

## LESSON PLANNING

Name of Assistant Professor/Associate Professor: Pradeep Bishnoi

Class and Section: B.Sc.-I/B.A.-I (EVEN SEM)

Session: 2023-2024

Subject: Mathematics - Ordinary Differential Equations

Lesson Plan: From Jan 2024 to April 2024

Month: January

Chapter 1: Exact Differential Equations - Definitions- Differential Equation, Order, Degree, Geometrical Meaning, Exact Differential Equation, Examples, Integrating Factor, I.F. by Inspection, Examples- Solution of ODE by finding Integrating Factor, Rules for finding Integrating Factor, Rules for finding Integrating Factor and Examples

Chapter 2: Differential Equations of First Order but not of First Degree - Introduction and Definition, Equations solvable for  $\frac{dy}{dx}$  and related Examples, Differential equations solvable for y and related Examples, Differential equations solvable for x and related Examples, Lagrange's Equations and related Examples

Month: February

Chapter 2: Differential Equations of First Order but not of First Degree - Clairaut's Equations and related Examples, Equations Reducible to Clairaut's Equations and related Examples, Singular solution, Discriminant, p-Discriminant, c-Discriminant, Examples on Singular solution, Class Test

Chapter 3: Orthogonal Trajectories - Trajectories and Types of Trajectories, Examples to find Orthogonal Trajectories, Unsolved problems to find Orthogonal Trajectories, Assignment

Chapter 4: Linear Differential Equation with Constant Coefficients - Definition, Differential Operator, Complete Solution, Auxiliary Equation, Methods to find the Complete solution, Summary of results to find the Complete solution, Complementary Function, Particular Integral and some Basic Results, Inverse Operator

Month: March

Chapter 4: Linear Differential Equation with Constant Coefficients - Theorems, Particular Integral in some Special Cases, Examples on Complementary Function and Particular Integral, Particular Integral for some trigonometric functions and cases of failure, Examples, Linear Differential Equation with Constant Coefficients Some Methods and Examples on Particular Integral, More Examples on Particular Integral, Some typical Problems to find Complementary Function and Particular Integral

Chapter 5: Homogeneous Linear Equations - Definition, Method of solution of Homogeneous Linear Equations, Examples, Equations Reducible to Homogeneous Linear Form, Examples, Solution of Some Typical Homogeneous Linear Equations, Assignment

Chapter 6: Linear Differential Equations of Second Order - Introduction, Solution by Changing the Dependent Variable when an Integral included in C.F. is known, Method to find Particular Integral for a Linear Differential Equations of Second Order, Solution of Problems, Solution by Removing First Derivative and by Changing the Dependent Variable, Examples

Month: April

Chapter 6: Linear Differential Equations of Second Order - Solution by Changing the Independent Variable, Examples, Method of Variation of Parameters, Examples, Method of Undetermined Coefficients, Examples

Chapter 7: Ordinary Simultaneous Differential Equations - Introduction, Solution of Ordinary Simultaneous Differential Equations, Examples, Solution of Simultaneous Equations, Examples

Chapter 8: Total Differential Equations - Definition, Necessary and Sufficient Condition for Integrability of Total Differential Equation, Exactness Condition, Solution of Total Differential Equation and Examples, Method of Auxiliary equations and Examples, Solution of Exact and Homogeneous Total Differential Equations, Examples