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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering
Final Examination, Spring 2024
Course Code: MAT211, Course Title: Engineering Mathematics
Level: L2 Term: T1 Batch: 64

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** $x^3\frac{d^3y}{dx^3}+3x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}+y=x\ln x$.	[7]	CO2
	(b)	**Identify** y_p for the ODE $D^3y-2Dy+4y=e^x\cos x$.	[4]	
2.	(a)	**Evaluate** $\mathcal{Z}\{4\cos^2 t+3\sin^2 t\}$.	[5]	CO3
	(b)	**Evaluate** $\mathcal{Z}\{e^{2t}\sin 2t\cos 2t\}$.	[6]	
3.	(a)	**Determine** the value of $\mathcal{Z}^{-1}\left\{\frac{1}{s^2-4s+3}\right\}$ using convolution theorem.	[5]	CO3
	(b)	**Determine** $f_s(n)+f_c(n)$ for $F(x)=e^{-2x}+e^{4x}$, $0<x<\infty$.	[6]	
4.		**Solve** $Y''(t)+4Y(t)=\cos t$, $Y(0)=Y'(0)=0$.	[7]	CO4