



# Daffodil International University

Faculty of Science & Information Technology  
Department of Computer Science and Engineering  
Mid Examination, Spring 2025

Course Code: MAT211, Course Title: Engineering Mathematics

Level: L2 Term: T1 Batch: 66

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)	Explain the order and degree of a differential equation with examples.	[2]	CO1
	b)	Outline an ODE corresponding to the function: $y = Pe^{3x} + Qe^{2x} + Re^{-x}$ .	[4]	
	c)	Interpret the solution to the Linear ODE: $x^2 \frac{dy}{dx} + 2xy = x^2 e^{2x}$ .	[4]	
2.	a)	Solve the homogeneous first order first degree ODE: $y^2 dx - (xy + x^2) dy = 0$ .	[4]	CO2
	b)	Solve the higher order ODE: $D^4 y + 2D^3 y + 8Dy + 16y = e^{-2x} + \sin 2x$ .	[6]	
3.		Solve the following higher order ordinary differential equation (ODE) with constant coefficients $D^2 y + 3Dy + 2y = f(x)$ where the function $f(x) = e^{2x} \sin^2 3x$ .	[5]	CO2