



21ME61

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025

Production and Operations Management

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define operation management. Explain briefly classification of production systems. (10 Marks)
- b. Define productivity. List the various factors affecting and improvements of the productivity. (10 Marks)

OR

- 2 a. Enumerate in brief the importance of decision making and list the steps involved in it. (10 Marks)
- b. Solve the following LPP by graphical method.

$$Z_{\max} = 3x_1 + 4x_2$$
 Subject to $x_1 + x_2 \leq 450$
 $2x_1 + x_2 \leq 600$ and
 $x_1, x_2 \geq 0$ (10 Marks)

Module-2

- 3 a. Define forecasting. What are the steps involved in forecasting process? (10 Marks)
- b. Briefly explain a forecasting technique. (10 Marks)

OR

- 4 a. Explain the following methods:
 (i) Source of redesigned product (10 Marks)
 (ii) Design for manufacturing
- b. 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 Tons (y)	2	3	6	10	8	7	12	14	14	18	19

Calculate the trend for the year 12 and 20.

(10 Marks)

Module-3

- 5 a. List and briefly explain the factors affecting the capacity. (08 Marks)
- b. Explain in brief the importance of capacity decisions. (04 Marks)
- c. Location A would result in fixed costs of Rs.3,00,000 variable costs of Rs.63 per unit, revenues of Rs. 68 per unit. Annual fixed costs at location B are Rs. 8,00,000 with variable costs of Rs. 32 per unit revenue of Rs. 68 per unit. Sales volume is estimated to be 25,000 units/year. Which location is most attractive? (08 Marks)

OR

- 6 a. Explain characteristics of Location Decisions. (06 Marks)
- b. Explain in brief Designing of process layout. (08 Marks)
- c. Explain the following :
 i) Identifying a country (06 Marks)
 ii) Identifying a community

Module-4

- 7 a. What is aggregate planning? Briefly explain strategies of aggregate planning. (10 Marks)
 b. Explain the techniques for aggregate planning in services. (10 Marks)

OR

- 8 a. With flow chart, explain master production scheduling process. (08 Marks)
 b. For the given data of supply, demand cost and inventory allocate the production capacity to fulfill request/demand at lowest cost method.

Supply Capacity

Period	Regular time	Overtime	Sub contract
A	70	15	750
B	65	20	1000
C	75	25	1250
D	80	30	1500

Demand and Inventory

Period	A	B	C	D
Unit of Demand	150	75	80	90

Inventory details :

Initial = 25 units ; Final = 35 units

Regular Time cost/unit = Rs. 150 (40% of cost is labour cost)

Overtime cost per unit = Rs. 140

Subcontracting cost per unit is Rs.160

Inventory carrying cost per unit period = Rs. 3

Carrying cost per unit per period = Rs. 3.

(12 Marks)

Module-5

- 9 a. Briefly explain with a flowchart of capacity requirement planning. (10 Marks)
 b. Briefly explain the structure of an Enterprise Resource Planning System (ERP). (10 Marks)

OR

- 10 a. State the importance of purchasing and supply chain management. (08 Marks)
 b. Briefly explain the following :
 i) Vender development
 ii) Make or Buy decision
 iii) E-procurement (12 Marks)

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