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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Midterm Examination, Summer 2026
Course Code: ECO426, Course Title: Engineering Economics
Level: L4 Term: T2 Batch: 64

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 Engineering Economics and Time Value of Money. — **2** — **CO2**

1. b) — **3** — **CO2**

Price	Quantity Demanded (income= $20,000)	Quantity Demanded (income= $24,000)
$8	40 Pizza	50 Pizza
10	32 Pizza	45 Pizza
12	24 Pizza	30 Pizza
14	16 Pizza	20 Pizza
16	8 Pizza	12 Pizza

Calculate your income elasticity of demand as your income increases from $20,000 to $24,000 if (i) the price is $12 and (ii) the price is $16.

2. a) Bangladesh's digital economy is experiencing rapid growth. As a CSE graduate planning to launch a tech startup: Compare the Free Price Mechanism and the Controlled Price System. Which mechanism would be more appropriate for your startup ecosystem in Bangladesh and justify. — **3** — **CO1**

2. b) State the Law of Diminishing Marginal Utility and explains its relevance to a software engineers who uses a productivity tool for multiple hours a day. — **2** — **CO1**

3. a) Briefly explain the concept of Marginal Rate of Substitution (MRS) in the IC Curve. Why two ICs can never intersect? Briefly explain with graph. — **2** — **CO3**

3. b) A student has a monthly budget of BDT 1,200 to spend on two goods: mobile data packages (Price = BDT 200 each) and online course subscriptions (Price = BDT 300 each). — **3** — **CO3**

i. Write the equation of the budget constraint and demonstrate in the graph.
ii. What are the maximum affordable units for mobile data and online course subscriptions separately).

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4. a) Distinguish between Short-Run and Long-Run production function. **2**

b) A Dhaka-based IT startup has a fixed server infrastructure (K = 10 units). The table below shows the total output (number of apps deployed per month) as more developers are hired. **3** **CO3**

Labor (Developers)	Total Product (Apps Deployed per Month)
0	0
1	30
2	70
3	120
4	120
5	160
6	185
7	195

Identify the Rational Region of Production for the Dhaka-based IT Startup and explain why this rational firm should operate in that region. Present with schedule and graph.

5. a) Explain in the light of Brook's Law which type of input (Fixed vs. Variable) a software developer represents in a software company? **2**

b) A software solutions company currently uses: **3** **CO3**

Developers (Labor)	Servers (Capital)	Output (Units)
2	2	100
4	4	250
6	6	350
8	8	400

Determine the type of Returns to Scale at each stage (IRS, CRS, or DRS) by comparing the proportional change in inputs to the proportional change in output. Show your calculations.

Note: You may add or delete rows as per your requirements. Mention CO's in the right side of the table as per your course outline.

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