Engineering Mathematics-I

PART-A

Unit-I
Sequences and Series: Sequences, Limits of sequences, Infinite series, series of positive terms, Convergence and divergence of sequence and series, Integral test, Comparison test, Ratio test, Root test, Alternating series, Absolute and Conditional Convergence, Leibnitz test, Power series, radius of convergence of power series.

Unit-II
Integral Calculus: Length of curves, Volume (disk and washer method) and surface areas of revolution.
Improper Integrals: Improper integrals of the First kind, Improper integrals of the second kind, Absolute convergence of Improper integrals, Beta and Gamma functions, their properties, relationship among beta and gamma functions.

PART-B

Unit-III
Functions of Several Variables: Concept of limit and continuity of a function of two and three variables, Partial derivatives, total derivative and differentiability, approximation by total differentials, derivatives of composite function and implicit function, chain rule, homogenous functions, Euler's theorem for homogenous functions, Taylor's theorem (statement only), Maclaurin series, Maxima and minima of a function of two and three variables, Lagrange's

method of multipliers.

Unit-IV

Multiple Integral: Double and triple integrals, Change of order of integration, Change of variables in integration, Applications to area and volumes.