



MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)

Rasipuram - 637 408, Namakkal Dist., Tamil Nadu.

Department of Mechanical Engineering Question Bank - Academic Year (2021-22)

Course Code & Course Name : 16MED25 & Computer Integrated Manufacturing System

Year/Sem/Sec : IV/ VII/ B

Unit-I: Introduction

Part-A (2 Marks)

1. List any two reasons for using a CAD system
2. What are the components of CIM?
3. What are the steps involved in designing and manufacturing a product?
4. Define automation and give its elements.
5. Define lean manufacturing
6. Write the types of production
7. Define Utilization and Availability
8. Name five typical factory overhead expenses
9. Differentiate open loop and closed loop control system in an automation system
10. Identify the five levels of automation in a production plant

Part-B (16 Marks)

1. What do you mean by Concurrent Engineering? Explain its process and advantages .
2.
 - (i). Examine Job shop Production and Mass Production
 - (ii). Demonstrate the significance of JIT Philosophy
3. Explain, in detail, the objectives, principles, structure and various concepts of Lean Production
4.
 - (i). What is Automation? Explain the three basic elements of an automated system.
 - (ii). Explain in detail the components of CIM
5. Write brief note of the following:
 - a. Cycle time
 - b. Production rate
 - c. Plant capacity
 - d. Utilization
 - e. Manufacturing lead time
 - f. Work-in-process

Unit-II : Production Planning and Control and Computerized Process Planning

Part-A (2 Marks)

1. Define Route Sheet
2. Write the benefits of CAPP.
3. List the approaches of process planning.
4. What are the activities within the scope of production planning?
5. Differentiate aggregate production planning and master production schedule.
6. What are the main inputs to the MRP processor?
7. Write the benefits of MRP system.
8. Define Shop Floor Control
9. List the three phases of shop floor control
10. Define Factory Data Collection System

Part-B (16 Marks)

1. Briefly explain the steps involved in generation of route sheet using variant and generative CAPP.
2. Develop an engineering brief about the various types of automatic identification technologies.
3. Assess an engineering brief about (i) MRP-II and (ii) ERP
4. (i) Discuss in details in phase of shop floor control system
(ii) Describe the various activities of Production Planning and Control System
5. Illustrate notes on the following.
 - i. Aggregate production planning
 - ii. Master production planning
 - iii. Material requirements planning
 - iv. Capacity planning

Unit-III : Cellular Manufacturing

Part-A (2 Marks)

1. Define Group Technology
2. What are the three methods of grouping parts into part families?
3. Write the benefits of GT.
4. Define Production Flow Analysis (PFA)
5. List the steps involved in production flow analysis.
6. Define Cellular Manufacturing
7. Write the types of machine cells and layouts in GT
8. List the various types of coding system.
9. What is meant by composite part concept?
10. Give the applications of GT.

Part-B (16 Marks)

1. Explain the concept of OPITZ coding system.
2.
 - (i). Discuss DCLASS and MCLASS Coding Systems
 - (ii). Explain the structure of KK-3 System
3. Explain in detail the four common GT Cell configurations. Also discuss the suitable layout of each of them.
4.
 - (i). Briefly explain the steps involved Production flow analysis
 - (ii). With an example explain Rank Order Clustering Technique
5.
 - (i). Explain with neat sketch the Machine Cell Design
 - (ii). Explain Facility Design using Group Technology

Unit-IV : Flexible Manufacturing System (FMS) And Automated Guided Vehicle System

Part-A (2 Marks)

1. Define FMS
2. What are the components of FMS?
3. List the layout configuration in FMS
4. Differentiate between a dedicated FMS and a random-order FMS
5. List out any two advantages and disadvantages of FMS implementation.
6. How the FMS is classified based on level of flexibility?
7. Define AGVs
8. What are the components of AGVS?
9. What is meant by vehicle guidance technology?
10. Name the different AGVS guidance system.

Part-B (16 Marks)

1.
 - (i) With neat sketch explain FMS layout Configurations
 - (ii) Discuss the applications and advantages of a FMS
2. What are the components of FMS? Explain in detail
3. Distinguish between a. Dedicated and Random order FMS b. FMC and FMS
4. List and explain the components of an automated guided vehicle system
5. Explain the Vehicle Guidance Technologies of AGVs.

Unit-V : Industrial Robotics

Part-A (2 Marks)

1. Define Robot
2. Write the types of joint notations
3. What are the four basic robot configurations available commercially?
4. What is an end effector?
5. Define Work Volume
6. Classify the sensors in robotics
7. Name the various sensors used in industrial robotics
8. What is meant by pitch, yaw and roll?
9. Write the applications of an industrial robot.
10. List the types of robot programming methods.

Part-B (16 Marks)

1. (i) Explain the types of mechanical joints commonly used in industrial robot construction, with neat sketch
(ii) Explain about any three types of robot control systems
2. Explain in detail about the types of robot part programming
3. (i) Explain in detail robot anatomy and its related attributes
(ii) Name some industrial robot applications
4. Describe the classification and characteristics of Mechanical Grippers
5. Explain the contact and non-contact type robot sensors

Course Faculty

HoD