Fitness, Health and Wellness</p> <ul style="list-style-type: none"> ● Meaning and Importance of Wellness, Health and Physical Fitness ● Components/Dimensions of Wellness, Health and Physical Fitness ● Traditional Sports & Regional Games for promoting wellness <p>Unit VI Test, Measurement & Evaluation</p> <ul style="list-style-type: none"> ● Concept of Test, Measurement & Evaluation in Physical Education & sports. ● Classification of Test in Physical Education and Sports. ● Test administration guidelines in physical education and sports <p>Unit VII Fundamentals of Anatomy, Physiology in Sports</p>

- Definition and Importance of Anatomy and Physiology in exercise and sports
- Functions of Skeletal system, classification of bone and types of joints.
- Function and Structure of Circulatory system and heart.
- Function and Structure of Respiratory system.

Unit VIII Fundamentals of Kinesiology and Biomechanics in Sports

- Definition and Importance of Kinesiology and Biomechanics in sports
- Principles of Biomechanics
- Types of Body Movements - Flexion, Extension, Abduction, Adduction, Rotation, Circumduction, Supination & Pronation
- Axis and Planes – Concept and its application in body movements

Unit IX Psychology & Sports

- Definition & Importance of Psychology in Physical Education & Sports
- Adolescent Problems & Their Management
- Team Cohesion and Sports Unit X Training and Doping in Sports
- Concept and Principles of Sports Training
- Training Load: Over Load, Adaptation, and Recovery
- Concept of Doping and its disadvantages