

22645

12425

03 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) List out any two features of DCS.
  - b) List out the programming languages used in DCS. (Any two points)
  - c) Elaborate the term “SCADA”.
  - d) Define following w.r.to DCS system:
    - i) Tags
    - ii) Alarm.
  - e) Write any two features of PLC.
  - f) List the topology used in DCS. (Any two points)
  - g) Differentiate between MAP and TOP protocol in DCS network. (Any two points)

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw the block diagram of direct digital control system and explain.
  - b) Differentiate between position and velocity algorithm (any four points.)
  - c) Explain the concept of redundancy in DCS with diagram.
  - d) Draw and explain the block diagram of analog input module.
- 3. Attempt any THREE of the following:** **12**
- a) Explain the concept of availability w.r.t. DCS.
  - b) State the advantages and disadvantages of centralised control system. (Any four points)
  - c) Classify higher level programming languages for process control in DCS.
  - d) List the typical parts of DCS system hardware. Explain the function of workstation.
- 4. Attempt any THREE of the following:** **12**
- a) Brief about overview display features of DCS with diagram.
  - b) Explain the working of smart transmitters.
  - c) Explain types of Alarm generated and acceptance of alarms.
  - d) Explain Data Highway and local IO Bus w.r.t. DCS.
  - e) Justify the need of security at different levels of DCS.
- 5. Attempt any TWO of the following:** **12**
- a) Describe position algorithm in detail.
  - b) Explain any two user defined display in context of DCS in detail. Give its importance.
  - c) Describe field bus and its two advantages briefly.
- 6. Attempt any TWO of the following:** **12**
- a) Explain Bus Access Method, features and Acceptance of PROFIBUS.
  - b) Explain cascade and ratio control algorithm in detail.
  - c) Explain MODBUS protocol in detail. Give its two advantages.
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