21819

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any THREE of the following:**   12

(i)   State scope of process automation with suitable example.

(ii) State the features and characteristic of profibus.

(iii) Describe the role of DCS in automation.

(iv) Explain the concept of energy monitoring.

b) **Attempt any ONE of the following:**   6

(i)   Explain the concept of profibus Dp, and Device net.

(ii) Write the selection criteria for appropriate CPU.

2. **Attempt any TWO of the following:**   16

a) Draw the block diagram for DCS and explain each block in it.

b) Explain enterprises (ERP) in detail.

c) Describe Alarm management system and events logs in DCS.

Marks

3. Attempt any FOUR of the following: **16**

  a) State use of following in plans:

    (i) MES

    (ii) Historian

  b) State any four features of HART.

  c) Explain concept of HOT standby architecture.

  d) Give the difference between proprietary and open network.

  e) Describe any four characteristics of TCP/IP.

4. a) Attempt any THREE of the following: **12**

    (i) Write features of input and output devices used in hazardous areas.

    (ii) List the different techniques for data handling.

    (iii) Explain PC work station and servers in detail with suitable block diagram.

    (iv) Explain following:

      1) Bus topologies

      2) Star and Ring topology.

  b) **Attempt any ONE of the following:**   **6**

    (i) Describe process visualization in DCS.

    (ii) Explain the interfacing of final control element with DCS.

Marks

5. **Attempt any TWO of the following:** **16**

a) (i) Draw and describe co-axial network cabling.

(ii) State characteristics of:

1) Copper network cabling

2) Fiber optic cabling

b) List different stages of food and beverage plant and develop modular program for any one stage.

c) Explain the continuous process in refinery industry and develop the modular program for different stage.

6. **Attempt any FOUR of the following:** **16**

a) Describe energy monitoring.

b) Develop a program for motor speed control using FBD.

c) Develop modular program for Refinery process.

d) Explain evolution of PLC.

e) Explain the batch process in food industry.

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