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Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall 2022
Course Code: MAT211, Course Title: Engineering Mathematics
Level: L2 Term: T1, Section: A,B,C,D,E,F,G,Old-A Batch: 60
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)***	Define Order and Degree of Differential Equations (D. Es.)	**2**	**CO1**
	b)	Develop the D.E. corresponding to the equation $y = ax + bx^2$	**3**	
2.	***a)***	Describe how can you verify the Homogeneous D.E.?	**1**	**CO2**
	b)	Solve the Homogeneous D.E. $(x^2 + y^2)dx + 2xy\,dy = 0$	**4**	
3.	***a)***	Solve the D.E. using appropriate method $(3x - 2y + 1)dy = (6x - 4y + 3)dx$	**2**	**CO3**
	b)	Solve the D.E. $(D^3 + D^2 + D + 1)y = \cos x$	**3**	
4.	***a)***	Define Integrating Factor (I.F.)	**1**	**CO2**
	b)	Calculate the solution of the D.E. using suitable method $x\frac{dy}{dx} + 2y = x^2 \log x$	**4**	
5.		Solve the Bernoulli's D.E. $2\frac{dy}{dx} - \frac{y}{x} = \frac{y^2}{x^2}$	**5**	**CO3**