

B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Eighth Semester

MECHANICAL ENGINEERING

U18MEE0016: Plant Layout and Process Design

COURSE OUTCOMES

- CO1:** Outline the importance of plant location analysis.
- CO2:** Extend types of layout and infer steps in layout design.
- CO3:** Apply production planning techniques in product design and development.
- CO4:** Outline process flow tasks and measures for managing flow variability.
- CO5:** Analyze the importance of process design.
- CO6:** Classify the various techniques of inventory management.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|---|-----|-------------------|
| 1. Distinguish between the factors influencing location choices in service sectors and manufacturing sectors. | CO1 | [K ₂] |
| 2. Enumerate the typical categorizations of location decisions frequently employed in business. | CO1 | [K ₁] |
| 3. Why is a layout study important in production management? | CO2 | [K ₂] |
| 4. Mention the concept of a fixed-position layout. | CO2 | [K ₂] |
| 5. How can enhanced production management contribute to heightened customer satisfaction? | CO3 | [K ₂] |
| 6. Define job production. | CO3 | [K ₁] |
| 7. Difference between a process flow diagram and a flow chart. | CO4 | [K ₂] |
| 8. Write the concept of Little's Law in production management. | CO4 | [K ₂] |
| 9. Mention the importance of inventory analysis in optimizing supply chain management. | CO5 | [K ₂] |
| 10. Define ABC analysis in inventory management. | CO5 | [K ₁] |

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

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| 11. | a) | Explore the process of selecting a new plant location, detailing the various steps involved and the criteria utilized for evaluation. | 8 | CO1 | [K ₂] |
| | b) | Discuss the overall effects of globalization on multinational corporations (MNCs) and their decisions regarding location. | 8 | CO1 | [K ₂] |
| 12. | a) | Explore the process of optimizing layout arrangements within industries and how efficient layout designs can positively impact operational performance. | 8 | CO2 | [K ₂] |
| | b) | Outline the procedural steps involved in designing the layout for a manufacturing facility. | 8 | CO2 | [K ₂] |
| 13. | a) | Explore various methodologies for plant layout design and their respective benefits, accompanied by an appropriate illustration. | 8 | CO2 | [K ₂] |
| | b) | Distinguish between various types of production systems and their distinctive features. Additionally, offer examples of industries where each type is frequently applied. | 8 | CO3 | [K ₂] |
| 14. | a) | Discuss the methodologies and instruments employed in product analysis for evaluating product performance, quality, and competitiveness within the market. | 8 | CO3 | [K ₂] |
| | b) | Explain the concept of break-even analysis and its significance in production decision-making. | 8 | CO3 | [K ₂] |
| 15. | a) | Explore in detail the essential components and symbols employed in flowchart diagrams, accompanied by a relevant example. | 8 | CO4 | [K ₂] |
| | b) | Discuss the concept of flow time measurement and its importance in evaluating process efficiency and responsiveness to customer demands. | 8 | CO4 | [K ₂] |
| 16. | a) | Examine the expenses and potential hazards linked to inventory management. Elaborate on how maintaining surplus inventory can result in disruptions to business operations and impact customer satisfaction negatively. | 8 | CO5 | [K ₂] |
| | b) | Explain in detail the VED, HML, and FSN analyses used for optimizing inventory management. | 8 | CO5 | [K ₂] |
