INDUSTRIAL ENGINEERING AND MANAGEMENT (TH.1)

QUESTION BANK:

TOPIC -1

SHORT QUESTION: -

1. What is plant engineering?
2. Define Plant layout
3. Define process layout
4. Define product layout
5. Define combination layout
6. Define plant maintenance
7. Define break down maintenance
8. Define preventive maintenance
9. Denine scheduled maintenance

10 What are the key objectives of plant layout design?

11 Name three types of maintenance strategies.

Long question:

1. Explain different factors influencing plant location
2. What are the factors which affect the quality of manufacturing
3. Explain briefly about breakdown maintenance
4. Explain the role of plant engineering in improving production efficiency and reducing operational costs.
5. Discuss the principles and steps involved in designing an efficient plant layout. How does it impact overall productivity?
6. What is preventive maintenance? Explain its importance and how it differs from corrective and predictive maintenance.
7. Write the objective of plant lay out. write the factors which affect plant lay out. Give symptoms of bad layout.

8. Explain the principle of material handling equipment.

Topic -2

SHORT QUESTION: -

1. What is operations research?
2. Define the term "linear programming.
3. What is the objective function in optimization problems?
4. Name two methods used to solve linear programming problems.
5. What is the difference between a feasible solution and an optimal solution?
6. What are the three time estimate in PERT analysis
7. What is the limitation of graphical method in solving LPP?
8. What do you mean by critical activity.
9. Define optimization .
10. Define Activity and Event
11. What is the use of Linear programming?

Long question:

1. Solve the LPP by graphical method. Max $Z=3x_1+4x_2$&

   Subject to- $4x_1+2x_2\leq 80$,

   $2x_1+5x_2\leq 60$,

   $X_1, x_2\geq 0$

2. Solve the LPP by graphical method. Min $Z=10x_1+8x_2$
   Subject to $2x_1+4x_2\leq 80$
   $3x_1+2x_2\geq 30$,
   $4x_1+3x_2\geq 40$,
   $X_{1,\ x2}\geq 0$

3. Solve the LPP by Graphical Method

   Minimize Z= $60X+40y$

Subject to $30X+10Y \geq 240$

$10X+10Y \geq 160$, $20X+60Y \geq 480$, $X,Y \geq 0$

4. Draw the network diagram and find the critical path

ACTIVITY	TIME	ACTIVITY	TIME
1-2	5	5-6	8
1-3	2	5-7	4
2-4	3	6-8	7
3-4	1	7-8	1
3-5	6	8-10	2
4-9	5	9-10	5

6. Draw the network diagram and find the critical path.

ACTIVITY	PREDECESSOR	TIME(DAYS)
A	-	6
B	-	8
C	A	3
D	A	4
E	B,D	6
F	B,C,D	10
G	E	3

Topic -3

SHORT QUESTION:

1. What is inventory control?
2. Define Economic Order Quantity (EOQ).
3. What is the purpose of a reorder point?
4. What is ABC analysis in inventory control?
5. What is perpetual inventory system?
6. Define Just-In-Time (JIT) inventory management.

Long question:

1. What is ABC analysis in inventory management? Explain how it is used to prioritize inventory items and improve control.
2. What is Economic Order Quantity (EOQ)? Derive the EOQ formula and explain its assumptions and limitations.
3. Calculate EOQ Given that Annual use-100 units, Procurement cost- 25/order, cost per 10 Pieces -Rs 1000, Cost of carrying inventory 15%
4. Calculate EOQ give data annual usage=60 units Procurement cost RS 15/order Cost per price C=RS=100/- Cost of carrying inventory I=100/-
5. Explain briefly about EOQ
6. Describe the function of inventories.

Topic-4

Short question:

1. Define quality control
2. What is the purpose of quality control?
3. Name two types of inspection.
4. What is a control chart?
5. What is the purpose of inspection in manufacturing?
6. What is total quality management (TQM)?
7. Define ISO 9001
8. Define JIT
9. Define six sigma
10. Define 7s
11. Define lean manufacturing

Long question:

1. What is the importance of inspection in manufacturing processes? Discuss the role it plays in ensuring product quality and customer satisfaction.
2. Explain the importance of ISO 9001 standards in quality management. How do these standards benefit organizations and their customers?
3. What is a control chart? Explain its components, types, and significance in identifying process variations.
4. Describe the concept of Six Sigma in quality control. How does it help in reducing defects and improving process efficiency?
5. Construct the $\bar{x}$ and R -chart

$\bar{x}$	24.76	24.77	27.77	24.77	24.77	24.75	24.77	24.76
R	0.07	0.11	0.06	0.08	0.04	0.05	0.06	0.06

A_2=0.14, N=6, D_4=2 , P_3=0

6. Calculate UCL and LCL for $\bar{\bar{X}}$ and R chart of following data

Sample no	1	2	3	4	5
$\bar{X}$	7.0	7.5	8.0	10.0	9.5
R	2	3	2	2	3

Where A=1.342,A2=0.58,D3=0,D4=2.11

7. Explain X chart and P chart.

Topic:5

Short question:

1. What is production planning?
2. Define production control
3. What are the main objectives of production planning?
4. What is the difference between routing and scheduling?
5. Define batch production.
6. Define mass production.
7. Define job order production.
8. Define scheduling
9. Define routing
10. Define forecasting
11. Define material requirement planning (MRP).

Long question:

1. Explain the concept of production planning and control (PPC). Discuss its role in improving operational efficiency and ensuring product quality in manufacturing origination
2. Explain major function of production planning and control.
3. Explain the significance of production planning and control in maintaining a balance between customer demand and production capacity. How do companies ensure that production processes remain flexible enough to adapt to changing market conditions?
4. What are the key differences between job order production and batch production? Discuss the advantages and challenges of each production system in terms of flexibility, lead times, and cost efficiency.