


$$-\int \frac{e^{-s}}{-s} dt$$



51

New College

ORDINARY DIFFERENTIAL EQUATIONS

**B.A / B.Sc - I
Semester - II**

JEEVANSONS PUBLICATIONS

SYLLABUS

K.U., Kurukshetra, C.D.L.U., Sirsa and G.J.U., Hissar

B.A. / B. Sc. 1st Year

SECOND SEMESTER

ORDINARY DIFFERENTIAL EQUATIONS : (BM - 122)

Time Allowed : 3 hours

Maximum Marks { B.Sc. : 40
B.A. : 20

Note. *The examiner is requested to set **nine questions** in all, selecting two questions from each section and **one compulsory question** consisting of five parts distributed over all the four sections. Candidates are required to attempt five questions, selecting at least one question from each section and the compulsory question.*

Section - I

Geometrical meaning of a differential equation. Exact differential equations, integrating factors. First order higher degree equations solvable for x , y , p . Lagrange's equations, Clairaut's equations. Equations reducible to Clairaut's form. Singular solutions.

Section - II

Orthogonal trajectories in Cartesian coordinates and polar coordinates. Self orthogonal family of curves. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations. Equations reducible to homogeneous.

Section - III

Linear differential equations of second order. Reduction to normal form. Transformation of the equation by changing the dependent variable / independent variable. Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation. Method of variations of parameters. Method of undetermined coefficients.

Section - IV

Ordinary simultaneous differential equations. Solution of simultaneous differential equations involving operators $x (d / dx)$ or $t (d / dt)$ etc. Simultaneous equation of the form $dx/P = dy/Q = dz/R$. Total differential equations. Condition for $Pdx + Qdy + Rdz = 0$ to be exact. General method of solving $Pdx + Qdy + Rdz = 0$ by taking one variable constant. Method of auxiliary equations.

SYLLABUS

M.D.U., Rohtak, C.B.L.U., Bhiwani and I.G.U., Meerpur, Rewari

B.A. / B. Sc. 1st Year

SECOND SEMESTER

ORDINARY DIFFERENTIAL EQUATIONS : (BM - 122)

Time Allowed : 3 hours

Maximum Marks { B.Sc. : 40
B.A. : 27

Note. *The question paper will consist of **five** sections. Each of the first four sections will contain two questions and the students shall be asked to attempt **one** question from each section. **Section - V** will contain **six** short answer type questions without any internal choice covering the entire syllabus and shall be **compulsory**.*

Section - I

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CONTENTS

Chapter	Pages
1. <i>Exact Differential Equations</i> 1.1 – 1.34
2. <i>Equations of First Order but not of First Degree</i> 2.1 – 2.40
3. <i>Orthogonal Trajectories</i> 3.1 – 3.10
4. <i>Linear Differential Equations with Constant Co-efficients</i> 4.1 – 4.54
5. <i>Homogeneous Linear Equations</i> 5.1 – 5.20
6. <i>Linear Differential Equations of Second Order</i> 6.1 – 6.52
7. <i>Ordinary Simultaneous Differential Equations</i> 7.1 – 7.22
8. <i>Total Differential Equations</i> 8.1 – 8.24
• <i>Short Answer Questions</i> (i) – (iv)
• <i>Question Papers</i> (v) – (xx)