

The Open University of Sri Lanka  
Faculty of Engineering Technology



Study Programme	: Diploma in Technology/Bachelor of Technology (Engineering)
Name of the Examination	: Final Examination
<b>Course Code and Title</b>	: <b>MEM5336-Management for Engineers</b>
Academic Year	: 2012/13
Date	: <b>05<sup>th</sup> AUGUST 2013</b>
Time	: <b>0930 -1230 HRS</b>
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) List the key elements of Management Function and explain each of them briefly. *(4 marks)*
- (b) Briefly explain the four (4) categories of principles that “Fredrick Taylor identified. *(4 marks)*
- (c) List down the basic steps to be followed for the selection of manpower for a particular job? *(4 marks)*
- (d) What are the two basic Theories in Motivation? Explain each of them briefly. *(4 marks)*
- (e) What are the advantages and disadvantages of Functional Organization structure? *(4 marks)*
- (f) List the three types of Leadership styles and explain each of them briefly. *(4 marks)*
- (g) List five (5) common categories of employment in Sri Lanka and explain them briefly. *(4 marks)*
- (h) Distinguish “Quality of Design” from “Quality of conformance”. *(4 marks)*

## SECTION B

- Q1 (a) There are several concepts under which an organization can conduct its marketing function. (5 marks)

Explain briefly the different types of concepts involved in marketing.

- (b) What are marketing variables? Explain each of them briefly. (5 marks)
- (c) Explain Break Even Analysis. (6 marks)  
What is the main characteristic of the break-even point?

- Q2 “The process of leadership is the use of non-coercive influence to direct and co-ordinate the activities of the members of an organization towards the accomplishment of the organization objectives.”

- (a) Briefly explain the main functions of leadership in an organization. (5 marks)
- (b) Briefly explain three unique features which differentiate Leaders from Managers. (5 marks)
- (c) Describe how a Leader could motivate clerical grade workers by using an appropriate motivational theory. (6 marks)

- Q3 (a) Explain the following.
- (i) Variable cost
  - (ii) Contribution
  - (iii) Break-even point
  - (iv) Margin of safety

(5 marks)

- (b) Selling price of a product is marked as Rs. 10.00 per unit. Variable cost is Rs. 6.00 per unit. Monthly fixed cost is Rs. 20,000/-. Monthly production capacity in monetary terms is Rs. 15,000/-.

(i) Draw graphs of total variable cost, total cost and total sales revenue for various volumes of output of the product. (4 marks)

(ii) Answer the following using the above graphs.

(i) Mark the break-even point and find out its value. (2 marks)

(ii) Mark the regions of profit and contribution (2 marks)

(iii) If the number of products sold is 8,000, find out the margin of safety in terms of volume and sales ( in rupees). (3 marks)

Q4 (a) Explain the following referring to final accounting system.

- (i) Trial Balance
- (ii) Trading Profit and loss account
- (iii) Balance Sheet

(6 marks)

(b) Prepare a trial balance for the XYZ company as at 31<sup>st</sup> March 2012, where the following transactions have taken place during the year.

Transaction	Value in Rs.
Opening stock	10,000
Bank account	4,000
Capital on 1 <sup>st</sup> April 2011	12,000
Cash in hand	2,000
Drawings	7,000
Motor cycle purchased	12,000
Vehicle expenses	3,000
Office expenses	4,000
Purchase of goods	30,000
Trade creditors	8,000
Trade debtors	12,000
Sales	64,000

(3 marks)

(i) Comment on arithmetical accuracy of Trial Balance.

(1 marks)

Closing stock is Rs. 12,000/-.

(ii) Prepare Profit and Loss account for the company for year ending 31<sup>st</sup> March 2012.

(3 marks)

(iii) Prepare a Balance Sheet for the company as at 31<sup>st</sup> March 2012.

(3 marks)

Q5 Explain the purpose of transportation method used to optimize resource allocation.

(4 marks)

A company has three (3) production plant identified as P1, P2, and P3, and supply a certain product to three (3) warehouses identified as A, B and C. The table below gives a feasible distribution schedule. Also given in the table are capacities of plant and the requirements at warehouses.

	A		B		C		Supply (1000)
P1	6	20	4	30	1		50
P2	3		8	40	7		40
P3	4		4	25	2	35	60
Demand (1000)	20		95		35		150

- (a) Determine the total cost involved for this distribution schedule. (3 marks)
- (b) Obtain minimum cost distribution schedule by using a suitable method. (5 marks)
- (c) Explain how the minimum cost distribution schedule is determined, if total supply exceeds the total demand. (4 marks)

- Q6 (a) Explain the purpose of Critical Path Method (CPM) used in project management. (4 marks)
- (b) A certain project consists of activities labelled as A through K. The following table gives the estimated time duration for each activity with preceding activities needed to be completed before the succeeding activity.

Activity	Time (days)	Preceding activities
A	6	-
B	4	-
C	10	-
D	4	A
E	3	B
F	12	C, E
G	7	B
H	9	D, G
I	4	E, H
J	7	C
K	5	F, I, J

- (i) Draw the network diagram for the above project, showing start and finish times of all the activities. (8 marks)
- (ii) Determine the minimum duration of the project and the critical path/s. (4 marks)
- Q7 (a) Briefly explain the merits and demerits of maintaining inventories of raw materials in a production plant. (3 marks)
- (b) What are costs that a company would incur in maintaining inventories? (3 marks)
- (c) A production plant produces an item at the rate of 'p', while the consumption rate is 'd'. This inventory model is shown in Figure Q6. The production takes place within the period, 'tp' only, during which 'Q' amount is produced. The next cycle of production commences just after stock reaches zero level.

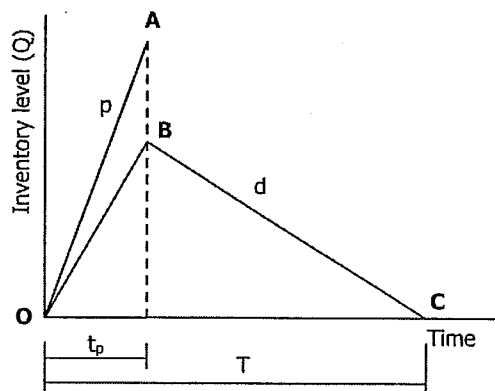


Figure Q6

- (i) Write down an equation for the maximum inventory level in terms of the total quantity produced in one production run ( $Q$ ), production rate ( $p$ ) and the consumption rate ( $d$ ). (2 marks)
- (ii) If the annual stock holding cost per unit is ' $h$ ', what is total annual stock holding cost? (2 marks)
- (iii) If the annual demand is ' $D$ ' and the machine setting up cost per one production run is ' $A$ ', what is the annual machine setting up cost? (2 marks)
- (iii) By using the answers for (ii) and (iii), derive an expression for the  $Q$ , which gives the minimum total cost. (4 marks)
- Q8 (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) State what is meant by Job analysis and indicate information derived from job analysis (4 marks)
- (d) Briefly discuss the two approaches of job analysis, Functional Job Analysis and the Position Analysis Questionnaire (4 marks)

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