ourdiu.com | Shared by Md. Karimul Basar

Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering
Final Examination, Spring 2026
Course Code: MAT211, Course Title: Engineering Mathematics
Level: L2 Term: T1 Batch: 68

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 $x^3\frac{d^3y}{dx^3} + 2x^2\frac{d^2y}{dx^2} + 6x\frac{dy}{dx} + 4y = \frac{10}{x}$	[6]	CO2
	b)	Identify y_p for the ODE $D^2y - 4Dy + 3y = 3e^{3x}\cos 2x$	[4]	
2.	*a)*	Simplify (i) $\mathcal{L}\left\{e^{-3t} - \cosh t + \frac{3}{4}t^4 + 3\sin\frac{2t}{5} - 1\right\}$ (ii) $\mathcal{L}\{3t\cos^2 2t\}$	[4] [4]	CO3
	b)	Inspect the result of $\mathcal{L}^{-1}\left\{\frac{e^{-\pi s}}{s^2+3s+7}\right\}$	[5]	
3.	*a)*	Solve $Y''(t) + 3Y'(t) + 2Y = \cos t$, $Y(0) = 1, Y'(0) = 0$ using Laplace transform	[7]	CO4
	b)	Construct $f_c(n)$ for $F(x) = e^{-2x}, 0 < x < \pi$	[3]	
	c)	Develop the Fourier series of $F(x) = x^3$, $-\pi < x < \pi$ and construct the definition of Fourier series.	[5+2]	