

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)



M.Tech. (Second Semester - Regular) Examinations, May – 2026

24MMTPE12001 – Manufacturing Management

Manufacturing Technology

Time: 3 hrs

Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

- | | CO # | Blooms Level |
|--|------|--------------|
| a. Briefly discuss the difference between manufacturing and service sector with suitable examples. | CO1 | K2 |
| b. State the applications of regression analysis in forecasting. | CO2 | K1 |
| c. State the objectives of plant layout. | CO3 | K1 |
| d. Differentiate between dependent and independent demand inventory. | CO4 | K2 |
| e. Mention the characteristics of Just-in-Time system. | CO6 | K2 |

PART – B

(10 x 5 = 50 Marks)

Answer **ALL** the questions

2. a. Analyze the relationship between productivity and manufacturing capability.
- b. A firm believes that its annual profit depends on its expenditures for research. The information for the preceding six years is given below. Estimate the profit when the expenditure is 6 units.

Year	Expenditure	Annual profit(Y)
1	2	20
2	3	25
3	5	34
4	4	30
5	11	40
6	5	31

Marks CO # Blooms Level

5 CO1 K4

5 CO2 K3

(OR)

- c. Discuss the impact of globalization on manufacturing management.
- d. A firm uses simple exponential smoothing with $\alpha=0.3$ to forecast demand. The forecast for the first week of January was 500 unit, whereas actual demand turned out to be 450.
- a. Forecast the demand for the second week of January
- b. Assume that the actual demand during the second week of January turned out to be 550 units. Forecast the demand up to February third week, assuming the subsequent demands as 475, 450, 470, 525, and 470 units.
- 3.a. Suppose that there are 5 existing plants, which have a material movement relationship with a new plant. Let the existing plants have locations of (400, 200), (800, 500), (1100, 800), (200, 900) and (1300, 300). Furthermore suppose that the numbers of tons transported per year from the new plant to various existing plants are 450, 1200, 300, 800, and 1500, respectively. Then determine optimum location for new plant such that the distance moved (cost) is minimized.

5 CO1 K4

5 CO2 K3

5 CO3 K3

b.	Compare product layout with process layout.	5	CO3	K4
	(OR)			
c.	Design a suitable facility layout for an automobile component manufacturing industry.	10	CO3	6
4.a.	Compare deterministic and probabilistic inventory models.	5	CO4	K4
b.	A manufacturer purchases items in lots of 1000 units which is a requirement for one quarter. The cost per unit is Rs. 200/- . The ordering cost is Rs. 100/- per order. The quarterly inventory carrying cost rate is 5%. Find out the Economic Order Quantity and the Total Annual Cost.	5	CO4	K3
	(OR)			
c.	Explain the objectives of inventory control in manufacturing systems.	5	CO4	K2
d.	The maintenance department of a large hospital uses about 816 cases of liquid cleaner annually, ordering costs are Rs. 12, carrying costs are Rs. 4 per case a year, and the new price schedule indicates that orders of less than 50 cases will cost Rs. 20 per case, 80 to 99 cases will cost Rs. 17 per case, and larger orders will cost Rs. 16 per case Determine the optimal order quantity and the total cost.	5	CO4	K3
5.a.	Explain the role of Master Production Schedule in MRP system.	5	CO5	K2
b.	Discuss the evolution of MRP into ERP systems.	5	CO5	K4
	(OR)			
c.	Discuss the limitations of MRP system in modern industries.	5	CO5	K2
d.	Analyze the impact of MRP on manufacturing efficiency.	5	CO5	K4
6.a.	Explain aggregate planning strategies used in manufacturing systems.	5	CO6	K2
b.	Analyze the role of production scheduling in improving operational efficiency.	5	CO6	K4
	(OR)			
c.	Discuss the functions of Kanban system in JIT environment.	5	CO6	K2
d.	Analyze the impact of JIT on inventory reduction and productivity improvement.	5	CO6	K4

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