

22680

24225

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (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 :

5 × 2 = 10

- (a) Explain the term 'Centralized computer system' wrt DCS evolution.
- (b) Define Reliability wrt DCS system.
- (c) Explain the term 'Rack Mounted Module'.
- (d) Explain single loop integrity.
- (e) State and define main elements of SFC (Sequential Function Chart).
- (f) Explain the term 'Remote module'.
- (g) State the function of Tag Database in HMI.

2. Attempt any THREE of the following :

3 × 4 = 12

- (a) Define Redundancy. Explain it wrt DCS.
- (b) Explain the difference between Local and Remote I/O modules with neat diagram.
- (c) Enlist any four features of a commercial HMI software.
- (d) Explain the significance of trends in HMI software. State and explain its classification.



- 3. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Explain basic building block of DCS with neat diagram.
 - (b) Give the functions of the following :
 - (i) Engineering Workstation
 - (ii) Operator Workstation
 - (c) Explain the Local and Remote I/O modules with neat diagram.
 - (d) Classify DCS workstations. Explain any one with diagram.
- 4. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Draw a neat diagram for hierarchical control in automation and explain in brief function of each level.
 - (b) List any two Alarms used in DCS. Explain them in brief.
 - (c) Enlist any six need & benefits of HMI panel in industry.
 - (d) Explain logs and reports in DCS.
 - (e) List any four features of Video Designer software.
- 5. Attempt any TWO of the following :** **2 × 6 = 12**
- (a) Explain the term 'fault tolerance' wrt DCS system. State difference between fault tolerance and redundancy.
 - (b) Explain FBD (Function Block Diagram) for any six logical functions with diagram.
 - (c) Give eight criteria to select a good HMI panel for a specific application.
- 6. Attempt any TWO of the following :** **2 × 6 = 12**
- (a) List steps involved in developing HMI screen for various applications.
 - (b) Differentiate between Delta V and Simatic PCS 7 DCS on any six points.
 - (c) Consider automatic opening/closing doors of office and write the steps involved in developing HMI screen for this application.
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