00399

The Open University of Sri Lanka
Faculty of Engineering Technology

Study Programme	:	Bachelor of Technology Honours in Engineering
Name of the Examination	:	Final Examination
Course Code and Title	:	**MEM5336 Management for Engineers**
Academic Year	:	2016 / 2017
Date	:	**7th November 2017**
Time	:	**0930 -1230 HRS**
Duration	:	3 hours

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) Briefly explain the changes took place in western countries due to industrial revolution. **4 marks**

(b) List the key elements of Management Function and explain them briefly. **4 marks**

(c) Differentiate between Administrative theory and Scientific management. **4 marks**

(d) What are the two types of organization structures? Give one advantage and disadvantage for each type. **4 marks**

(e) Explain briefly the four (4) techniques used in evaluating capital projects. **4 marks**

(f) Explain briefly the different types of concepts involved in marketing. **4 marks**

(g) Briefly explain the four (4) categories of principles that Frederic Taylor identified. **4 marks**

(h) What are the steps to be considered to evolve an efficient corporate plan? **4 marks**

SECTION B

Q1 Leadership plays an important role in influencing the behavior of an individual or a group focused towards achieving the goals of an organization.

(a) What are the main functions of leadership? Explain them briefly. **5 marks**

(b) Explain, how do the leaders influence the followers using different types of power? **5 marks**

(c) Explain the different approaches followed by leaders in managing an organization. **6 marks**

Q2

(a) What are the four 'P's of marketing mix? Explain each 'P' using suitable examples. **5 marks**

(b) Explain using appropriate examples, how does the quality of goods (products) affect its market. **5 marks**

(c) 'ABC' Ltd is a fruit juice manufacturing company. The company is planning to launch a new product with the brand name of 'ABC Fruit-juice' to the market. **6 marks**

What components of the marketing mix would you use for the promotional campaign? Explain your answer.

Q3

(a) Explain briefly "Employee Motivation". **5 marks**

(b) Which non-monetary factors do you think help in building up the motivation level of employees? **5 marks**

(c) To which perspective Maslow's theory of motivation falls? **6 marks**
Briefly explain Maslow's theory of hierarchy of needs.

Q4

(a) Briefly describe the functions of a human resource manager in an organization. **4 marks**

(b) Discuss the different methods of recruitment and their merits and demerits. **4 marks**

(c) Differentiate between "Job description" and "Job specification". **4 marks**

(d) Briefly discuss the two approaches identified as Functional Job Analysis (FJA) and the Position Analysis Questionnaire (PAQ) in job analysis. **4 marks**

Q5

(a) Briefly explain the following related to project management.

(i) Activity network diagram

(ii) Slack time of an activity **4 marks**

(b) A project consists of 12 activities labeled A through L. The following Table gives the estimated time duration in days for each of the 12 activities with what activities should have been completed prior to the commencement of the relevant activity.

Activity	Time duration (days)	Immediate predecessor(s)
A	6	-
B	4	-
C	10	-
D	1	A, B
E	1	B
F	3	B
G	14	C, F
H	6	B
I	9	E, H
J	2	E, H
K	7	D, J
L	5	G, K

(i) Draw a network diagram for this project and indicate the earliest and latest event times. **6 marks**

(ii) Hence find the critical path and project duration. **4 marks**

(iii) Find the slack time in activities E and H. **2 marks**

Q6

(a) What are the advantages of maintaining an Inventory Management system for a factory that manufactures goods? **2 marks**

(b) Fig. 6(b) below shows the lot size inventory model with back orders. Write expressions for the following cost components using given notations.

A-Administrative cost P - Penalty cost / unit/ unit time
N-Number of cycles I - Inventory cost/unit/unit time
λ - Demand rate units/unit time

(i) Ordering cost **1 marks**

(ii) Inventory cost **1 marks**

(iii) Shortage cost **1 marks**

(iv) Total variable cost **2 marks**

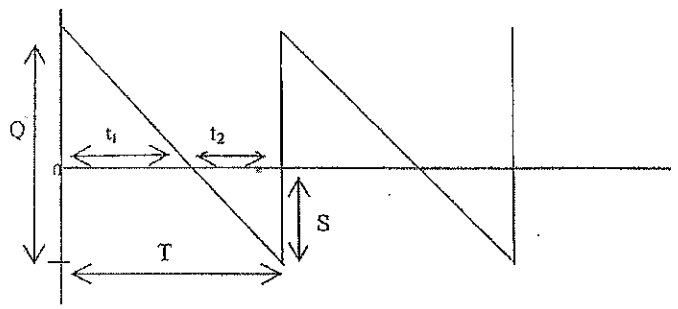


Fig. 6(b)-Model with back orders

Where Q- Ordering quantity S – Shortage
T- Period t_1 – Time of having positive inventory
t_2 -Shortage period

(c) Using the lot size inventory model with back orders, show that the minimum ordering quantity Q^* is given by, **5 marks**

$$Q^* = \sqrt{\frac{2\lambda A}{I} \cdot \frac{I+P}{P}}$$

(d) The demand for a product is 10,000 units per month and the product has uniform demand throughout the year. The set-up cost for the production process is Rs. 3,000 per batch and stock holding cost is Rs. 24 per unit per year. If stock out is allowed and cost of stock shortage is found to be Rs.10 per unit per month. Calculate the following.

(i) Optimum processing quantity **2 marks**

(ii) Monthly running cost **2 marks**

Q7

(a) Explain the purpose of using transportation method in resource optimization. **4 marks**

(b) Three premix plants X, Y & Z produce premix compound for road construction with production capacities of 150,175 & 275 tons per day respectively. Three road development sites A, B, C require the quantities of 200,100 and 300 tons per day respectively. Transportation cost in Rs. per ton of premix between sites is given by the following matrix.

	A	B	C
X	600	800	1000
Y	700	1100	1100
Z	400	500	1200

Find the following with the use of minimum cost cell method.

(i) Basic feasible solution for allocation of premix from 3 plants to the 3 road development sites and the cost. **6 marks**

(ii) Optimum transport schedule and the cost. **6 marks**

Q8

(a) Describe the purpose of following accounts. **4 marks**

(i) Journal

(ii) Ledger Account

(b) The following trial balance was extracted from the XYZ company on 30th December 2016. Using the trial balance and the notes given below, prepare the following.

(i) Profit and Loss account for the year ended 30th December 2016. **6 marks**

(ii) The Balance sheet as at that date. **6 marks**

Trial Balance as at 30th December 2016.

	Debit (Rs'00)	Credit (Rs'00)
Capital		30,000
Fixtures and fittings	6,000	
Motor Vehicles	10,000	
Stock at 1st January 2016	6,000	
Sales		145,000
Purchases	119,100	
Rent and rates	3,800	
Lighting and heating	2,600	
Advertising	1,700	
Motor expenses	2,400	
Telephone and postages	1,200	
Salaries	11,500	
Debtors	13,100	
Creditors		10,400
Cash at bank	8,000	
	185,400	**185,400**

Notes:

(i) The closing stock was valued at Rs.750,000

(ii) Advertising prepaid amounted to Rs. 15,000

(iii) Motor expenses due and not yet paid amounted to Rs. 12,000

(iv) Depreciation policy is as follows:
Furniture and Fittings 10% on cost
Motor vehicle 5% on cost

(v) Rs. 25,000 out of the debtor's amount is to be considered as bad debts during the year.

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