

DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS

UNIT I

First order , higher degree Differential equations solvable for x, solvable for y , solvable for $\frac{dy}{dx}$, Clairaut's form.- Conditions of integrability of $M dx + N dy = 0$
- simple problems

UNIT II

Particular integrals of second order Differential Equations with constant coefficients-Linear equations with variable coefficients –Method of Variation of Parameters (Omit third & higher order equations)

UNIT III

Formation of Partial Differential Equation – General , Particular & Complete integrals –Solution of PDE of the standard forms - Lagrange's method of solving – Charpit's method and a few standard forms

UNIT IV

PDE of second order homogeneous equation with constant coefficients – Particular Integrals of $F (D, D') z = f (x , y)$,where $f(x ,y)$ is of one of the forms $e^{(a x + b y)}$, $\sin (a x + b y)$, $\cos (a x + b y)$, $x^r y^s$, and $e^{(a x + b y)} f(x ,y)$.

UNIT V

Laplace Transforms –standard formulae –Basic Theorems & simple applications-Inverse Laplace Transform – Use of Laplace Transform in solving ODE with constant coefficients.

TEXT BOOK(S)

- [1] M.D. Raisinghania, Ordinary & Partial Differential Equations, S. Chand & Co.,
- [2] M.K. Venkataraman, Engineering Mathematics, S.V. Publications, 1985, Revised Edn.

REFERENCE(S)

- [1] S.Narayanan, Differential Equations, S. Viswanathan Publishers, 1996.
- [2] M.L. Khanna, Differential Calculus, Jaiprakashnath and Co., Meerut-2004.