



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