

Maximum Marks: 80

Time: 3 Hours

Instructions:

- 1) Question No. 1 is Compulsory.
- 2) Answer any three from remaining five Questions.
- 3) Assume suitable data if required.
- 3) Draw figure, charts, block diagram wherever required.
- 4) All questions carry equal marks.

Q 1 Write the importance of the following in brief (any four) 05x4=20

- a) Supply Chain Management
- b) ABC analysis
- c) Standard Time & Normal time
- d) Lean Manufacturing & JIT
- e) Group Technology

Q 2 a. Explain the steps to be followed for Method study and Time study. 10
b. The table below shows the demand for the last 7 months. 10

| Months | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. |
|--------|------|------|------|------|-----|------|------|
| Orders | 23 | 29 | 33 | 40 | 41 | 43 | 49 |

1. Calculate a two month moving average for months Feb. to July. What would be your forecast for the demand in August month?
2. Apply exponential smoothing with a smoothing constant of 0.1 to derive a forecast for the demand in August month.
3. Which of the two forecasts for August month do you prefer and why?

Q 3 a. Draw the generic graph for Life cycle of a Production system, mark each stage, and list the challenges and consideration to made at each stage. 10

b. Following data is provided for inventory management, 10
Demand = 380 units, Holding cost = ₹ 0.90 /unit/year
Order cost = Rs.100 /order , Number of working days = 320 days/year

1. What is an EOQ?
2. What is the expected time between orders?
3. What is the total cost of an inventory?

Q 4 a Explain the Primary & Secondary activities and Support system for creating value in the conversion process. 10

b. List and compare different types of Production systems with their characteristics 10

- Q 5 Write short notes on any four 5x4=20
1. Material Requirement Planning
 2. Capacity Planning
 3. Purchasing cycle
 4. Maynard Operations Sequence Technique (MOST)
 5. Plant Layout
- Q 6 a. Differentiate between Value and waste. Is Lean a value creation or waste removal philosophy? Discuss with justification 10
- b. Total of 12 work elements and their relationship and time (in seconds) is given below; Draw the line of balance by trial and error method. Also find Line efficiency, Balance Delay and Smoothness Index for Cycle time of 12 seconds 10

| Element No. | Predecessor element | Time in seconds |
|-------------|---------------------|-----------------|
| 1 | - | 5 |
| 2 | 1 | 3 |
| 3 | 2 | 4 |
| 4 | 1 | 3 |
| 5 | 4 | 6 |
| 6 | 3,5 | 5 |
| 7 | 6 | 2 |
| 8 | 7 | 6 |
| 9 | 6 | 1 |
| 10 | 6 | 4 |
| 11 | 10 | 4 |
| 12 | 8,9,11 | 7 |