Units	Sub topics	Units	Sub topics
UNIT 1: Sets	Sets and their representation; Union, intersection and complement of sets and their algebraic properties; Power set.	UNIT 2: Relations	Relation, Types of relations, equivalence relations.
UNIT 3: Function, limit and Continuity	• One-one, into and onto functions, composition of functions; • Real valued functions, algebra of functions, polynomials, rational, trigonometric, logarithmic and exponential functions, inverse functions. Graphs of simple functions.Limits, continuity and differentiability.	UNIT 4: Complex numbers	Complex numbers as ordered pairs of reals, Representation of complex numbers in the form a+ib and their representation in a plane, Argand diagram, algebra of complex numbers, modulus and argument (or amplitude) of a complex number, square root of a complex number, triangle inequality.
UNIT 5: Quadratic equations	Quadratic equations in real and complex number system and their solutions. Relation between roots and coefficients, nature of roots, formation of quadratic equations with given roots.	UNIT 6: Sequences and series	Arithmetic and Geometric progressions, insertion of arithmetic, geometric means between two given numbers. Relation between A.M. and G.M. Sumupto n terms of special series, Geometric progression.
UNIT 7: Matrices	Matrices, algebra of matrices, types of matrices, matrices of order two and three; Adjoint; transpose; symmetric and skew symmetric matrices.	UNIT 8: Determinants	Properties of determinants, evaluation of determinants, area of triangles using determinants.Evaluation of inverse of a square matrix using determinants and elementary transformations,

			Test of consistency and solution of simultaneous linear equations in two or three variables using determinants.
UNIT 9: Vector algebra	p, addition of vectors, components of a vector in two dimensions and three dimensional space, scalar and vector products, scalar and vector triple product.	UNIT 10: Mathematical reasoning	Statements, Logical Operations and, or, Implies, Implied by, if and only if. Understanding of tautology, contradiction, converse and contrapositive.
UNIT 11: Permutations	The fundamental principle of counting is permutation as an arrangement. Meaning of P(n, r), simple applications.	UNIT 12: Combinations	Combination as selection, Meaning of C (n, r), simple applications.
UNIT 13: Mathematical induction	Principle of Mathematical Induction and its simple applications.	UNIT 14: Binomial theorem and its simple applications	Binomial theorem for a positive integral index, general term and middle term, properties of Binomial coefficients and simple applications.
UNIT 15: Derivatives	• Differentiation of sum, difference, product and quotient of two functions; • Differentiation of trigonometric, inverse trigonometric, logarithmic, exponential, composite and implicit functions; derivatives of order up to two; Rolle's and Lagrange's Mean Value Theorems.	UNIT 16: Application of Derivatives	• Rate of change of quantities, monotonic increasing and decreasing functions, Maxima and minima of functions of one variable, tangents and normals.
UNIT 17: Integral	• Integral as an anti-derivative. Fundamental	UNIT 18: Integral	• Evaluation of simple integrals of the following type:

calculus (Part1)	integrals involving algebraic, trigonometric, exponential and logarithmic functions. Integration by substitution, by parts and by partial fractions. Integral is the limit of a sum. Fundamental Theorem of Calculus.Integration using trigonometric identities.	calculus (Part 2)	$\int \frac{dx}{x^2 \pm a^2}$, $\int \frac{dx}{\sqrt{x^2 \pm a^2}}$, $\int \frac{dx}{a^2 - x^2}$, $\int \frac{dx}{\sqrt{a^2 - x^2}}$, $\int \frac{dx}{ax^2+bx+c}$, $\int \frac{dx}{\sqrt{ax^2+bx+c}}$, $\int \frac{(px+q)dx}{ax^2+bx+c}$, $\int \frac{(px+q)dx}{\sqrt{ax^2+bx+c}}$, $\int \sqrt{a^2 \pm x^2}dx$, $\int \sqrt{x^2 - a^2}dx$
UNIT 19: Definite Integrals	Properties of definite integrals. Evaluation of definite integrals, determining areas of the regions bounded by simple curves in standard form.	UNIT 20: Differential Equations	Ordinary differential equations, their order and degree. Formation of differential equations. Solution of differential equations by the method of separation of variables, solution of homogeneous and linear differential equations of the type: $\frac{dy}{dx} + p(x)y = q(x)$
UNIT 21: Coordinate geometry	Cartesian system of rectangular coordinates in a plane, distance formula, section formula, locus and its equation, translation of axes, slope of a line, parallel and perpendicular lines, intercepts of a line on the coordinate axes.	UNIT 22: Straight lines	Various forms of equations of a line, intersection of lines, angles between two lines, conditions for concurrence of three lines, distance of a point from a line, equations of internal and external bisectors of angles between two lines, coordinates of centroid, orthocentre and circumcentre of a triangle, equation of the family of lines passing through

			the point of intersection of two lines.
UNIT 23: Circles	The standard form of the equation of a circle, the general form of the equation of a circle, its radius and centre, the equation of a circle when the endpoints of a diameter are given, points of intersection of a line and a circle with the centre at the origin and condition for a line to be tangent to a circle, equation of the tangent.	UNIT 25: Three-Dimensional Geometry (Part 1)	Coordinates of a point in space, the distance between two points, section formula, direction ratios and direction cosines, and the angle between two intersecting lines.
UNIT 24: Conic sections	Sections of cones, equations of conic sections (parabola, ellipse and hyperbola) in standard forms, condition for y = mx + c to be a tangent and point (s) of tangency.	UNIT 26: Three-Dimensional Geometry (Part 2)	Skew lines, the shortest distance between them and its equation. Equations of a line and a plane in different forms, the intersection of a line and a plane, and coplanar lines.
UNIT 27: Statistics and probability	Measures of Dispersion: Calculation of mean, median, mode of grouped and ungrouped data calculation of standard deviation, variance and mean deviation for grouped and ungrouped data.	UNIT 28: Probability	Probability of an event, addition and multiplication theorems of probability, Baye's theorem, probability distribution of a random variate, Bernoulli trials and Binomial distribution.
UNIT 29: Trigonometry	Trigonometrical Identities and equations, Trigonometrical functions	UNIT 30: Inverse Trigonometric Functions	Definition, domain, range, elementary properties of inverse trigonometric functions, Heights and distances