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06ME668

Sixth Semester B.E. Degree Examination, May/June 2010
Operations Management

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What do you understand by the term operations management? Trace the historical events leading to study of operations management. **(08 Marks)**

b. How do the managerial techniques and productivity methods employed in Japanese companies differ from American firms? Explain in brief. **(04 Marks)**

c. Define productivity and explain the factors affecting productivity. **(08 Marks)**

2 a. List the steps in a systematic decision making process. **(05 Marks)**

b. With a neat sketch, explain decision tree analysis. **(05 Marks)**

c. A producer of a calculator watches sells his product through a credit card firm at Rs.30 each. The production cost at volumes 10,000 and 25,000 units are as follows:

	10,000 units	25,000 units
Labour	Rs.60,000	Rs.1,00,000
Material	Rs.1,20,000	Rs.2,00,000
Overhead (FC + VC)	Rs.90,000	Rs.1,10,000
Selling and administration	Rs.50,000	Rs.60,000
Depreciation and other FC	Rs.80,000	Rs.80,000

Use the data to prepare a break even chart and determine the BEP. **(10 Marks)**

3 a. Explain design capacity and system capacity, with a block diagram. **(05 Marks)**

b. With sketches, explain the product and process layouts. **(10 Marks)**

c. A metal processing firm wishes to install enough automobile molders to produce 2,50,000 good castings per year. The molding operation takes 1.5 minutes per casting, but the output is typically about 3 percent defective. How many molders will be required if each one is available for 2000 hours (of capacity) per year? **(05 Marks)**

4 a. Define forecasting. List and explain forecasting variables. **(05 Marks)**

b. Explain briefly any two methods of forecasting. **(05 Marks)**

c. The manager of a road transport company believes that the demand for tyres used on his trucks is closely related to the number of kilometers driven. Accordingly the following data covering the past six months has been collected.

Month	1	2	3	4	5	6
kms driven in thousands	150	200	170	110	120	270
No. of tyres used	10	15	12	8	9	18

i) Compute the co-efficients a and b for the regression line.

ii) Suppose the manager plans to drive 1,40,000 kms, what is the expected number of tyres which will be used?

iii) What percentage of variation in tyre can be explained by kilometers driven? **(10 Marks)**

PART – B

5 a. What is aggregate planning? List and explain the aggregate planning strategies. **(08 Marks)**

b. A company produces mini computers that have a seasonal demand pattern. The available production capacities during regular time and overtime, as well as cost data are as follows :

Period	Available capacity units			Demand forecast units
	RJ	OT	SC	
1	900	350	600	700
2	1000	350	600	1000
3	1100	350	600	2000
4	700	350	600	1200

Initial inventory = 200 units, final inventory = 150 units, RT cost/unit = Rs.125, OT cost/unit = Rs.150, SC cost/unit = Rs.175. Inventory carrying cost/unit/period = Rs.25, unused regular time cost = Rs.50. Formulate the aggregate planning problem by transportation and solve. **(12 Marks)**

6 a. Define materials management. Explain the scope of materials management. **(06 Marks)**

b. Briefly explain the inventory costs. **(04 Marks)**

c. A manufacturer requires rivets in an approximately constant rate of 2500 kgs per year. The cost of rivets is Rs.40 per kg. The company's purchase manager estimates that the carrying cost of inventory is 10 % per year. Procurement cost is Rs.200 per order. How frequently should the order for rivets be placed and what quantities should be ordered? Also calculate total cost of inventory. **(10 Marks)**

7 a. What are the three major inputs for an MRP system? Briefly explain them. **(06 Marks)**

b. What are the essential inputs and outputs in a CRP system? **(04 Marks)**

c. A firm producing wheel barrows is expected to deliver 40 wheel barrows in week 1, 60 in week 4, 60 in week 6, and 50 in week 8. Among the requirements for each wheel barrow are two handle bars, a wheel assembly and one tyre for wheel assembly. Order quantities, lead times and inventory on hand at the beginning of period 1 are shown in able.

Part	Order quantity	Lead times	Inventory on hand
Handle bars	300	2 weeks	100
Wheel assemblies	200	3 weeks	220
Tyres	400	1 week	50

90 wheel assemblies are also required in week 5 for a garden tractor shipment.
A shipment of 300 handle bars is already scheduled to be received at the beginning of week 2. Compute the MRP for the handle bars, wheel assemblies and tyres, and show what quantities or orders must be released and when they must be released to satisfy the master schedule. **(10 Marks)**

8 a. What is the importance of purchasing and supply management in operations management? **(08 Marks)**

b. Briefly explain make or buy decision. **(06 Marks)**

c. Define vendor rating. Explain the steps involved in vender rating. **(06 Marks)**

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