

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



Study Programme	: Bachelor of Technology Honours in Engineering
Name of the Examination	: Final Examination
Course Code and Title	: DMM5836 / MEM5336 Management for Engineers
Academic Year	: 2020/21
Date	: 1 st February 2022
Time	: 1400-1700hrs
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. Answer for each question should commence from a new page.
3. Relevant charts/ codes are provided.
4. This is a Closed Book Test (CBT).
5. Answers should be in clear handwriting.
6. Do not use Red colour pen.

THIS QUESTION PAPER HAS TWO SECTIONS, SECTION A AND B. ANSWER ANY FIVE PARTS FROM SECTION A AND FIVE QUESTIONS FROM SECTION B.

SECTION A

- (a) What are the **four** functions of management? Explain them briefly. **4 marks**
- (b) What are the **two** basic theories of motivation? Explain each of them briefly. **4 marks**
- (c) Distinguish between the formal and informal types of groups found in an organization. **4 marks**
- (d) What are the key elements to be considered when designing an organization structure for an organization? Briefly explain each element. **4 marks**

- (c) Explain the importance of activity network analysis as a planning tool in project management. **4 marks**
- (f) Explain the terms Contribution, Break-even point, Variable cost and Margin of safety with reference to costing. **4 marks**
- (g) Distinguish the difference between “Quality of Design” and “Quality of conformance”. **4 marks**
- (h) List **four** (4) common categories of employment you come across in Sri Lanka and explain them briefly. **4 marks**

SECTION B

- Q1 (a) Due to industrial revolution, some changes took place in western countries. What changes made the evolution of Behavioural Management Theory? **5 marks**
- (b) What are the **four** categories of principles that Frederick Taylor identified? Explain them briefly. **5 marks**
- (c) SWOT analysis enables managers to develop a strategic profile of the organization based on collected information. Explain how it is done. **6 marks**
- Q2 (a) Define, what human resource planning is? **4 marks**
- (b) Briefly explain the steps involved in the human resource planning process. **4 marks**
- (c) What is job analysis? **4 marks**
- (d) Briefly explain the **two** approaches used in job analysis. **4 marks**
- Q3 (a) Define “leadership” and explain it’s similarities and differences compared with “management”. **5 marks**
- (b) What are the **three** approaches used to explain the leadership? Explain them briefly. **6 marks**
- (c) Briefly explain the **five** types of power used by the leaders to influence the followers. **5 marks**

- Q4 (a) Marketing is a human activity directed at satisfying needs and wants through exchange process.
- (i) Explain, what is meant by "Marketing Mix"? 3 marks
- (ii) Explain the importance of marketing mix. 3 marks
- (b) What are the **two** basic pricing methods used in marketing? Explain them briefly. 6 marks
- (c) Explain the difference between Monopoly, Duopoly and Oligopoly markets. 4 marks
- Q5 (a) Briefly explain **two** benefits and **two** drawbacks of critical path method in network analysis. 4 marks
- (b) A project consists of activities A-L. The activity completion times, and the precedence relationships are as follows.

Activity	Duration (Days)	Preceding activities
A	1	-
B	6	A
C	3	A
D	1	C
E	6	C
F	2	C
G	5	B, D
H	1	E, G
I	2	E, G
J	1	F
K	1	H, I, J
L	1	K

- (i) Draw the network diagram for the project and indicate the earliest and the latest event times. 6 marks
- (ii) What is the minimum project duration? 2 marks
- (iii) What are the critical activities? 2 marks
- (iv) The activity F is to be delayed by 3 days due to an unavoidable reason. Can the project be completed in planned time? Justify your answer. 2 marks

Q6 (a) Transportation problems can be solved using different methods. Name **three** of them. **3 marks**

(b) There are 3 factories located at A, B and C and 3 distribution centers at X, Y and Z. Supply from 3 factories are 4000, 7000 and 9000 units respectively and the demand in 3 distribution centers are 7000, 5000 and 8000 units respectively. Transportation cost per unit of distribution is given below in Rs.

Location	X	Y	Z
A	10	8	12
B	12	13	10
C	8	10	14

(i) Is this a balanced or unbalanced transportation problem? Justify your answer. **2 marks**

(ii) Find a feasible transportation schedule using the least cost method. **5 marks**

(iii) Check for the degeneracy of the feasible solution. **2 marks**

(iv) What is the total minimum transportation cost? **4 marks**

Q7 (a) Explain the following terms used in financial accounting.

(i) Trial Balance

2 marks

(ii) Suspense account

2 marks

(b) The following balances were extracted from XYZ company on 31st December 2020.

Extracted Balance	Debit (Rs.)	Credit (Rs.)
Capital		18,100
Purchases	78,200	
Drawings	3,600	
Plant and Machinery (balance on 1 st January 2020)	12,000	
Plant and Machinery (addition on 1 st July 2020)	2,500	
Stock as at 1 st January 2020	9,500	
Return inwards	1,200	
Sundry Debtors	2,060	
Furniture and Fixtures	1,500	
Freight and duty	200	
Carriage outwards	50	
Rent, Rates and Taxes	2,460	
Printing and Stationary	380	
Trade expenses	540	
Sundry creditors		4,000
Sales		98,000
Returns outwards		300
Postage and Telegrams	80	
Provision for Doubtful Debts		40
Discounts		180
Rent of premises for the year		720
Insurance charges	270	
Salaries and wages	3,130	
Cash in hand	620	
Cash at Bank	3,050	
	1,213,40	1,213,40

Additional information:

1. Closing stock at 31st December 2020 was Rs.9,460
2. Write off Rs.60 as Bad Debts.
3. The provision for Doubtful Debts is to be maintained at 5% on Sundry Debtors.
4. Provide for depreciation on Furniture and Fixtures at 5% per annum and on Plant and Machinery at 20% per annum.

Using the balances and the additional information given above prepare the following statements.

- (i) Trading and Profit and loss account for the year ending 31st December 2020. **6 marks**
- (ii) Balance sheet as at that date. **6 marks**
- Q8 (a) Discuss why a manufacturing organization should have a good inventory management system giving at least **four** reasons. **4 marks**
- (b) State **three** main costs associated with inventory management in a manufacturing organization. **3 marks**
- (c) The demand for a certain product is 4800 units per year. The fixed administrative cost of placing an order is Rs.1800. Stock holding cost is Rs.24 per unit per year and price per one unit is Rs 10.

Additional notes:

Wilson formula: $Q = \sqrt{\frac{2\lambda A}{I}}$

Average yearly inventory cost $K = \frac{A\lambda}{Q} + \frac{I Q}{2} + c \lambda$

(In standard notation used in your textbook.)

Calculate the following.

- (i) Economic lot size. **5 marks**
- (ii) How many orders should be placed in a year? **2 marks**
- (iii) Calculate the total inventory cost per year, considering only ordering cost, holding cost and cost of an item. **2 marks**

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