

MT-215 Differential Equations & Complex Variable

INFINITE SERIES:

Applications of simple convergence tests such as comparison, root, ratio, Raabe's and Gauss's tests on the behavior of series.

ORDINARY DIFFERENTIAL EQUATIONS:

Definitions, formation and solution, boundary conditions, homogeneous and non-homogeneous linear differential equations with constant coefficients, linear equations with variable coefficients. Cauchy's and Legendre's equations. Equations of second order. System of simultaneous linear equations with constant coefficients. Numerical approximation to solutions. Solution in series. Simple applications in Engineering. Orthogonal trajectories.

PARTIAL DIFFERENTIAL EQUATIONS:

Formation of partial differential equations. Solutions of first order linear and special types of second and higher order differential equations used in Engineering problems. Various standard forms.

LAPLACE TRANSFORMATIONS:

Elementary transformations. Shifting Theorems. Heaveside's expansion formulae. Simple applications.

COMPLEX VARIABLES:

Limit, continuity, zeros and poles, Cauchy-Riemann equations, conformal transformations, contour integration.