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Daffodil International University
Faculty of Science & Information Technology
Department of Multimedia and Creative Technology (MCT)
Semester Final Examination, Spring 2026
Course Code: 0541-111
Course Title: Mathematics-1

Time: 2:00 Hrs **Marks: 40**

Answer ALL Questions

1.	Evaluate the following logarithmic expressions. I. $10(\log_3 243 + \log_3 81) + \log_4 16 + \log_4 64 + 5$ II. $\log_4 64 + \log_4 16 - \log_4 4 + 5\log_8 8$ III. $\log_2 64 - \log_2 \sqrt{4} + \log_3 27 - 2\log_3 3 + \log_3 9$	[3 x 3 =9]	CLO 3, C5
2.	a) Prove the following logical statements: i) $(A \wedge B) \rightarrow (A \vee B)$ is a tautology ii) $(A \rightarrow B) \leftrightarrow (\neg B \rightarrow \neg A)$ is a tautology iii) $\neg(\{A \wedge B\} \wedge \neg A)$ is a tautology b) Illustrate the truth tables for conditional statements.	[9 +1 = 10]	CLO 5, C2
3.	By applying the concept of vector, prove that the given points are collinear. **A** {1, 2, 4}; **B** {2, 5, -1}; **C** {3, 8, -6}	[4]	CLO 4, C2
4.	If (a, bc), (b, ca) and (c, ab) are collinear; prove that a = b = c.	[3]	CLO 2, C2
5.	A, B, C, D- are four points and their co-ordinates are (0, -1), (15, 2), (-1, 2), (4, -5) accordingly. Line AB divides line CD. Determine the ratio of the division.	[5]	CLO 2, C4
6.	The ordinate of a point is 2 and the distance of it from (1, -2) point is $4\sqrt{2}$ units. Determine the abscissa.	[3]	CLO 2, C2
7.	Make a list of at least six bullet points on how a game developer can benefit from a strong mathematical foundation while performing his professional tasks.	[3]	CLO 5, C2
8.	Two ships are surveying around a lighthouse. Ship 1 is 50 feet north and 20 feet east of the light house. Ship 2 is 80 feet north and 60 feet east of the light house. How far is ship 1 from ship 2? Use Pythagorean theorem to solve this problem. Mathematical solution must be backed up by proper graphical representation.	[3]	CLO 1, C1