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THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF MECHANICAL ENGINEERING
BACHELOR OF INDUSTRIAL STUDIES (INDUSTRIAL MANAGEMENT)
FINAL EXAMINATION 2010/2011

MEX 4240– OPERATIONS MANAGEMENT
DATE : 21st March 2011
TIME : 1400hrs-1700hrs
DURATION : 03 hours

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INSTRUCTIONS

1. **Answer any five (05) questions only.**
2. **All questions carry equal marks.**
3. **Write your registration number clearly on your answer script.**

1. (a) Operation Management can be defined as the management of transformation systems which convert inputs into goods and services. Discuss the activities relevant to transformation process in a Bank.
   (b) What is the role of feed back loop of the transformation process?
   (c) Discuss the difference between production management and operation management.

2. (a) Discuss the importance of forecasting in operation management.
   (b) Table given below shows how a demand of a certain product varies during the last 15 months.

Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Demand	10	18	29	15	30	12	16	8	22	14	15	27	30	23	15

Forecast the suitable moving average. (Justify your selection)
If the smoothing factor is 0.2, calculate the smoothed forecasted values.

3. (a) What is meant by aggregate planning?
   (b) A frame work for Facilitiy Planning can be developed around the steps required for any facility decision. Discuss the steps involved in Facility Planning process.
   (c) Three factories produce 25, 25 and 10 Metric Tons of cement per day. They have to deliver 20, 15, 20 and 05 tons per day to warehouse A,B,C and D respectively. Associated cost of transporting 01 Metric Ton of cement is given in the table. Find the minimum transportation cost to fulfill this requirement.

		Warehouse			
		A (20MT)	B (15 MT)	C (20MT)	D (5MT)
Transport Cost per MT (Rs 000)	1 (25 MT)	2	2	0	4
	2 (25 MT)	5	9	8	3
	3 (10 MT)	6	4	3	2

4. (a) Discuss the difference between Batch Production and Job Production with suitable examples.

(b) Discuss the factors that you have to consider in Designing a Facility Lay Out. Give examples to justify your answer.

(c) AD Bank has decided to investigate the possibility of introducing ATM machines instead of manual system. The cost involvement of this change is given below with the present cost of handling all transactions by manually.

ATM Option	
Initial investment	Rs. 100,000.00
Variable cost of operation per month	Rs. 1,000.00
Capacity	8000 transactions per year
Manual option	
Initial training cost	Rs. 7,000.00
Variable cost of operation per month	Rs. 7,000.00
Capacity	6000 transaction per year

Advice management on the decision for the change?

5. (a) What do you mean by backward loading in scheduling?

(b) A machine shop consists of three different (based on the nature of work) work stations A, B and C. Each work station is having only one machine and four jobs to be loaded. The processing time of each job at each work station is given below. Machine shop works eight hours per day. The moving and setting time between each operation can be neglected.

Job	Work centers / Machine hrs	Due date
1	A/2,B/3 and C/4	4
2	C/6 and A/4	3
3	B/3,C/2 and A/1	4
4	C/4, B/3 and A/3	4

Schedule the jobs in order to meet the due dates.

6. (a) Discuss the two bin system in inventory management.

(b) Discuss the difference between MRP I and MRP II in inventory management with suitable examples.

(c) Following information is given with respect to past records of dealing carpets by a dealer:

Annual demand	100,000 meters
Ordering cost	Rs. 2,000.00
Carrying interest rate, percent of Rs. value per year	20%

Price of carpet with quantity discounts

Rs. 500.00	for anything less than 19,999 meters
Rs. 450.00	for anything between 20,000 and 49,999 meters
Rs. 425.00	for anything more than 50,000 meters.

Determine the economic order quantity.

7. (a) You are a member in a committee appointed to improve the quality of a product. Describe the steps that you recommend to your CEO in achieving suggesting desired quality levels. Assume you have a thorough understanding about the product.

(b) Discuss the Total Cost of Quality.

(c) The following costs have been recorded in a production facility.

Incoming material inspection	Rs. 100,000.00
Training of personal	Rs. 300,000.00
Warranty	Rs. 450,000.00
Process planning	Rs. 150,000.00
Scrap	Rs. 90,000.00
Quality laboratory	Rs. 300,000.00
Rework	Rs. 250,000.00
Allowances	Rs. 100,000.00
Complaints	Rs. 120,000.00

Determine Cost of Prevention, Cost of Appraisal, Cost of External Failure and Cost of Internal Failure.

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