

22658

22232

3 Hours / 70 Marks

Seat No.

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- 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) Assume suitable data, if necessary.

**Marks**

**1. Attempt any FIVE of the following :**

**5 × 2 = 10**

- (a) Define product life cycle.
- (b) State four benefits of CAPP.
- (c) Write four different tools used in CAMC.
- (d) Give one suitable example of hierarchical database.
- (e) Define group technology. Write two advantages.
- (f) Write two applications each for fixed automation & programmable automation.
- (g) State function of manipulator. Define its degree of freedom in robots.

**2. Attempt any THREE of the following :**

**3 × 4 = 12**

- (a) Discuss disadvantages of traditional product cycle & how it is different than CIM based product cycle.
- (b) How PLC & SCADA is used in computer aided manufacturing ?
- (c) Explain in brief network topologies with diagrams.
- (d) Describe the following robots configuration. State its specific use.  
Cartesian coordinate robot



- 3. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Explain in brief Material Resource Planning.
  - (b) Explain major elements of FMS with neat sketch.
  - (c) With one example elaborate how you will implement strategies of automation.
  - (d) Explain various robot joints with suitable sketches.
- 4. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Describe in brief role of various elements of CIM.
  - (b) State functions and advantages of DBMS systems.
  - (c) Describe with sketch loop type & ladder type layouts used in FMS.
  - (d) What are elements of automation ?
- 5. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) List application areas of Computer aided manufacturing for manufacturing control.
  - (b) Describe role of Supply chain management in business with suitable example.
  - (c) Compare between Programmable and flexible automations.
  - (d) Write at least eight sensors used in automation with their exact role.
- 6. Attempt any TWO of the following :** **2 × 6 = 12**
- (a) How PLM is beneficial ? List softwares used. Write on product visualization.
  - (b) Write different data classes are handled in CIM. State various tasks in CIM that require data.
  - (c) State usefulness of part family & coding. Elaborate concept of cellular manufacturing.
  - (d) Describe various functions performed by robots in any four of following applications :
    - (i) Palletizing
    - (ii) Machine loading & unloading
    - (iii) Welding
    - (iv) Assembly & inspection
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