



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Mid Term Examination, Fall – 2024

Course Code: EEE 0541-123
Section: A,B,C
Full Marks: 25

Course Title: Ordinary and Partial Differential Equation
Level-Term: L1-T2
Exam Date: October 02, 2024

Teacher's Initial: TRS
Time: 1.5 Hours

[Notes: Answer all the following questions

CO's represent one of the learning outcomes of the course.

Figures on the right hand side indicate marks allocated for the questions.]

		Marks
Q1. (a) Discuss the ordinary and partial differential equations with an example.	CO-1	[2]
(b) Identify the order and degree of the following differential equations	(C2)	[3]
i) $y = x \left(\frac{dy}{dx} \right) + a \left\{ 1 + \left(\frac{dy}{dx} \right)^2 \right\}^{\frac{1}{2}}$		
ii) $\left\{ y + x \left(\frac{dy}{dx} \right)^2 \right\}^{\frac{4}{3}} = x \left(\frac{d^2y}{dx^2} \right)$		
iii) $\left(\frac{d^2y}{dx^2} + 1 \right)^{\frac{2}{3}} = \left(\frac{dy}{dx} \right)^{\frac{1}{3}}$		
Q2. Illustrate an ordinary differential equation corresponding to the equation $a(y + a)^2 = x^3$ And identify the obtain differential equation is either linear or nonlinear and if nonlinear then why?	CO-1 (C2)	[5]
Q3. Illustrate the differential equation of a family of circles that touches the y-axis at origin.	CO-1 (C2)	[5]
Q4. Analyze the following differential equation $(x - 2y + 3)dx = (2x - y + 4)dy$	CO-2 (C4)	[5]
Q5. Analyze the following differential equations i) $(x^2 - 2xy - y^2)dx - (x + y)^2dy = 0$ ii) $(x^3 - 2y^2)dx + 2xydy = 0$	CO-2 (C4)	[5]