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Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall 2025
Course Code: MAT211, Course Title: Engineering Mathematics
Level: L2 Term: T1 Batch: Retake_A

Time: 01:30 Hrs **Marks: 25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	*a)*	**Demonstrate** the ordinary differential equation of a family of curves $y = Acosx + Bsinx$	[5]	CO1
2.	*a)*	**Solve** the given ODE $\frac{dy}{dx} = e^{x-y} + x^2e^{-y}$	[5]	CO2
	b)	**Solve** the first order first degree homogeneous ODE $\frac{dy}{dx} = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[5]	
	c)	**Solve** the first order first degree Linear ODE $x\frac{dy}{dx} + 2y = x^2\log x$	[5]	
3.	*a)*	**Solve** the higher order ODE $(D^3 - 6D^2 + 11D - 6)y = e^x$.	[5]	CO2