



Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering

Final Examination, Fall-2025

Course Code: MAT211, Course Title: Engineering Mathematics

Level: L2 Term: T1 Batch: RE_B

Time: 2 Hrs

Marks: 40

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)	Solve $x^3 \frac{d^3 y}{dx^3} + 5x^2 \frac{d^2 y}{dx^2} + 7x \frac{dy}{dx} + 8y = x^2$.	[6]	CO2
	b)	Identify y_p for the ODE $(D^3 - D^2 - 4)y = e^x \sin 2x$.	[4]	
2.	a)	Evaluate $\mathcal{L}\{4e^{-2t} - 2 \cosh t + 3t^4 + 1\}$.	[4]	CO3
	b)	Evaluate $\mathcal{L}\{t^2(\sin 4t + t)\}$.	[6]	
3.	a)	Determine the value of $\mathcal{L}^{-1}\left\{\frac{s}{s^2+6s+5}\right\}$	[5]	CO3
	b)	Solve $Y''(t) + Y(t) = t$, $Y(0) = 1$, $Y'(0) = -2$.	[5]	
4.		Define Fourier Series. Find the Fourier Series of $f(x) = e^{4x}$, $-\pi < x < \pi$	[10]	CO4