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UNIT-I : MATRICES

Introduction, Elementary row and column transformation, Rank of matrix, Linear dependence, Consistency of linear system of equations, Characteristic equation, Caley-Hamilton Theorem, Eigen value and eigen vectors, Diagonalisation, Complex and unitary matrices.

UNIT-II : DIFFERENTIAL CALCULUS-I

n th derivative, Leibnitz theorem, Partial differentiation, Eulers theorem, Curve tracing, Change of variables, Expansion of function of several variable.

UNIT-III : DIFFERENTIAL CALCULUS-II

Jacobian, Approximation of errors, Extrema of functions of several variables, Lagrange's method of multipliers (Simple applications.)

UNIT-IV : MULTIPLE INTEGRALS

Double and triple integral, Change of order of the Integration, Change of variables, Beta and Gamma functions, Application of area, volume, Dirichlet integral and its applications.

UNIT-V : VECTOR CALCULUS

Point functions, Gradient, divergence and curl of a vector and their physical interpretations, Line, Surface and Volume integrals, Green's, Stoke's and Gauss divergence theorem.