**AALIM MUHAMMED SALEGH COLLEGE OF ENGINEERING**

**DEPARTMENT OF MECHANICAL ENGINEERING**

**QUESTION BANK**

**DEPARTMENT: MECH SEMESTER: VII**

**SUBJECT CODE / Name: ME 2402 / COMPUTER INTERGRATED MANUFACTURING**

**PART-B**

**UNIT – I COMPUTER AIDED DESIGN**

1. Define CAD. List and explain various benefits of implementing a CAD system.
2. Explain the design process proposed by Shigley and the application of computer to the design process.
3. Define CAM. Briefly explain the applications of CAM and also about the CAD/CAM interface.
4. What do you mean by computer-aided drafting? List and explain the various desirable features of a CAD package.
5. (a) What are geometric transformations?

(b) Explain any four 2D geometric transformations with suitable illustrations.

(c) What do you mean by concatenation and homogeneous representation?

1. . Write short notes on the following 3D geometric transformations:
   1. 3D translation
   2. 3 D scaling
   3. 3D rotation
   4. 3D reflection
   5. 3D shearing
2. List and explain the various drawing features in a CAD package.
3. What is geometric modeling? Explain the geometric models, by bringing out their limitations and applications.
4. What is wireframe modeling? Compare 2D and 3D wireframe models? Also list its advantages and disadvantages.
5. Compare and contrast the CSG and B-rep techniques of solid modeling.
6. Differentiate between surface modeling and solid modeling.
7. Explain, with suitable examples, how solid models are generated using Boolean operations.

**UNIT – II COMPONENTS OF CIM**

1. What is CIM? Explain briefly the meaning and concept of CIM.
2. What is a CIM wheel? Explain its different segments in relation to CIM’S scope.
3. ‘CIM is both a concept and a technology’. Comment.
4. Briefly outline the evolution of CIM.
5. Explain the importance of CIM. Also brief the main objectives of it.
6. What do you understand by the term ‘islands of automation’? List and explain any six islands of automation.
7. Differentiate between CIM I and CIM II.
8. Elaborately discuss the various elements of a CIM system.
9. List some CIM hardware’s and CIM software’s.
10. Bring out the various benefits of implementing a CIM system.
11. What do you mean by communication matrix, in relation to CIM? Explain.
12. What is data communication? Identify and firefly explains the five components of a data communication system.
13. What is a network? Explain the various advantages of networking?
14. Write short notes of LAN, MAN, and WAN.
15. Differentiate between client/server and peer-to- peer LANs.
16. What is network topology? Discuss briefly the five basic network topologies. Also give an advantage and a disadvantage for each type of network topology.
17. What do you mean by simplex, Half- duplex, and full- duplex transmissions?
18. (a) Explain the two modes for transmitting binary data across a link.

(b) What are the advantages and disadvantages of parallel transmission?

1. Compare the two methods of serial transmission. Discuss the advantages and disadvantages of each.
2. List and brief discuss the various guided and unguided transmission media.
3. (a) What are medium access control techniques?

(b) Explain CSMA/CD and token passing.

22. What is meant by ‘open system’ interconnection? Explain briefly seven layers of the ISO/OSI reference model.

23. Compare and contrast between MAP AND TOP.

**UNIT – III GROUP TECHNOLOGY AND COMPUTER AIDED PROCESS PLANNING**

**Group technology**

1. What is group technology? Also explain why GT is important in achieving CAD and CAM integration.
2. Explain the concept of part family with a suitable illustration.
3. Discuss with examples the following: monocode, polycode, and mixed code.
4. List the various coding system widely used.
5. What MICLASS system. Compare it with DCLASS system.
6. What is production flow analysis? List the steps involved in carrying out PFA.
7. Briefly discuss the various benefits of implementing a GT in a firm. Also bring out the advantages and limitations of using GT.
8. What is meant by cellular manufacturing? Explain, in detail, single-linkage clustering algorithm used for cell formation.
9. What do you understand by cell design? What are the criteria used for cell design?

**Process Planning**

1. What is process planning? What are activities associated with it?
2. Explain the technological framework of process planning by using a block diagram. Also explain why process planning is important in achieving the integration of CAD/CAM.
3. Explain in detail the process planning activities.
4. What is meant by CAPP? List out the benefits of CAPP system.
5. Explain the two approaches commonly used in CAPP system bringing out their advantages and limitations.
6. List some variant and generative CAPP systems that are available commercially.
7. What factors should be considered while selecting the best CAPP system?

**UNIT – IV SHOP FLOOR CONTROL AND FLEXIBLE MANUFACTURING SYSTEM**

**SHOP FLOOR CONTROL**

1. What is shop floor control? What are the functions of SFC?
2. Explain, in detail, the phases of shop floor control system.
3. Write and engineering brief about (1) MRP II, and (2) JIT production system.
4. Write an engineering brief about the various types of automatic identification technologies.
5. Explain the bar-code technology.
6. What is computer process monitoring? Also explain the use of data acquisition system, and multilevel scanning.

**Flexible Manufacturing System**

1. What is flexible manufacturing system? In what ways, FMS differs from other manufacturing systems.
2. List and explain the functions of the material handling system in a FMS.
3. With suitable sketches explain the various FMS layout configurations prevalent today.
4. What are AGVs? How do they operate?
5. Distinguish between:
6. FMC and FMS, and
7. Dedicated FMS and random-ordered FMS.
8. Discuss the applications, advantages, and disadvantages of a FMS.

**UNIT – V COMPUTER AIDED PLANNING AND CONTROL & MONITORING**

1. What is production planning and control? Describe the various activities of a PPC system.
2. Briefly explain about production planning process in discrete part manufacturing.
3. What is MRP?. And explain the inputs to MRP and various MRP outputs. Also list the various benefits of MRP.
4. Write an engineering brief about. (i) MRP II and (II) JIT Production system
5. What is agile manufacturing? Describe in detail, the principles characteristics and concepts of agile manufacturing.
6. Enumerate the approaches to make a company more agile.
7. With a diagram, explain the structure model of a manicuring process.
8. List of the different process control strategies and explain them.
9. What is adaptive control? Explain the configuration and function of adaptive control.
10. In what way, the feed forward control differs from fees back and regularity control.
11. What is a direct digital control? Explain the components and their arrangement of a direct digital control.