PHYSICS

1. MOTION AND LAWS OF MOTION
Distance and displacement, velocity, uniform and non-uniform motion along a straight line, acceleration, distance-time and velocity-time graphs, elementary idea of conservation of momentum, force and motion, Newton's laws of motion, action and reaction forces, inertia of a body, inertia and mass, momentum force and acceleration, elementary idea of uniform circular motion.

2. GRAVITATION
Universal law of gravitation, force of gravitation on the earth (gravity), acceleration due to gravity, mass and weight, free fall, thrust and pressure, Archimedes' principle, buoyancy, elementary idea of relative density.

3. WORK, POWER, ENERGY
Work done by a force, energy, power, kinetic and potential energy; law of conservation of energy.

4. SOUND
Nature of sound and its propagation in various media, Speed of sound, Range of hearing in humans, Ultra sound reflection of sound, Echo & sonar, structure of the human ear (Auditory aspect only).

5. NATURAL PHENOMENA
Reflection of light by curved surfaces, images formed by spherical mirror, center of curvature, principle axis, focus, focal length, mirror formula (Derivation not required), Magnification, refraction, laws of refraction, refractive index, light by spherical lens, image formed by spherical lenses, lens formula, magnification, power of lens, refraction of light through prism, Functioning of lenses in human eye, defects of vision & their correction, application of spherical mirror & lenses. Refraction of light through prism dispersion of light scattering of light, applications in daily life.

6. EFFECTS OF CURRENT
Electric current & potential difference, Ohm's law, Resistance & their factors, Resistivity, Series & parallel combination of resistors & their applications in daily life, Electric power, Heating effect of electric current, Relationship between p, v, i & r.

7. MAGNETIC EFFECT OF CURRENT
Magnetic field, field line, field due to a current carrying conductor & coil, Force on current carrying conductor, Fleming's left hand rule & right hand rule, Electric motor, Electro magnetic induction, Induced potential difference & current, DC & AC, frequency & advantages, Domestic electric circuits.

CHEMISTRY

1. MATTER
Definitions Solid, liquid & gas & their characteristics - shape, volume & density, Melting, freezing, evaporation condensation, sublimation, Elements, compounds & mixtures, heterogeneous & homogeneous mixtures, Colloids & suspensions.

2. MOLEC CONCEPT
Atoms & molecules, law of constant proportions, atomic and molecular masses, isotopes, Avogadro number, gram atomic mass, gram molecular mass, international mole day. The volume of gases and number of moles, volume of gases and gas laws, boyle's law, charles law, avogadro's law unit pressure, temperature and volume.

3. STRUCTURE OF ATOMS
Electrons, protons, & neutrons, valency, chemical formula of common compound, isotopes and isotobars.

4. CHEMICAL REACTIONS
Chemical equation, balanced chemical equation, implications of a balanced chemical equation. Type of chemical reaction: combination, decomposition, displacement, double displacement, precipitation, neutralization, oxidation and reduction.

5. ACID, BASES AND SALT
Their definitions in terms of furnishing of H+ and OH- ions, general properties, examples and uses, concept of PH scale, importance of PH in everyday life. Preparation and uses of sodium hydroxide bleaching powder, baking soda washing soda and plaster of paris.

6. METALS AND NON METALS
Properties of metals and non metals, reactivity series formation and properties of ionic compounds, basic metallurgical processes. Corrosion and its prevention, hydrogen, water, hardness of water.

7. CARBON COMPOUNDS
Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series. Nomenclature of carbon compounds containing functional groups (halogen, alcohol, ketones, aldehydes, alkenes, and alynes) the difference between saturated hydrocarbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and ethanoic acid (only properties and uses) soaps and detergents.

8. PERIODIC CLASSIFICATION OF ELEMENTS
Need for classification early attempt at classification of elements (dubereiner's traits, newland's law of octaves, mendeleev's periodic table), modern periodic table, gradation in properties, valency, atomic number, metallic and non-metallic properties.

BIOLOGY

1. OUR ENVIRONMENT
Air, water, air for respiration for combustion for moderating temperatures, movements of air and its role in bringing rains across India. Air, water and soil pollution (brief introduction). Holes in ozone layer and the probable damages. Ecosystem environmental problem, Bio-geo chemical cycles in nature – water, oxygen, carbon and nitrogen, waste production & their solutions, biodegradable and non biodegradable substances.

2. FOOD PRODUCTION
Plants and animal breeding, selection for quality improvement and management, use of fertilizers and manures, protection from pests and diseases, organic farming
3. SOURCES OF ENERGY
Different forms of energy, conventional & non-conventional, fossil fuels, solar energy, biogas, wind, water, tidal energy, nuclear energy, renewable versus non-renewable sources of energy.

5. MANAGEMENT OF NATURAL RESOURCES
Conservation & judicious use of natural resources, forest & wild life, coal & petroleum conservation, advantages & limitations.

6. LIFE PROCESS
Living being, nutrition, respiration, transport & excretion in plants & animals.

7. CONTROL & CO-ORDINATION IN ANIMALS & PLANTS
Nervous system, voluntary & involuntary & reflex action, chemical co-ordination, animal hormones.

Tropic movement in plants, introduction of plant hormones.

8. REPRODUCTION
Asexual & sexual reproduction, reproductive health, family planning, HIV/AIDS, Child bearing & women health.

9. HERIDITY & EVOLUTION
Heridity, mendel’s contribution—laws of inheritance of traits, sex determination brief introduction, basic concepts of evolution.

UNIT-1: NUMBER SYSTEM

1. REAL NUMBERS
Representation of natural numbers, Integers, Rational numbers on the number line, Representation of terminating / non-terminating recurring decimals on the number line, Operations on real numbers, Representation of irrationals on number line, Definitions of nth root, Laws of exponents with integral power, Euclid’s division lemma, Theorem of arithmetic, Proofs of irrationality of √2, √3, √5.

UNIT-2: ALGEBRA

1. POLYNOMIALS
Coefficients of a polynomial, Terms, Zeroes, Degree of linear, Quadratic & cubic polynomial, Remainder theorem, Factor theorem.

2. PAIR OF LINEAR EQUATION IN TWO VARIABLES
Graphical method, Solution of a pair of linear equations by substitution, by elimination and by cross multiplication method.

3. QUADRATIC EQUATIONS
Roots of quadratic equations, Factorization, Quadratic formula, Discriminant and nature of roots, Situational problems based on quadratic equations.

4. ARITHMETIC PROGRESSION
Nth term, Sum of the first n terms of A.P and their application in solving daily life problems.

UNIT-3: CO-ORDINATE GEOMETRY

1. LINES:

Concepts graphs of linear equations, distance formula section formula, area of a triangle, cartesian plane, plotting points in the plane.

UNIT-4: GEOMETRY

1. INTRODUCTION TO EUCLID’S GEOMETRY
History, postulates and axioms

2. LINES AND ANGLES
Proofs about triangle, pair of angles, Angle sum property, Parallel lines and transversal, 3. TRIANGLE, Congruence of triangle, properties of a triangle, inequalities, proofs and theorems.

4. QUADRILATERALS
Angle sum property of a quadrilateral, Type of quadrilateral, Mid-point theorem, Properties of quadrilaterals.

5. AREA
Parallelograms on the same base and between the same parallels, Triangles on the same base and between the same parallels.

6. CIRCLES
Definitions, Angle subtended by a chord at a point, Circle through three points, Equal chord and their distance from the centre, Arc of a circle, Cyclic quadrilateral and theorems, Tangents to a circle, number of tangents from a point on a circle.

7. CONSTRUCTIONS
Construction of a tangents to a circle, division of a line segment.

UNIT-5: MENSURATION

1. AREAS
Areas of circle, sector, segment, combinations of plane figures, Area of a triangle using Heron’s formula, application of Heron’s formula in finding area of quadrilaterals, Perimeter of a circle.

2. SURFACE AREAS AND VOLUMES
Surface area of a cuboid, cube, cylinder, cone, sphere, combination of solids, Volume of cuboid, cylinder, right circular cone, sphere combination of solids, Conversion of solid from one shape to another.

UNIT-6: STATISTICS & PROBABILITY

1. STATISTICS
Mean, Medium, Mode of grouped and ungrouped data, Graphical representation of data, Bar graph, histograms, frequency polygons.

2. PROBABILITY
Frequency approach to probability of an events, sample space, random experiments.

UNIT-7: TRIGONOMETRY

1. VALUES OF TRIGONOMETRIC OF 30, 45, 60 relationship between the ratios.

2. TRIGONOMETRIC IDENTITIES
proof & applications of the identity sin^2 A + cos^2 A = 1

3. HEIGHT AND DISTANCE
Angle of elevation, angle of depression, simple problems on height and distance.