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Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
Operations Management

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a.   Write a note on the historical development of Operations Management. **(10 Marks)**

    b.   Explain the Job shop production and Batch production system with its advantages , limitations and applications. **(10 Marks)**

2   a.   List and explain steps in decision making process. **(06 Marks)**

    b.   Old – Fashioned Berry Pies – Lmt., currently operates a single bakery, but it is not considering a second location in a new shopping mall. The owner estimates that fixes cost would be Rs 3000/week and that labour and materials to produce pies at the location will be Rs 0.60 per pie. Pie be sold for Rs 1.60 each.
      i)   What number of pies must be sold to break even?
      ii)   What profit (or loss) would there be on sales of 20,000 pies in one week?
      iii)   What volume would be required in order to realize a profit of Rs 12,000? **(07 Marks)**

    c.   Three plastic injection moulding machines produce the following number of goods and defective cassette covers are shown in the table. From the total lot of cassette covers all mixed up and delivered from three machines, what is the probability that ,
      i)   A cassette cover picked up is defective.
      ii)   A cassette cover picked up is made by Machine C and good.
      iii)   A cassette cover picked up is either produced by Machine C or it is good.

	Machine A	Machine B	Machine C
Good	900	4500	5400
Not good	100	500	600

(07 Marks)

3   a.   Discuss the Delphi Technique for better forecasting. Mention its advantages and disadvantages. **(08 Marks)**

    b.   The actual demand for an item produced by the Lenovo exports for the last eight weeks is given in the following table. Develop an simple exponential smoothing ($\alpha = 0.1$) and adjusted exponential smoothing ($\alpha = 0.1$, $\beta = 0.8$) for the 9th week. Begin with a previous period forecast as Rs 650 and an initial trend adjustment of zero. Take the actual demand for the 9th week as 780 units. Also calculate MAD for both methodology.

Week	1	2	3	4	5	6	7	8
Demand	700	685	648	717	714	728	754	762

(12 Marks)

4   a.   Write a note on determinants of effective capacity. **(10 Marks)**

    b.   Explain the factors influencing the plant location. **(10 Marks)**

PART – B

5   a. Discuss the nature and scope of Aggregate planning. **(08 Marks)**

    b. Ohio Instruments Company is manufacturing scientific calculators in its plant at Ohio and has no subcontractors available but offer OT to employees and encourages customers to back order. Each of the following 12 period has 20 working days and company maintains a constant work force of 40.

Available initial inventory = 100 (included in period 12 demand).
RT hours = 8 hr/day ; OT hours = 4 hr/day.
Standard labour hr per unit = 10 hr.
Costs :
Labour : RT = Rs 6/hr ; OT = Rs 9/hr.
Material & OH = Rs 100/units produced.
Back order costs @ Rs 5/unit period and increases in reverse order.
Inventory carrying cost = Rs 2/unit period.
Assuming 5 period cycle, develop an aggregate plan using transportation approach.

Period	Units	Period	Units
1	800	7	400
2	500	8	600
3	700	9	1000
4	900	10	700
5	400	11	900
6	300	12	1200

(12 Marks)

6   a. List and explain the types of Inventories. **(07 Marks)**

    b. What are the reasons for holding Inventories? **(05 Marks)**

    c. A stockiest has to supply 400 units of a product every week to his customers. He gets the product at Rs 50 per unit from manufacturer. The cost of ordering and transportation from the manufacturer is Rs 75 per order. The cost of carrying inventory is Rs 7.5% per year of the cost of the product.
       i) What is the Economic lot size?
       ii) How long it would take to produce economic lot size?
       iii) What is the Optimum cost per week? **(08 Marks)**

7   a. What are the essential input and output of MRP system? Explain. **(12 Marks)**

    b. Give an overview of MRP – II system. **(08 Marks)**

8   a. List and explain the steps involved in the procurement process. **(06 Marks)**

    b. Differentiate between the traditional approach and recent approach to the Supply Chain Management. **(08 Marks)**

    c. Write a note on E – Procurement. **(06 Marks)**

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