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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: VI**
Branch: Mechanical Engineering **Duration: 3 hrs.**
Course Code: 20ME6DEPOM **Max Marks: 100**
Course: Production and Operation Management

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.
3. Learning curves table maybe permitted.

UNIT - I

1 a) Describe the framework for managing operations. **10**

b) Explain the forced choice model of strategic planning for operations. **10**

UNIT - II

2 a) Explain the capacity planning modeling. **10**

b) An entrepreneur wants to introduce a new quartz crucible in the market. This product has an excellent market for the next 5 years. He has three options: **10**
(i) By building a large unit, (ii) By building a small unit, (iii) By becoming a trader
Draw a tree diagram and suggest which option is best.

Investment analysis

Alternatives	Investment
Trading	Nil
Large Unit	Rs. 80 Lakhs
Small Unit	Rs. 60 Lakhs

Annual cash flow analysis

Alternatives	Probability of demand	Sales revenue per year (Lakhs)	Probability
Large Unit	High	20	0.7
	Medium	14	0.2
	Small	4	0.1
Small Unit	High	18	0.6
	Medium	12	0.3
	Small	3	0.1
Trading	High	14	0.5
	Medium	8	0.3
	Small	5	0.2

UNIT - III

3 a) Describe the forecasting and operating sub-system with the help of a flow chart. **10**

b) A firm uses simple exponential smoothing with $\alpha=0.1$ to forecast sales. The forecast for week ending Feb 1 was 500 units whereas actual demand turned out to be 450 units. **10**

i. Forecast the demand for week ending Feb 08

ii. Assume the actual demand during the week ending Feb 08 turned out to be 505 units. Forecast demand for week ending Feb 15. Continue the forecasting through March 15 assuming the actual demands were 516, 488, 467, 554 and 510 units subsequently.

OR

4 a) Explain with some examples the priority sequencing rules in modern manufacturing and service industries. **10**

b) Explain with a flow-chart the operations planning and scheduling system. **10**

UNIT - IV

5 a) Describe the different types of costs involved in inventory control. **10**

b) In a medical center disposable sanitary packs are ordered in boxes of 5 dozen/box. Annual demand is 400 boxes. The cost of placing an order is Rs. 12 and inventory carrying charge is 20%. There are three price breaks: **10**

i. Rs 29 for 1 to 49 boxes

ii. Rs. 28.50 for 50 to 99 boxes.

iii. Rs. 28 for 100 or more boxes

Determine the ideal order quantity and the total cost for the same.

OR

6 a) Briefly explain the factors which justify the need for inventories. **10**

b) Compare and elaborate the differences between quantity recorder versus periodic inventory systems. **10**

UNIT - V

7 a) Explain with a flow chart the effective job-design. **10**

b) Briefly describe the work measurement techniques. **10**

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