Code No: **R204103X** **R20** **Set No. 1**

IV B.Tech I Semester Regular Examinations, January – 2024

OPERATIONS MANAGEMENT

(Common to All Branches except ME)

Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

*****

UNIT - I

1 a) The below table shows the demand for a particular brand of razor in a shop for each of the last nine months.

Month	1	2	3	4	5	6	7	8	9
Demand	10	12	13	17	15	19	20	21	20

Calculate a three month moving average for months three to nine. What would be the demand forecast for 10^{th} month? Also, apply the exponential smoothing with a smoothing constant of 0.3 to derive a forecast for the demand in 10^{th}month. Which of the two forecasts for 10^{th}month is preferable and why? [7]

b) What is job shop type production system? List out its important characteristics. [7]

(OR)

2 a) Differentiate between Forecast and Prediction. [7]

b) Explain briefly the importance of Aggregate planning. [7]

UNIT - II

3 a) A project with the following data is to be implemented. Draw the network and find the critical path.

Activity	Predecessor	Duration (in days)
A	-	2
B	-	4
C	A	1
D	B	2
E	A,B	3
F	E	2

[7]

b) What is ABC analysis? Explain the different policies governing ABC method of inventory management. [7]

(OR)

4 a) Write the differences between forward scheduling and reverse scheduling. [7]

b) Discuss the primary and secondary objectives of materials management? [7]

Code No: **R204103X** **R20** **Set No. 1**

UNIT - III

5 a) The John Equipment Company estimates its carrying cost at 15% and its ordering cost at Rs.9 per order. The estimated annual requirement is 48,000 units at a price of Rs.4 per unit.
i) What is the most economical number of units to order?
ii) How many orders should be placed in a year?
iii) How often should an order be placed? [7]

b) What are the advantages and limitations of Material requirements planning system? [7]

(OR)

6 a) Distinguish between Q and P inventory systems. [7]

b) Explain the role of ERP in supply chain management. [7]

UNIT - IV

7 a) What are the factors that affect the quality of any product or service? [7]

b) Explain briefly the organizational structure of a Six Sigma organization. [7]

(OR)

8 a) Explain briefly the concept of Total Quality Management. [7]

b) The number of scratch marks on a particular piece of furniture is recorded. The data for 20 samples are given below:

Sample number	1	2	3	4	5	6	7	8	9	10
Scratch mark	6	3	14	7	2	5	12	4	7	3
Sample number	11	12	13	14	15	16	17	18	19	20
Scratch mark	2	7	6	8	4	10	5	4	13	9

Draw the appropriate control chart and write the comments about the state of the process when the management sets a goal of 5 scratch marks on an average per piece. [7]

UNIT - V

9 a) Write the steps involved in the North-West Corner Rule for finding an initial basic feasible solution to a transportation problem. [7]

b) Solve the following assignment problem using Hungarian method. Cell values represent cost of assigning job A, B, C and D to the machines I, II, III and IV.

	Machines			
	I	II	III	IV
A	10	12	19	11
B	5	10	7	8
C	12	14	13	11
D	8	15	11	9

[7]

(OR)

10 Solve the following linear program;
Maximize $Z=x_1+3x_2$, subjected to $x_1 \leq 5$, $x_1+2x_2 \leq 10$, $x_2 \leq 4$; $x_1, x_2 \geq 0$ [14]