

316359

25226

3 Hours / 70 Marks

Seat No. 

|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|

- 
- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Use of Non-programmable Electronic Pocket Calculator is permissible.  
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. **Attempt any FIVE of the following :** **10**
- a) Define Computer Integrated manufacturing (CIM).
  - b) List any four CAE software.
  - c) Name the different components of CAMC.
  - d) State the various types of network topologies.
  - e) Give any two applications of ERP software.
  - f) List various robot joints.
  - g) State two applications each for fixed automation and programmable automation.

P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) Explain how CIM improves production rate, quality and flexibility in modern manufacturing.
  - b) Define CAM and state its role in CIM.
  - c) Differentiate between LAN WAN and MAN.
  - d) Suggest the various factors to be considered while selecting grippers for robots.
- 3. Attempt any THREE of the following : 12**
- a) List and explain the four components of CIM architecture.
  - b) Compare concurrent engineering and sequential engineering on the basis of :-
    - i) Product development cycle time
    - ii) Cost
    - iii) Quality
    - iv) Communication between teams
  - c) Discuss the benefits of using SCADA in industrial automation.
  - d) Suggest and Justify the suitable network topology for manufacturing company wants to setup a network for its CIM system connecting various devices like CNC machines, robots and inspection system.
- 4. Attempt any THREE of the following : 12**
- a) State the need of Human Machine Interface (HMI) in industrial automation.
  - b) A car manufacturing industry is implementing a relational DBMS for its CIM system. State the advantages of using relational DBMS in this context.
  - c) Describe the advantages and limitations of automation and robotics in CIM.
  - d) Describe the importance of accuracy and repeatability in CIM. How they are achieved?
  - e) A manufacturing firm wants to implement CIM to improve its production efficiency. Explain how the company can integrate CAD, CAPP and CAMC to achieve goal using a specific product example.

**5. Attempt any TWO of the following : 12**

- a) Explain the importance of finite element analysis and optimization techniques.
- b) Describe database management system with its components.
- c) Explain with neat sketch cylindrical configuration robot.

**6. Attempt any TWO of the following : 12**

- a) Distinguish between concurrent and sequential engineering with any suitable parameters.
  - b) Interpret the concept of industry 4.0 in context of CAM.
  - c) Describe the various elements of automation in details.
-