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10ME81

**Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018**  
**Operations Management**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Explain briefly with a schematic model the functions within business organization and operation management. (08 Marks)
  - b. Define operation management. Explain the classification of production systems. (06 Marks)
  - c. Define productivity. List the various factors affecting productivity. Mention how it can be improved. (06 Marks)
  - 2 a. What is decision making? Explain the frame work for decision making. (06 Marks)
  - b. Briefly explain the characteristics of operation decision. What is Break even analysis? Explain. (08 Marks)
  - c. Jindal steels Ltd. is planning to start a new factory for manufacturing steel utensils. It is considering three location options namely Bengaluru, Shimoga and Bellary. The fixed cost at these locations have been estimated at ₹ 8.15 million, ₹ 7.377 million and 7.903 million respectively. The variable costs at the three locations are estimated at ₹ 500 per unit, ₹ 580 per unit and ₹ 490 per unit respectively. The factory will have an annual production capacity of 10000 units and in the initial year it will operate at 75% efficiency. Find the best location option, which has the lowest total cost of production. (06 Marks)
  - 3 a. What is forecasting? List the steps involved in forecasting process. (04 Marks)
  - b. Explain the moving average and simple exponential smoothing methods of forecasting. (08 Marks)
  - c. The Table below gives a sales record of a firm. Determine the regression line for the firm and find the forecast of sales in the month of January for next year (08 Marks)
- | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 90  | 111 | 99  | 89  | 87  | 84  | 104 | 102 | 95  | 114 | 103 | 113 |
- 4 a. Distinguish between design capacity and system capacity. (04 Marks)
  - b. Explain the various factors that influence the location of plants. (06 Marks)
  - c. What is facility layout? What factors determines the type of layout used in an organization? (05 Marks)
  - d. Sketch and explain any two types of layouts. (05 Marks)

**PART – B**

- 5 a. Briefly explain the following with the help of a flow chart:  
(i) Aggregate planning. (ii) Master scheduling (08 Marks)

- b. A company produces mini computers that have a seasoned demand patterns. The available production capacity during regular time and overtime, as well as cost data are shown in the table below:

Period	Available capacity units			Demand Forecast units
	RT	OT	SC	
1	60	18	1000	100
2	50	15	1000	50
3	60	18	1000	70
4	65	20	1000	80

Initial inventory = 20

Final inventory = 25

Total cost/unit (Regular time) = ₹ 100/-

Overtime cost/unit = ₹ 125/-

Sub contract cost/unit = ₹ 130/-

Carrying cost unit/period = ₹ 2

Using transportation.

(12 Marks)

- 6 a. What you mean by inventory? What are the types of inventory? (04 Marks)
- b. Define ABC analysis, EOQ and ordering cycle. (06 Marks)
- c. Calculate the economics lot size with uniform date of demand and instantaneous replacement. Give total costs and total annual costs. (06 Marks)
- d. An industry estimates that it will sell 12000 units of its product for the next year. The ordering cost is ₹ 100 per order and the carrying cost per unit per year is 20% of the purchase price per unit. The purchase price per unit is ₹ 50. Find (i) EOQ (ii) Number of orders per year (iii) Time between successive orders. (04 Marks)
- 7 a. Define MRP and with a block diagram, explain the various inputs to an MRP system. (10 Marks)
- b. What is ERP? Write the benefits and limitations of MRP. (05 Marks)
- c. A work centre operates 6 days a week on a two shifts per day basis (8 hours per shift). It has four machines with the same capacity. If the machines are utilized 75% of the time at a system efficiency of 90%, what is the rated output in standard hours per week? (05 Marks)
- 8 a. Why has purchasing and supply chain management assumed to be importance in today's organizations? (08 Marks)
- b. Briefly explain the following: (08 Marks)
- Vendor development
  - E-procurement.
  - Concept of tenders.
  - Make or buy decision.
- c. Define vendor rating. Explain the steps involved in the vendor rating. (04 Marks)

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