

22645

24225

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 answer with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Assume suitable data, if necessary.  
(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) Explain the concept of centralized computer system.
  - b) State two features of process control programs.
  - c) List the different types of alarms in DCS.
  - d) State any two features of Simatic PCS 7 architecture.
  - e) Enlist any two features of MODBUS.
  - f) Define MAP/TOP protocol.
  - g) Explain the term PLC? Give any one application.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw the generic architecture of DCS. State the function of any two blocks.
  - b) Describe the functions of communication module and power supply module w.r.t. DCS.
  - c) Describe the feed-forward control algorithm in brief.
  - d) State the significance of following term in maintenance of DCS –
    - i) Single loop integrity
    - ii) Reliability.
- 3. Attempt any THREE of the following:** **12**
- a) Explain with diagram Redundancy in DCS.
  - b) Differentiate between operator workstation and Engineering workstation. (Any four points)
  - c) Explain bus access of foundation fieldbus.
  - d) Describe the velocity algorithm with help of diagram.
- 4. Attempt any THREE of the following:** **12**
- a) Differentiate between local and remote IO bus. (Any four points)
  - b) Explain overview display with neat sketches.
  - c) Explain the need for different necessity level to various operating paramet.
  - d) Describe bus access method for FIPBUS.
  - e) Compare MODBUS and PROFIBUS. (Any four points)
- 5. Attempt any TWO of the following:** **12**
- a) Design SFC algorithm for process control loop. Explain it.
  - b) List different user defined display. Explain any one of it in detail.
  - c) Explain RACKBUS in detail with its advantages.

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

- a) Describe cascade and ratio control algorithm with help of suitable example.
  - b) Describe different types of logs and report that can be configured on DCS system.
  - c) Compare foundation Fieldbus and FIPBUS. (Any six points)
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