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10ME81

Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019

Operations Management

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define Operations Management. Explain in brief the functions of operations management. (08 Marks)
- b. Define productivity. Explain the factors affecting productivity. (06 Marks)
- c. State the classification of production system. Explain any one production system with example. (06 Marks)
- 2 a. What is decision making? What are the steps involved in decision making? (06 Marks)
- b. Explain decision making environment. (06 Marks)
- c. A private owned summer camp for youngsters has the following operating data for a 12-week session:
 Charge per camper = \$120 per week
 Variable cost per camper = \$80 per week
 Fixed cost = \$ 48,000 per session
 Capacity = 150 campers.
 - i) What is the total number of campers that will allow the camp to just break even?
 - ii) What is the profit for the 12-week session if the camp operates at 80% capacity? (08 Marks)
- 3 a. What is forecasting? State the benefits and costs associated with forecasting. (06 Marks)
- b. Briefly explain the components of time series method. (04 Marks)
- c. The following table gives the annual shipment (tons) of welded tube by an aluminium producer to machinery manufactures.

Year	2004	05	06	07	08	09	10	11	12	13	14
Shipment (tons)	2	3	6	10	8	7	12	14	14	18	19

Use 3 years moving average method to find the forecasted demand for the year 2015. Compare the forecasted demand with the estimate made using least square method.

(10 Marks)

- 4 a. Define capacity planning. Explain long term and short term capacity strategies. (06 Marks)
- b. Explain various factors that influence the location of the plants. (06 Marks)
- c. An automobile spares manufacturer has a plan of buying a moulding machine which can manufacture 17000 parts/year. The moulding machine is a part of product line and its efficiency is 85%.
 - i) What is the required system capacity?
 - ii) Assume that 100 seconds time is required to produce each part and plant operates at 2000 Hrs/year. If the proposed moulding machines are used for 60% of the time and at 90% efficiency. What is the output of moulding machines/hour?
 - iii) How many moulding machines would be required? (08 Marks)

PART – B

- 5 a. List the common strategies used in aggregate planning. Explain any two. (06 Marks)
 b. State the functions of master production scheduling. (04 Marks)
 c. Fortune furniture’s operates with a constant work force with which 3000 dining tables can be produced. The yearly demand is 12,000 units and is dispersed seasonally with quarterly indices $Q_1 = 0.80$, $Q_2 = 1.40$, $Q_3 = 1.00$ and $Q_4 = 0.80$. Inventories are accumulated when demand is less than capacity and are used up during periods of high demand. To satisfy the total demand i) How many tables must be accumulated each quarter? ii) What inventory must be on hand at the beginning of first quarter? (10 Marks)
- 6 a. Derive an equation for Economic Order Quantity (EOQ). (05 Marks)
 b. Explain briefly ABC classification in inventory control. (05 Marks)
 c. Factory Built Homes, Inc (FBH) purchases paneling components from nearby western New York mill for \$5 per unit. It expects to use about 4,000 units during the coming year. FBH estimates that it costs \$30 to place an order and \$1.50 per unit-year for carrying and storage costs. The mill can provide FBH with immediate delivery of any reasonable quantity.
 i) What is the most economic quantity for FBH to order?
 ii) How many orders should be placed per year?
 iii) What is the total yearly cost associated with ordering, carrying and purchasing the EOQ amount? (10 Marks)
- 7 a. Define MRP. What are the main inputs and outputs of MRP? (06 Marks)
 b. State the benefits and limitations of MRP. (06 Marks)
 c. Complete the MRP for item X shown below. Note that this item has an independent demand that necessitates that a safety stock of 40 units be maintained.

Order quantity = 70 Lead time = 4 weeks Safety stock = 40	WEAK											
	1	2	3	4	5	6	7	8	9	10	11	12
Projected requirements	20	20	25	20	20	25	20	20	30	25	25	25
Receipts		70										
On hand at the end of period	65											
Planned order release												

- 8 a. State the importance of purchasing and supply management. (06 Marks)
 b. Write a note on make or buy decision. (06 Marks)
 c. Explain stages of vendor development. (08 Marks)
