

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Mechanical Engineering



Study Programme	: Bachelor of Science Honours in Engineering/ Bachelor of Science in Software Engineering
Name of the Examination	: Final Examination
Course Code and Title	: DMX6601 / DMM6602 Management for Engineers
Academic Year	: 2024-2025
Date	: 28 th February 2026
Time	: 1330-1630 hrs
Duration	: 3 hours

General instructions

1. Read all instructions carefully before answering the questions.
2. Answer to each question should commence on a new page.
3. This is a Closed Book Test (CBT).
4. This question paper consists of Part A and Part B. Part A has 8 structured questions and expects short answers. Part B has 4 Questions.
5. Answer **five questions from Part A** and **all four (4) questions from Part B**.

PART A – Answer five questions; each question carries 4 marks.

1. Explain the reasons for the evolution of Management theories. Discuss at least three points. (4 Marks)
2. Recruiting is one of the main elements of the HRM process. Why should an organization rely on both internal and external methods of recruitment? Give at least two reasons to justify each method. (4 Marks)
3. Explain how effort and time behave in different stages of a project life cycle. (4 Marks)
4. Quality management involves many activities to ensure product quality at the end. What are the two main categories of cost of quality? Give one example for each. (4 Marks)
5. Strategy formulation is the most crucial activity in Strategic Management. List down four major steps in strategy formulation (4 Marks)
6. Groups or teams proceed through four stages of development. Identify and briefly explain these four stages of development when forming a group. (4 Marks)
7. Explain the advantages and disadvantages of “functional organizational structure” in organizational management. (4 Marks)
8. Briefly explain three productivity improvement techniques that are commonly used in modern organizations. (4 Marks)

PART B – Answer all 4 Questions. Each question carries 20 marks.

Q1.

- (a) Define the three main parameters that should be satisfied for project success in traditional project management. Explain other factors you may consider important as a Project Manager in a successful project. (6 Marks)
- (b) Explain the concept of Earned Value Management and its importance in project control. (4 Marks)
- (c) What is risk management in projects? Explain the steps involved in the project risk management process (4 Marks)
- (d) Explain the concept of a Work Breakdown Structure (WBS) and discuss its importance in project management, explaining at least four factors. (6 Marks)

Q2.

- (a). Two types of discount methods are applied in inventory management: All-units discounts and incremental discounts. State the differences between incremental and all-units quantity discount in EOQ models. (6 Marks)
- (b) A firm requires an item that a supplier offers at the following prices, offering an all-unit discount.

Order quantity	1-999	1000-3000	3000 and over
Price per unit	Rs.50	Rs.45	Rs.40

The average annual demand is 12000 units. The ordering cost is Rs.1500, and the stock holding cost is Rs.200 per unit per year. Find the following:

- I. Economic lot size (5 Marks)
- II. Average yearly cost (5 Marks)
- III. Frequency of placing orders (4 Marks)

Q3.

- (a) State the objective of the transportation algorithm. (4 Marks)
- (b) A company has three factories F_1, F_2, F_3 supplying a product to three warehouses W_1, W_2, W_3 . The unit transportation costs (Rs./unit), factory supplies, and warehouse demands are given below:

Table Q3-1

	W1	W2	W3	Supply
F1	2	3	1	20
F2	5	4	8	35
F3	5	6	8	25
Demand	30	25	25	

- I. State whether the transportation problem is balanced. If not, show how you would balance it. (2 Marks)
- II. Using the Least Cost Method, obtain an initial basic feasible solution. (6 Marks)
- III. Calculate the total transportation cost for your initial solution obtained in part (II). (2 Marks)
- IV. Examine whether the initial basic feasible solution obtained in part (II) is degenerate or non-degenerate. Justify your answer (2 Marks)
- V. Test and state the optimality of the solution obtained in part (II) using the MODI (u-v) method. (4 Marks)

Q4.

- (a) Explain the concept of floats in network analysis and discuss their importance in project planning and control. (5 Marks)
- (b) A project consists of the following activities with their immediate predecessors and durations as given below.

Table Q4-1

Activity	Immediate Predecessor(s)	Duration (days)
A	—	4
B	A	5
C	A	6
D	B, C	7
E	D	4
F	D	3
G	E, F	5

- i. Draw the network diagram for the project (5 Marks)
- ii. Using the Critical Path Method (CPM), determine the Earliest Start (ES), Earliest Finish (EF), Latest Start (LS), and Latest Finish (LF) times for each activity. (5 Marks)
- iii. What is the total project duration? (2 Marks)
- iv. Mention the activities you may delay most so that they will not affect the total project duration. (3 Marks)

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