

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

Th-1 Industrial Engineering & Management

Time- 3 Hrs

Full Marks: 80

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

1. Answer **All** questions 2 x 10
- Differentiate between fixed cost and variable cost.
 - Define critical activity in a network diagram.
 - Differentiate between optimistic time and pessimistic time in PERT?
 - Define scheduling.
 - Write the significance of inventory control.
 - Define and explain plant location.
 - Define predictive maintenance.
 - Define and explain SQC.
 - What is optimization?
 - Define and explain JIT technique.
2. Answer **Any Six** Questions 6 x 5
- Explain the types of production along with its advantages and disadvantages.
 - Write short notes on "7S".
 - Write down the principles of material handling.
 - What are the advantages and disadvantages of urban location of plant?
 - 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%
 - Write the advantages and disadvantages of Master scheduling.
 - Write down the needs of inspection.
3. Solve the given LPP by graphical method 10
- Maximize $Z = x + 5y$
Subject to constraints
- $$\begin{aligned} 5x + 6y &\leq 30 \\ 3x + 2y &\leq 12 \\ x + y &\geq 2 \\ x, y &\geq 0 \end{aligned}$$

- 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
i) Lean manufacturing
ii) ISO certification 5 x 2 =10

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MECH(SAND.) /AUTO/ 2022(S)**

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1. Answer **All** questions 2 x 10
- a. What are the three times estimate in PERT analysis?
 - b. Define plant layout.
 - c. State the significance of ISO certification.
 - d. What are the limitations of the graphical method in solving LPP?
 - e. Define CPM.
 - f. State the uses of inventory.
 - g. What is the need of inspection?
 - h. Define Quality & Control.
 - i. What do you mean by operation research?
 - j. State the three objectives of plant maintenance.
2. Answer **Any Six** Questions 6 x 5
- a. State the advantages & disadvantages of master scheduling.
 - b. What are the factors which affect the quality of manufacturing?
 - c. Compare PERT with CPM.
 - d. Explain ABC analysis.
 - e. Describe different types of over heads.
 - f. Give symptoms of a bad plant layout.
 - g. What are the characteristics if ISO-9000?

3 Explain different factors influencing plant location. 10

4 Find the critical path and the duration of project completion for the data given in table. 10

Activity	Predecessor	Duration
A	-	7
B	-	13
C	A	10
D	A	17
E	B	3
F	D, E	26

5 What are the different types of control chart? Discuss about \bar{X} -Chart & P- Chart 10

6 Find the graphical solution of LPP for the following condition 10

$$\text{Min } Z = 60x + 40y$$

Subject to

$$30x + 10y \geq 240$$

$$10x + 10y \geq 160$$

$$20x + 60y \geq 480$$

$$x, y \geq 0$$

7 Write short notes on: 10

a Scheduling

b Breakdown Maintenance

c Six Sigma

d Job Order production