Daffodil International University
Department of Business Administration
Course Title: Business Mathematics
Course Code: MAT-102

Semester: Summer 2025 **Examination: Midterm Term**
Time: 1 Hour 30 minutes **Full Marks: 25**
Section: Retake **Teachers' Initial: JI**

[NB: Answer all the following questions]

SL		Questions	Marks
01.	a.	Define matrix. Describe the condition of matrix multiplication.	2
	b.	State the formula to calculate the inverse matrix.	1
	c.	Write down simple and compound interest formulas.	2
02.		There are two families, A and B. Family A consists of 4 men, 6 women, and 2 children, while family B consists of 2 men, 2 women, and 4 children. The recommended daily allowance (RDA) for each individual varies by category. For calories, a man requires 2400 kcal, a woman needs 1900 kcal, and a child requires 1800 kcal per day. In terms of protein intake, the recommended amount is 55 grams for a man, 45 grams for a woman, and 33 grams for a child.	
	a.	Represent the above information by matrices.	2
	b.	Use matrix multiplication to calculate the total requirement of calories and proteins for each of the two families	3
03.		Consider the System $$2x + 3y = 4$$ $$5x + 6y = 8$$	
	a.	Express the above system in matrix form $AX = B$.	1
	b.	Solve the system using Gauss-Jordan Method.	2
	c.	Compute A^{-1}.	2
04	a.	Find the proceeds of a Tk. 20000, 18-month loan from a bank if the discount rate is 12 percent.	2
	b.	Mr. Tawhid deposits Tk. 10000 in an employees' savings account at 6% interest rate. How many months will it be until the amount in the account is Tk. 11000?	3
5.	a.	At what interest rate compounded annually will Tk.1000 grow to Tk. 5000 in 10 years.	3
	b.	Find the value of TK. 5000 at 8% compounded quarterly for 10 years.	2