22680

12425

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) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following : **5 × 2 = 10**

(a) Explain the term 'Centralized Computer System' w.r.t. DCS evolution.

(b) Define Reliability w.r.t. the DCS system.

(c) List any two Alarms used in DCS.

(d) Explain single loop integrity.

(e) Differentiate between Logs and Reports w.r.t. DCS system (any two).

(f) Explain the term 'Rack Mounted 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 w.r.t. DCS.

(b) Explain the function of controller module & communication module in DCS.

(c) Enlist any eight features of a commercial HMI software.

(d) Explain the procedure to set trends in HMI software.

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 following :

(i) Engineering Workstation

(ii) Operator Workstation

(c) Explain the Local & Remote I/O modules with neat diagram.

(d) Describe the routine maintenance of DCS system.

4. Attempt any THREE of the following : **3 × 4 = 12**

(a) State the function of Controller module and communication module in DCS system.

(b) Explain any 1 alarm in detail used in DCS.

(c) State the benefits and need of industrial HMI. (Each 2 points)

(d) Explain FBD program for single loop control system with diagram.

(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' w.r.t. DCS system. State difference between fault tolerance and Redundancy.

(b) Explain the alarm, logs and reports in DCS.

(c) (i) Give criteria to select a good HMI panel for a specific application.

(ii) Give benefits of HMI (any two points)

6. Attempt any TWO of the following : **2 × 6 = 12**

(a) List steps involved in developing HMI screen for automatic opening/closing doors.

(b) Differentiate between DeltaV and Simatic PCS7 DCS on any six points.

(c) Consider pulse counting application and write the steps involved in developing a HMI screen for this application.