Indian Society for Technical Education (ISTE)

National Level Srinivasa Ramanujan Mathematical Competitions 2024

Syllabus for Polytechnic College Students

UNIT I   REAL NUMBERS AND SEQUENCES

Rational Numbers – Irrational Numbers – Real Numbers - Radical Notation – Surds - Rationalisation of Surds - Scientific Notation - Euclid's Division Lemma - Euclid's Division Algorithm - Fundamental Theorem of Arithmetic - Modular Arithmetic – Sequences - Arithmetic Progression – Series - Geometric Progression - Sum to n terms of a Geometric Progression - Special Series.

UNIT II   ALGEBRA

Polynomials - Remainder Theorem - Algebraic Identities – Factorisation - Division of Polynomials - Linear Equation in Two Variables - Simultaneous Linear Equations in Three Variables - GCD and LCM of Polynomials - Rational Expressions - Square Root of Polynomials - Quadratic Equations - Graph of Variations - Quadratic Graphs – Matrices.

UNIT III   COORDINATE GEOMETRY

Mapping the Plane - Devising a Coordinate System - Distance between any Two Points - The Mid-point of a Line Segment - Points of Trisection of a Line Segment - Section Formula - The Coordinates of the Centroid - Area of a Triangle - Area of a Quadrilateral - Inclination of a Line - Straight Line - General Form of a Straight Line.

UNIT IV   TRIGONOMETRY

Trigonometric Ratios of Some Special Angles - Trigonometric Ratios for Complementary Angles - Method of using Trigonometric Table - Trigonometric Identities - Heights and Distances.

UNIT V   STATISTICS AND PROBABILITY

Collection of Data - Measures of Central Tendency - Arithmetic Mean - Median – Mode - Measures of Dispersion - Coefficient of Variation - Probability - Classical Approach - Empirical Approach - Types of Events - Algebra of Events - Addition Theorem of Probability.