

(3 Hours)

[Total Marks: 80]

Note:-

1. Question Number **ONE** is compulsory.
2. Attempt any **THREE** questions from remaining **FIVE** questions.
3. Assume suitable data if necessary.



- Q1** Attempt **any four** question from the following: 20
- a Explain Material Requirement Planning 5
  - b List and compare different types of Production systems with their characteristics 5
  - c Explain on Selection of Material Handling Equipments 5
  - d Explain ABC analysis in relation with inventory 5
  - e Compare Mass and Job Production systems on various features 5
  - f Explain Objectives and Challenges of PPD 5

- Q2** a What is Lean Manufacturing? List and elaborate various waste in manufacturing as per Just in Time Philosophy 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

- Q3** a List and explain in brief various functions of Production Planning and Control 10
- b Explain in brief the Stages involved Product Life Cycle 10
- Q4** a Explain Procedure for making location decisions and factors affecting location decisions 10
- b Explain various types of Plant Layouts with neat block diagram 10

- Q5** a A company uses 100000 units of a particular item per year. Each item costs Rs 2. The production engineering department estimates the holding cost as 12.5% of the value of the inventory per day. The replenishment rate is uniform at 500 units per day. Assuming 250 working days (for replenishment purpose), calculate the
- a) optimal set-up quantity;
  - b) total cost on the basis of optimal policy; and
  - c) optimal number of set-ups.
- b Two components P and Q are used as follow:
- Normal usage 600 units per week each.
  - Maximum usage 900 units per week each
  - Minimum usage 300 units per week each
  - Re-order quantity- P = 4,000 units; Q = 7,000 units
  - Re-order period- P = 4 to 6 weeks; Q = 2 to 4 weeks
- a. Re-order level
  - b. Minimum Level
  - c. Maximum Level
  - d. Average stock level
- Q6** Write short notes on (Any Four)
- a Problems in POM
  - b Sustainable Production and Green Manufacturing
  - c Principles of Plant layout
  - d New Product development Strategy
  - e Importance of Inventory Management