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10ME/PM81

Eighth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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. Define Operations Management and how the production systems are classified. (06 Marks)
- b. What are the various functions of operations management? (06 Marks)
- c. Define productivity. List the various factors affecting productivity. (08 Marks)
- 2 a. Briefly explain the importance of decision making and list the steps involved in it. (06 Marks)
- b. What is Break Even Analysis? Explain with the help of a chart? (06 Marks)
- c. A spring washer manufacturing industry has the following data on costs at two volumes of production for spring washer which sells at Rs 6/- per unit.

| Cost particulars | 3000 units | 7000 units |
|-------------------------|-------------|-------------|
| Materials cost (Rs) | 4000/- | 9000/- |
| Labour cost (Rs) | 3000/- | 8000/- |
| Overhead charges (Rs) | 1000/- | 6000/- |
| Depreciation costs (Rs) | 10,000/- | 10,000/- |
| Total costs in (Rs) | Rs. 18000/- | Rs. 33000/- |

- i) Find the fixed cost and variable cost
- ii) Find the BEP graphically and verify the results analytically. (08 Marks)
- 3 a. Define forecasting. What are the steps involved in forecasting process? (06 Marks)
- b. List the various factors affecting forecasting. (04 Marks)
- c. A company adopts method of least squares to develop a linear trend equation for the data as shown in the table below :

| Year (x) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-----------------------|---|---|---|----|---|---|----|----|----|----|----|
| Shipment in tones (y) | 2 | 3 | 6 | 10 | 8 | 7 | 12 | 14 | 14 | 18 | 19 |

Calculate the trend forecast for the year 12 and 20.

(10 Marks)

- 4 a. Define the following :
 - i) Design capacity
 - ii) System capacity
 - iii) Capacity planning. (06 Marks)
- b. List the various factors to be considered during plant location. (05 Marks)
- c. A automobile manufacturers must acquire some moulding machines capable of producing 160,000 good parts per year. They will be installed in a production line that normally produces 20% rejects because of tight specifications.
 - i) What is the required systems capacity?
 - ii) If it takes 90 seconds to mould each part and the plant operates for 2000 hours per year and if the moulding machines are used only 50% of the time and are 90% efficient, what actual moulding machines output per hour would be achieved?
 - iii) How many moulding machines would be required? (09 Marks)

PART – B

- 5 a. What is aggregate planning? Briefly explain pure strategies of aggregate planning. (08 Marks)
 b. A firm has developed the following demand forecast in units for a item which is influenced by seasonal factors. Suppose the firm estimates that it costs Rs. 150/unit to increase production rate, Rs. 200/unit to decrease production rate, Rs. 50/unit/month to carry the inventory and Rs. 100/unit if subcontracted. Compare the costs incurred if pure strategies are followed :

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Forecast demand | 270 | 220 | 470 | 670 | 450 | 270 | 200 | 370 |

(12 Marks)

- 6 a. Define inventory. What are the objectives of inventory control? (06 Marks)
 b. Briefly explain the reasons for holding inventories. (06 Marks)
 c. Write short notes on the following :
 i) Economic Order Quantity (EOQ)
 ii) ABC Analysis for inventory control. (08 Marks)
- 7 a. What is a Materials Requirement Planning? What are the various steps involved in the implementation of MRP? (08 Marks)
 b. What are the benefits and limitations of MRP? (06 Marks)
 c. Briefly explain :
 i) Capacity Requirement Planning [CRP]
 ii) Manufactures Resources Planning [MRP- II] (06 Marks)
- 8 a. What is Supply Chain Management? What are its functions? (06 Marks)
 b. Briefly explain Make or Buy decision. (06 Marks)
 c. Write short notes on :
 i) Vendor development
 ii) E – Procurement. (08 Marks)

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