

MATHEMATICS

PART - I 100

PART – II 100

TOTAL: 200

Marks: 100	PART –I (CLASS-XI)	Time: 3:00 Hours
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UNIT-1 Complex Numbers

- 1.1 Complex Numbers
- 1.2 Equality of Two Complex Numbers
- 1.3 Complex Polynomials as a Product of Linear Factors
- 1.4 Three Cube Roots of Unity /Polar Coordinates System
- 1.5 Complex Numbers in the Real World

UNIT-2 Functions and Graphs

- 2.1 Concept of Function
- 2.2 Finding the Intersecting Point(s) Graphically
- 2.3 Graph of the Square Root Function
- 2.4 Graph of the Cube Root Function
- 2.5 Real Life Applications

UNIT-3 Theory of Quadratic Functions

- 3.1 Quadratic Function
- 3.2 Inverse of Quadratic Function
- 3.3 Absolute Value
- 3.4 Solutions of Equations Reducible to the Quadratic Equation
- 3.5 Real World Problems of Quadratic Equations and Inequalities

UNIT-4 Matrices and Determinants

- 4.1 Matrix
- 4.2 Matrix Operations
- 4.3 Properties of Matrix Addition, Scalar Multiplication and Matrix Multiplication
- 4.4 Determinants
- 4.5 Adjoint and Inverse of a Square Matrix
- 4.6 Elementary Row Operations on a Matrix
- 4.7 Echelon and Reduced Echelon Forms of Matrices
- 4.8 System of Non-Homogeneous Linear Equations
- 4.9 System of Homogeneous Linear Equations
- 4.10 Applications of Matrices in Real World

UNIT-5 Partial Fractions

- 5.1 Rational Fraction

UNIT-6 Sequences and Series

- 6.1 Sequence
- 6.2 Arithmetic Progression or Arithmetic Sequence (A.P)
- 6.3 Arithmetic Mean (A.M)
- 6.4 Series
- 6.5 Geometric Progression (G.P)
- 6.6 Geometric Mean (G.M.)
- 6.7 Geometric Series
- 6.8 Arithmetico-Geometric Progression (A.G.P.)
- 6.9 Harmonic Progression (H.P)
- 6.10 Miscellaneous Series
- 6.11 Real Life Problems involving Sequences and Series

UNIT-7 Permutations and Combinations

- 7.1 Fundamental Principle of Counting
- 7.2 Permutations
- 7.3 Permutation of Objects Not All Different
- 7.4 Combinations

UNIT-8 Mathematical Inductions and Binomial Theorem

- 8.1 Principle of Mathematical Induction
- 8.2 Binomial Theorem

- 8.3 The Binomial Theorem (when the Index n is a Negative Integer or a Fraction)
- 8.4 Binomial Coefficients Using Pascal's Triangle
- 8.5 Applications of Binomial Theorem
- UNIT-9 Division of Polynomials**
- 9.1 Polynomial Function
- 9.2 Real Life Applications of Remainder and Factor Theorems
- UNIT-10 Trigonometric Identities**
- 10.1 Distance Formula:(Recall)
- 10.2 Trigonometric Ratios of Allied Angles
- 10.3 Further Applications of Basic Identities
- 10.4 Double Angle Identities
- 10.5 Half Angle Identities
- 10.6 Triple Angle Identities
- 10.7 Express the Product (of sines and cosines) as Sums or Differences (of sines and cosines)
- UNIT-11 Trigonometric Functions and their Graphs**
- 11.1 Domains and Ranges of Sine and Cosine Functions
- 11.2 Even and Odd Functions
- 11.3 Period of Trigonometric Functions
- 11.4 Values of Trigonometric Functions
- 11.5 Maximum and Minimum Values of Given Functions of the Type
- UNIT-12 Limit and Continuity**
- 12.1 Limit of a Function
- 12.2 Limits of Important Functions
- 12.3 Continuity and Discontinuity of Functions
- 12.4 Application of Transcendental Functions to Limits and Continuity on Real World Problems
- UNIT-13 Differentiation**
- 13.1 Tangent to a Curve at a Point
- 13.2 Derivative as the Limit of a Difference Quotient
- 13.3 Process of Finding Derivative $f'(x)$ by the Definition
- 13.4 Derivation of x^n Where $n \in \mathbb{Z}$
- 13.5 Connection Between Derivatives and Continuity
- 13.6 Theorems on Differentiation
- 13.7 Application of Differentiation
- UNIT-14 Vectors in Space**
- 14.1 Vectors (Recall)
- 14.2 Dot or Scalar Product
- 14.3 Cross Product or Vector Product
- 14.4 Scalar Triple Product

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