

Daffodil International University
Department of Innovation & Entrepreneurship
Midterm Exam, Fall 2026

Course Code: 0413-313

Course Title: Operations Management

Semester: Fall 2026

Examination: Midterm

Time: 1 Hour 30 Minutes

Full Marks: 25

Section: _____

Teachers' Initial: DSA

Answer all questions. (5 + 5 + 5 + 10 = 25 marks)

Show calculation steps where applicable. All scenarios are hypothetical.

1. An online grocery startup in Dhaka finds that customers reject sellers supplying unsafe food or incorrect orders. Among sellers meeting these basic standards, customers prefer the provider that reliably delivers within two hours. **Explain order qualifiers and order winners using this case. (CLO-1, Level-2) [5]**

2. A customer at an online bookstore browses books, selects a book, and decides whether to add another. If another book is needed, the customer returns to browsing; otherwise, the customer proceeds to checkout and submits the order. **Apply standard flowchart symbols to represent this process, including the decision, return loop, and start and end points. (CLO-2, Level-3) [5]**

3. A Dhaka courier company monitors delivery time using samples of four deliveries. Stable historical data give a grand mean of 29 minutes and an average range of 4 minutes. Use $A_2 = 0.729$, $D_3 = 0$, and $D_4 = 2.282$. A new sample has a mean of 33 minutes and a range of 5 minutes. **Calculate the upper and lower control limits for the x-bar chart and R-chart, and interpret the new sample against these limits. (CLO-2, Level-3) [5]**

4. A Dhaka bank branch uses one officer and one queue for printed account statements and personalized loan consultations. Statements follow fixed steps and require little discussion, while consultations require detailed customer input and varied processing time. Statement requests wait whenever a consultation is underway. **Analyze this capacity problem using the customer-contact matrix and front-office/back-office concepts, explaining how separating routine processing from personalized service would affect waiting time and service quality. (CLO-3, Level-4) [10]**