

**TH-1 Industrial Engineering And 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
- Define plant layout.
  - State the importance of plant maintenance.
  - Define LPP.
  - What is project scheduling? State the full form of CPM & PERT.
  - Define float and slack.
  - Define inventory control and its benefits.
  - Differentiate between variable charts and attribute chart.
  - Define JIT.
  - What is forecasting?
  - Define safety stock and lead time.
2. Answer **Any Six** Questions 6 x 5
- Explain factors influencing plant location.
  - Solve the LPP by graphical method.  
 $\text{Min } Z = 20x_1 + 10x_2$   
Subject to constraint  $x_1 + 2x_2 \leq 40$ ,  $3x_1 + x_2 \geq 30$ ,  $4x_1 + 3x_2 \geq 60$  &  $x_1, x_2 \geq 0$
  - Write different type of production with their characteristics.
  - Explain lean manufacturing.
  - Alpha industry estimates that it will sell 12000 units of its product for forthcoming year. The ordering cost is 100/- per order and carrying cost per unit per year is 20% of the purchase price per unit. The purchase price per unit is 50/-. Find
    - EOQ
    - no of order per year
    - Time between successive orders.
  - State the advantages and disadvantages of quality control. ≥

g Draw the network and find the critical path.

|          |     |     |     |     |     |     |     |     |     |     |      |      |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| activity | 1-2 | 1-3 | 2-4 | 3-4 | 3-5 | 4-9 | 5-6 | 5-7 | 6-8 | 7-8 | 8-10 | 9-10 |
| time     | 5   | 2   | 3   | 1   | 6   | 5   | 8   | 4   | 7   | 1   | 2    | 5    |

3 Explain different types of plant maintenance. 10

4 What are the factors influencing plant location. 10

5 Explain ABC analysis. 10

6 Write notes on 10

1- routing

2-scheduling

3- dispatching

4- controlling

7 A small project is composed of the following events whose time estimates are given below in weeks. 10

| event | $T_0$ | $T_m$ | $T_p$ |
|-------|-------|-------|-------|
| 1-2   | 1     | 1     | 7     |
| 1-3   | 1     | 4     | 7     |
| 1-4   | 2     | 2     | 8     |
| 2-5   | 1     | 1     | 1     |
| 3-5   | 2     | 5     | 14    |
| 4-6   | 2     | 5     | 8     |
| 5-6   | 3     | 6     | 15    |

a) Draw the network and find critical path (b)find  $t_e$  .(c)find standard deviation of project.

d) What is the probability that the project will completed

i) At least 4 weeks earlier than  $t_e$ .

ii) Not more than 4 weeks later.

iii) If  $D=19$  than what is probability of not meeting the due date.

iv) Find duration of project at 95% probability.

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