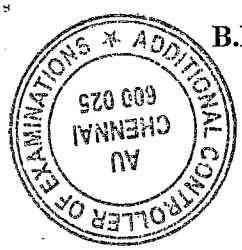
RollNo. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)




B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2024

INDUSTRIAL ENGINEERING

Semester

**IE5652 & PRODUCTION AND OPERATIONS MANAGEMENT**
(Regulation2019)

Time:3hrs Max.Marks: 100

| | |
|---|---|
| CO1 | Recognize and appreciate the concept of Production and Operations Management in |
| CO2 | Creating and enhancing a firm's competitive advantages. |
| CO3 | Describe the concept and contribution of various constituents of Production and |
| CO4 | Operations Management (both manufacturing and service) |
| CO5 | Relate the interdependence of the operations function with the other key functional |

**BL – Bloom's Taxonomy Levels**
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

**PART- A(10x2=20Marks)**
(Answer all Questions)

| Q.No. | Questions | Marks | CO | BL |
|---|---|---|---|---|
| 1 | Distinguish between Production and Productivity? | 2 | CO1 | L1 |
| 2 | Define Product life cycle with example? | 2 | CO1 | L2 |
| 3 | List Quantitative Forecasting models? | 2 | CO2 | L1 |
| 4 | What is the purpose of forecasting in Operations Management? | 2 | CO2 | L2 |
| 5 | What does MRP stand for, and what is its primary objective? | 2 | CO3 | L1 |
| 6 | Define ERP with application? | 2 | CO3 | L2 |
| 7 | Differentiate between long-term and short-term capacity decisions.? | 2 | CO4 | L1 |
| 8 | What are the factors affecting Capacity Management? | 2 | CO4 | L2 |
| 9 | Define JIT? | 2 | CO5 | L1 |
| 10 | Write two lean manufacturing principles? | 2 | CO5 | L2 |

**PART- B(5x 13=65Marks)**
(Restrict to a maximum of 2 subdivisions)

| Q.No. | Questions | Marks | CO | BL |
|---|---|---|---|---|
| 11 (a) | Discuss how Operations Management integrates with other functional areas and adapts through the product life cycle. | 13 | CO1 | L3 |
| | **OR** | | | |
| 11 (b) | Discuss how Operations Management integrates with other functions to ensure efficient product and service design | 13 | CO1 | L4 |
| | | | | |
| 12 (a) | Describe in detail about any two qualitative and quantitative type of forecasting with their advantages and disadvantages. | 13 | CO2 | L3 |
| | **OR** | | | |
| 12 (b) | A firm uses simple exponential smoothing with $\alpha = 0.3$ to forecast demand. The forecast for the first week of January was 500 units, | 13 | CO2 | L4 |

| | | | | |
|---|---|---|---|---|
| | whereas actual demand turned out to be 450 units.<br><br>(a) Forecast the demand for the second week of January.<br><br>(b) Assume that the actual demand during the second week of January turned out to be 550 units. Forecast the demand up to the February third week, assuming the subsequent demands as 475, 450, 470, 525, and 470 units. | | | |
| | | | | |
| 13 (a) | Examine the role of MRP systems in linking forecasts, inventories, and production schedules. | 13 | CO3 | L3 |
| | **OR** | | | |
| 13 (b) | Explain about aggregate planning strategies<br>(i) Pure strategies.<br>(ii) Mixed strategies. | 13 | CO3 | L4 |
| | | | | |
| 14 (a) | Describe the procedure adopted for systematic approach to capacity planning? | 13 | CO4 | L3 |
| | **OR** | | | |
| 14 (b) | Explore capacity measurement methods and tools, such as break-even analysis and capacity requirement planning (CRP). Show how these tools assist managers in making informed decisions about capacity adjustments.? | 13 | CO4 | L4 |
| 15 (a) | Examine the challenges and barriers to implementing Lean Manufacturing systems. Propose strategies for overcoming resistance to change, ensuring employee engagement, and sustaining Lean initiatives over time. | 13 | CO5 | L3 |
| | **OR** | | | |
| 15 (b) | Discuss the concept of continuous improvement (Kaizen) and its role in fostering a culture of ongoing enhancements in productivity, quality, and efficiency. Provide examples of how Kaizen events can lead to significant operational improvements. | 13 | CO5 | L4 |

**PART- C(1x 15=15Marks)**
(Q.No.16 is compulsory)

| Q.No. | Questions | Marks | CO | BL |
|---|---|---|---|---|
| 16. | Lean Manufacturing prioritizes flow efficiency, minimal inventories, and continuous improvement. Analyze the concept of value-added versus non-value-added activities within a production system.<br><br>Explain how a value stream map is constructed and used to identify and eliminate waste. Demonstrate how these Lean approaches improve lead times, customer satisfaction, and overall competitiveness, using real-life or hypothetical case. | 15 | CO5 | L5, L6 |