UNIT -1	**Number Systems:** Irrational numbers, Real Numbers and their Decimal Expansions, Representing Real Numbers on the Number Line, Operations on Real Numbers, Laws of Exponents for Real Numbers **Real Numbers :** Euclid's Division Lemma, The Fundamental Theorem of Arithmetic , Irrational Numbers, Rational Numbers and their Decimal Expansions
UNIT -2	**Polynomials:** Polynomials in One Variable, Zeros of a Polynomial, Remainder Theorem, Factorisation of Polynomials, Algebraic Identities, Geometrical Meaning of the Zeroes of a Polynomial, Relationship between Zeroes and Coefficients of a Polynomial, Division Algorithm for Polynomials. **Linear Equations In Two Variables :** Linear Equations, Solution of a Linear Equation, Graph of a Linear Equation in Two Variables, Equations of Lines Parallel to the x-axis and y-axis, Pair of Linear Equations in Two Variables, Graphical Method of Solution of a Pair of Linear Equations, Algebraic Methods of Solving a Pair of Linear Equations , Equations Reducible to a Pair of Linear Equations in Two Variables **Quadratic Equations:** Quadratic Equations, Solution of a Quadratic Equation by Factorisation, Solution of a Quadratic Equation by Completing the Square , Nature of the Roots
UNIT -3	**Lines And Angles:** Intersecting Lines and Non-intersecting Lines, Pairs of Angles, Parallel Lines and a Transversal, Lines Parallel to the Same Line, Angle Sum Property of a Triangle **Triangles:** Congruence of Triangles, Criteria for Congruence of Triangles, Some Properties of a Triangle, Inequalities in a Triangle, Similar Figures, Similarity of Triangles, Criteria for Similarity of Triangles, Areas of Similar Triangles, Pythagoras Theorem **Quadrilaterals :** Angle Sum Property of a Quadrilateral, Types of Quadrilaterals, Properties of a Parallelogram, Conditions for a Quadrilateral to be a Parallelogram, Mid-point Theorem, **Areas of Parallelograms and Triangles :** Figures on the same Base and Between the same Parallels, Parallelograms on the same Base and between the same Parallels, Triangles on the same Base and between the same Parallels **Circle:** Circle and its related terms, Angle Subtended by a Chord at a Point, Perpendicular from the Centre to a Chord, Circle through Three Points, Equal Chords and Their Distances from the Centre, Angle Subtended by an Arc of a Circle, Cyclic Quadrilaterals, Tangent to a Circle, Number of Tangents from a Point on a Circle
UNIT- 4	**Heron's Formula :** Area of a Triangle – by Heron's Formula, Applications of Heron's Formula in finding Areas of Quadrilaterals **Areas Related to Circles :** Perimeter and Area of a Circle, Areas of Sector and Segment of a Circle, Areas of Combinations of Plane Figures **Surface Areas and Volumes:** Surface Areas of a Cuboid and a Cube, Surface Area of a Right Circular Cylinder, Surface Areas of a Right Circular Cone, Surface Area of a Sphere, Volume of a Cuboid, Volume of a Cylinder, Volume of a Right Circular Cone, Volume of a Sphere, Surface Area of a Combination of Solids, Volume of a Combination of Solids, Conversion of Solid from One Shape to Another, Frustum of a Cone
UNIT- 5	**Trigonometry :** Trigonometric Ratios, Trigonometric Ratios of Some Specific Angles, Trigonometric Ratios of Complementary Angles, Trigonometric Identities, Heights and Distances, Angles, Trigonometric Functions, Trigonometric Functions of Sum and Difference of Two Angles, Trigonometric Equations **Inverse Trigonometric Functions :** Basic concepts of Inverse Trigonometric Functions, Properties of Inverse Trigonometric Functions
UNIT- 6	**Complex Numbers and Quadratic Equations:** Complex Numbers, Algebra of Complex Numbers, The Modulus and the Conjugate of a Complex Number, Argand Plane and Polar Representation, Quadratic Equations **Sequences And Series:** Sequences, Series, Arithmetic Progression (A.P.), Geometric Progression (G.P.), Relation between A.M. and G.M. , Sum to n terms of Special Series
UNIT -7	**Coordinate Geometry (Two Dimensional) :** Cartesian System, Plotting a Point in the Plane if its Coordinates are Given, Distance Formula, Section Formula, Area of a Triangle **Coordinate Geometry (Three Dimensional):** Coordinate Axes and Coordinate Planes in Three Dimensional

	Space , Coordinates of a Point in Space, Distance between Two points, Section Formula, Direction Cosines and Direction Ratios of a Line, Equation of a Line in Space, Angle between Two Lines, Shortest Distance between Two Lines, Plane, Coplanarity of Two Lines, Angle between Two Planes, Distance of a Point from a Plane, Angle between a Line and a Plane **Vector Algebra:** Some basic Concepts of Vector Algebra, Types of Vectors, Addition of Vectors, Multiplication of a Vector by a Scalar, Product of Two Vectors
UNIT -8	**Statistics :** Collection of Data, Presentation of Data, Graphical Representation of Data, Measures of Central Tendency, Mean of Grouped Data, Mode of Grouped Data, Median of Grouped Data, Graphical Representation of Cumulative Frequency, Measures of Dispersion, Range, Mean Deviation, Variance and Standard Deviation, Analysis of Frequency Distributions **Probability :** Probability – An Experimental Approach, Probability – A Theoretical Approach, Random Experiments, Event, Axiomatic Approach to Probability, Conditional Probability , Multiplication Theorem on Probability, Independent Events, Bayes' Theorem , Random Variables and its Probability Distributions , Bernoulli Trials and Binomial Distribution
UNIT- 9	**Limits and Derivatives :** Intuitive Idea of Derivatives, Limits, Limits of Trigonometric Functions, Derivatives **Continuity and Differentiability :** Continuity, Differentiability , Exponential and Logarithmic Functions, Logarithmic Differentiation, Derivatives of Functions in Parametric Forms, Second Order Derivative, Mean Value Theorem **Application of Derivatives:** Rate of Change of Quantities, Increasing and Decreasing Functions, Tangents and Normals, Approximations, Maxima and Minima. **Integrals :** Integration as an Inverse Process of Differentiation , Methods of Integration, Integrals of some Particular Functions, Integration by Partial Fractions, Integration by Parts, Definite Integral, Fundamental Theorem of Calculus, Evaluation of Definite Integrals by Substitution , Some Properties of Definite Integrals **Application of Integrals :** Areas under Simple Curves , Area between Two Curves **Differential Equations :** Basic concept of differential equation, General and Particular Solutions of a Differential Equation, Formation of a Differential Equation whose General Solution is given, Methods of Solving First order and First Degree Differential Equations
UNIT -10	**Vector Analysis and Geometry:** Scalar and Vector product of three and four vectors, Reciprocal vectors, Vector differentiation, Gradient, divergence and Curl, Directional derivatives, Vector identities and Vector equations. Vector Integration, Theorems of Gauss, Green, Stoke (without proof) and problems based on them.

Physics

Unit -11

<u>**Force and Mechanics-**</u> Unit system, fundamental and derived units, dimensions of physical quantities, significant figures, distance, displacement, speed, velocity, acceleration, equations of uniformly accelerated motion, laws of motion, momentum, conservation of momentum, impulse, static and kinetic friction, circular motion and centripetal force, work, energy, power, kinetic and potential energy, law of conservation of energy, work-energy theorem, universal law of gravitation, acceleration due to gravity.

Unit -12

<u>**Properties of Matter-**</u> Elasticity and deformation in solids, pressure in liquids, effect of gravity on pressure, buoyancy, Archimedes' principle, viscosity, Stokes' law, terminal velocity, Bernoulli's theorem and applications, capillary rise, surface tension. Temperature and heat, different scales for measurement of temperature and relation between them, specific heat, conduction, convection, radiation, thermal conductivity, change of state and latent heat, thermal expansion, anomalous expansion of water, Laws of thermodynamics, isothermal, adiabatic, reversible and irreversible processes, heat engine, specific heat at constant pressure, specific heat at constant volume, black body radiation, Newton's law of cooling.

Unit-13

<u>**Magnetism and Electricity -**</u> Electric charge, Coulomb's law, Electric field lines and their properties, Electric dipole, Electric flux, Electric potential, Capacitance, Capacitor, Electric current, Conductor and insulator, Ohm's law and its limitations, Resistance of conductor, Series and parallel combination of resistance, cell, internal resistance of cell, series and parallel combination of cells, bar magnet, magnetic field, magnetic field lines and their properties, magnetic effect of