

MATHEMATICS III: DEPARTMENT OF CSE

SEMESTER: SUMMER 2020

Part-A: Ordinary Differential Equation (ODE)

1. Introduction of differential equations
2. Classifications of differential equations according to degree and order
3. Formation of differential equations
4. Solution of first order differential equations by the method of
 - Variable Separable
 - Homogeneous Equation
 - Equation reducible to homogeneous form
 - Linear differential equation
 - Bernoulli differential equation
 - Exact differential equation
5. Solutions of second order differential equations by the reduction of order
6. Solution of nth order linear differential equations with constant coefficients
7. Solution of homogeneous linear equations (Cauchy-Euler equation)
8. Solution of non-homogeneous differential equation by the method of
 - D operators
 - Undetermined coefficients
 - variation of parameters formula
9. Systems of First order linear differential equations
 - Homogeneous Linear systems with constant coefficients

Part-B: Partial Differential Equation (PDE)

1. Introductions of PDE
2. Classifications
3. Solutions Simultaneous Differential equations by the method of
 - Grouping
 - Multipliers
4. Solutions of Lagrange's first order PDE
5. Charpit's method for finding the solutions of first-order nonlinear PDE
6. Wave equations, particular solution with boundary and initial conditions