Daffodil International University

Faculty of Business & Entrepreneurship
Department of Business Administration
Program: BBA

Semester: Fall-2025 | Examination: Mid-term
Time: 1 Hour and 30 Minutes | Full Marks: 25
Course Code: 0541-122 | Course Title: Business Mathematics
Section: All | 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 6% 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**.**	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 $(5,5), (10,y),$ 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 long-term savings plan. She wants her investment to triple in value over 10 years. 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)	Interpret Annuity, Isosceles triangle and Natural logarithm.	3	