



Indian Society for Technical Education (ISTE)
New Delhi



National Level
Srinivasa Ramanujan Mathematical Competitions 2024
(SRMC 2024)

Syllabus for Engineering College Students

UNIT 1 MATRICES AND DETERMINANTS

Types of Matrices – Operations on Matrices – Transpose of a Matrix – Symmetric and Skew Symmetric Matrices – Elementary Transformation of a Matrix – Invertible Matrices – Properties of Determinants – Area of a Triangle – Minors and Cofactors – Adjoint and Inverse of a Matrix – Applications.

UNIT 2 DIFFERENTIAL CALCULUS

Limits – Limits of Trigonometric Functions – Derivatives – Continuity – Differentiability – Exponential and Logarithmic Differentiation – Derivatives of Functions in Parametric Forms – Second Order Derivative – Mean Value Theorem – Rate of Change of Quantities – Increasing and Decreasing Functions – Tangents and Normals – Approximations – Maxima and Minima – Applications.

UNIT 3 INTEGRAL CALCULUS

Methods of Integration – Integration by Partial Fractions – Integration by Parts – Definite Integrals – Fundamental Theorem on Calculus – Evaluation of Definite Integrals by Substitution – Properties of definite integrals – Applications.

UNIT 4 DIFFERENTIAL EQUATIONS

General and Particular solutions of a differential equations – formation of differential equations – Solution of first order and first order differential equations – Applications.

UNIT 5 PROBABILITY AND STATISTICS

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 Measures of Dispersion – Range – Mean Deviation – Variance and Standard Deviation – Analysis of Frequency Distributions – Applications.