

Daffodil International University

Faculty of Business & Entrepreneurship

Department of Business Administration

Program: BBA

Semester: Fall-2025

Time: 1 Hour and 30 Minutes

Course Code: 0541-122

Section: All

Examination: Mid-term

Full Marks: 25

Course Title: Business Mathematics

Teachers' Initial: SAS, AA

Answer the following questions:

1.	(a)	A company has borrowed Tk. 5,00,000 at 10 percent compounded semi-annually. The debt is to be amortized by equal payments each over a period of two years. Identify the amount of each payment and also prepare the amortization schedule.	3	CLO 2 Level-3
	(b)	Sarah deposits \$8,000 into a savings account that pays <u>6%</u> simple interest per year. She wants her money to grow to \$9,440. Choose the number of months it will take for her investment to reach \$9,440. 34	2	
2.	(a)	Examine that the points $A(2, 4)$, $B(2, 6)$ and $C(2 + \sqrt{3}, 5)$ are the vertices of an equilateral triangle or not.	3	CLO 3 Level-4
	(b)	Identify the value of k that the points $(5, 5)$, $(10, k)$, and $(-5, 1)$ are on the same line.	2	CLO 2 Level-3
3.	(a)	If $a^{3-x} \cdot b^{5x} = a^{x+5} \cdot b^{3x}$ then show that $x \log \left(\frac{b}{a} \right) = \log a$	2.5	CLO 2 Level-3
	(b)	If $x^3 + y^3 = 0$ and $x + y \neq 0$, then prove that $\log(x + y) = \frac{1}{2} (\log x + \log y + \log 3)$	2.5	
4.	(a)	An architect is designing a triangular playground. The three corners of the playground will be at the points $(2, 5)$, $(x, 0)$, and $(7, -3)$ on a layout map (measured in meters). The playground must have an area of exactly 12.5 square meters. Detect the value of x that makes the area of this triangle equal to 12.5 square meters.	2.5	CLO 2 Level-3

	(b)	A small business owner invests some capital into a <u>long-term savings plan</u> . She wants her investment to <u>triple in value over 10 years</u> . If the interest is compounded quarterly, select the interest rate must the bank offer for her money to triple in 10 years.	2.5	CLO 2 Level-3
5.	(a)	Distinguish the characteristics of simple interest and compound interest.	2	CLO 1 Level-2
	(b)	<u>Interpret Annuity, Isosceles triangle and Natural logarithm.</u>	3	

