Paper VI: Differential Equations

I. Differential equation:

Recapitulation of differential equations, exact equations, equations reducible to exact form. Linear and Bernoulli's equations, simple equations of first order and higher degree equations: solvable for p,x,y. Clairauts equations and their singular solutions. Orthogonal trajectories in Cartesian and polar form.

Second and higher order ordinary linear differential equations with constant coefficients, complementary functions, particular integrals (Standard types), Cauchy- Euler differential equation of order two, simultaneous differential equations with constant coefficients, solutions of ordinary second order linear differential equation by the following methods:

i. When a part of complementary function is given.

ii. Changing the independent variable.

iii. Changing the dependent variable.

iv. When first integral is given (Exact equation). **42Hrs**

II. Total Differential Equations:

Necessary condition for the equation Pdx+Qdy+Rdz=0 to integral problems there on,

Solution of the equation of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$ **10 Hrs**

NOTE: INTERNAL MARKS-25

References:

1. Simnens G.F: Differential equations (TMH)
2. Cholriton F: Ordinary Differential Equations & Difference equations (D Van Norstrand Co Ltd).
3. Daniel. A .Murray: Introductory course in differential equations (Orient Longman).
4. Ayres F: Differential equation (Schum's Outline series).
5. M.D Raisinghania: Advanced Differential equations (S.Chand & co).
6. B.S Grewal: Higher Engineering Mathematics (Khanna Publishers).
7. Rudraiah et al: College Mathematics, Vol. I & II, (Sapna Book House, Bangalore).