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Daffodil International University

Department of Electrical and Electronic Engineering

Faculty of Engineering

Final Examination, Spring – 2025

Course Code: 0541-123 Course Title: Ordinary & Partial Differential Equations

Section: A,B,C,D,E,F Level-Term: L1-T2 Teacher's Initial: TRS

Full Marks: 40 Exam Date: June 28, 2025 Time: 2 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.	**Solve** the following differential equations using the appropriate method: i) $D^3y + 3D^2y + 3Dy + y = 0$ ii) $D^2y + 4Dy + 3y = e^{-3x}$	**CO-2 (C3)**	[6]
Q2.	**Compute** the general solutions of the following differential equations i) $(D^2 + 1)^2 y = sin2x$ ii) $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 3y = e^x sinx$ iii) $x^2\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + 4y = x^3$	**CO-2 (C3)**	[12]
Q3.	**Solve** the following partial differential equations i) $ptanx + qtany = tanz$ ii) $(y^2 + z^2 - x^2)p - 2xyq + 2xz = 0$ iii) $(D^3 - 3DD'^2 + 2D'^3)z = \sin(2x + y)$	**CO-2 (C3)**	[15]
Q4.	**Illustrate** the particular solutions of the differential equation from the following Initial Value Problem: $2y'' - 11y' + 12y = 0, y(0) = 5, y'(0) = 15$	**CO-3 (C3)**	[7]