2127

SECOND YEAR
B. A. MATHEMATICS
PAPER – II
DIFFERENTIAL EQUATIONS

Duration: 3 Hours Max. Marks: 65

UNIT – I

Exact differential equations and equations of special forms. Simultaneous differential equations. Total differential equations.

UNIT – II

Linear differential equations of second order and their solutions by:

(i) The method of finding an integral of the C.F. by Inspection,
(ii) Changing of independent variables,
(iii) Removal of the first derivative,
(iv) Operational factors,
(v) Undetermined coefficients and
(vi) Variation of parameters.

UNIT - III

Linear partial differential equations of first order: Lagrange's method, Integral surfaces passing through a given curve, orthogonal surfaces, Geometric description of Pp+Qq=R. Non-Linear partial differential equations of order one. Special methods of their solutions applicable to certain standard forms.

UNIT -IV

Charpit's method of solving non linear partial differential equations of first order, Monge's method of integration of equations Rr + Ss + Tt = V. Higher order homogeneous linear part of differential equation of the first order.

UNIT - V

Numerical solutions of ordinary differential equations: Introduction about initial value problem, boundary value problem, Euler's method, short comings. Euler's modified method. Picard's method of successive approximation and Picard's method for simultaneous equations.

References:

1. Ray and Sharma : Differential equation.
2. Bansal, Dhami : Differential equation (Vol. II).
3. Raisinghania, M.D. : Advanced differential equations.
4. Murray A. Daniel : Differential equation.
5. Forsyth, A.R. : A Treatise on Differential equation.
6. Ian N. Sneddon : Elements of Partial differential equations., Mc Graw–Hill Book Company.
7. Gokhroo, Saini, Kumbhat : Avkal Samikaran.
8. Gokhroo, Saini, Ojha : Partial differential equations.
9. Codington, E.A. : An introduction to ordinary differential equation by, Prenticehall of India.