UNIT-I

9

Sequences and Series of Real Numbers Sequence of real numbers, convergence of sequences, bounded and monotone sequences, convergence criteria for sequences of real numbers, Cauchy sequences, subsequences, Bolzano-Weierstrass theorem. Series of real numbers, absolute convergence, tests of convergence for series of positive terms, comparison test, ratio test, and root test; Leibniz test for convergence of alternating series.

UNIT-II

9

Linear Algebra: Symmetric, Skew-symmetric matrices, Hermitian, Skew Hermitian Matrices, orthogonal and unitary matrices and basic properties, linear independence and dependence of vectors, Rank of Matrix, Inverse of a Matrix, Elementary transformation, Consistency of linear system of equations and their solution, Characteristic equation, Eigenvalues, Eigenvectors, Cayley-Hamilton theorem, Diagonalization of matrices.

UNIT-III

9

Functions of Two or Three Real Variables: Limit, continuity, partial derivatives, differentiability, Taylors Theorem, maxima, and minima. Integral Calculus: Double and triple integrals, change of order of integration, change of variables, calculating surface areas and volumes using double integrals, Dirichlet's Integral, calculating volumes using triple integrals.

UNIT-IV

9

Differential Equations: Linear differential equations with constant coefficients , complementary function and particular integral. Simultaneous linear differential equations, solution of second order differential equations by changing dependent and independent variables, Method of variation of parameters.

Books & References

B.S. Grewal: Higher Engineering Mathematics; Khanna Publishers

Erwin kreyszig: Advanced Engineering Mathematics, John Wiley & Sons.

R. K. Jain and Iyenger: Advanced Engineering Mathematics, Narosa Publications.

B.V. Ramana: Higher Engineering Mathematics, Tata Mc. Graw Hill Education Pvt. Ltd.,