

**6TH SEM./MECH./AUTO./DIP. IN MECH./MECH(MAIN)/
MECH(PROD.)/ MECH(SAND.)/ MECH(IND.INT)/ 2024(S)**

Th-1 Industrial Engineering & Management

Full Marks: 80

Time- 3 Hrs

**Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks**

1. Answer **All** questions 2 x 10
 - a. Differentiate between fixed cost and variable cost.
 - b. Define critical activity in a network diagram.
 - c. Differentiate between optimistic time and pessimistic time in PERT?
 - d. Define scheduling.
 - e. Write the significance of inventory control.
 - f. Define and explain plant location.
 - g. Define predictive maintenance.
 - h. Define and explain SQC.
 - i. What is optimization?
 - j. Define and explain JIT technique.

2. Answer **Any Six** Questions 6 x 5
 - a. Explain the types of production along with its advantages and disadvantages.
 - b. Write short notes on "7S".
 - c. Write down the principles of material handling.
 - d. What are the advantages and disadvantages of urban location of plant?
 - e. Calculate the Economic Order Quantity (EOQ) for
Annual requirements - 1600 units
Cost of materials per unit - Rs 40
Cost of placing and receiving an order - Rs 50
Annual carrying cost for inventory value - 10%
 - f. Write the advantages and disadvantages of Master scheduling.
 - g. Write down the needs of inspection.

3. Solve the given LPP by graphical method 10

Maximize $Z = x + 5y$
Subject to constraints $5x + 6y \leq 30$
 $3x + 2y \leq 12$
 $x + y \geq 2$
 $x, y \geq 0$

- 4 What are the objectives of plant layout? Write the factors which affect plant layout. Give symptoms of bad layout. 10
- 5 A small engineering project consists of 6 activities namely P,Q,R,S,T & U having a duration of 5,7,6,5,4 & 4 respectively. Draw the network and calculate EST, LST, EFT, LFT and float. Find the total project duration. 10
- 6 What are the different types of control chart? Define and explain in detail about X- chart and P-chart. 10
- 7 Write short notes on 5 x 2 =10
i) Lean manufacturing
ii) ISO certification