

17665

21415

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--

- 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: **20****
- a) Define process automation. State its benefits.
- b) Compare any two internationally recognized process automation system in detail. (four points)
- c) Compare proprietary and open network. (any four points)
- d) Describe, how interfacing of final control element and DCS is achieved?
- e) With suitable example, explain importance of graphic displays in process automation.
- f) For ethernet network compare bus topology with star topology (any four points)
- g) Explain the role of SCADA in automation.

P.T.O.

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

- a) (i) Explain in brief ERP.
- (ii) Explain the concept of intelligent motor control.
- b) State use of following in plans.
 - (i) MES
 - (ii) Historian
- c) What do you mean by continuous process plant? Develop and explain the architecture refinery plant in detail.

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

- a) Explain following in detail.
 - (i) Control net
 - (ii) Ethernet
- b) Write FBD program to control speed of motor for following conditions:
 - (i) When start button pressed it turned on the motor?
 - (ii) When speed of motor increases on/above 1200 rpm motor will turn of automatically?
- c) Develop modular program for petrochemical continuous process plant and explain.

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

- a) Draw and explain schematic of PC work station and servers in detail.
- b) With suitable diagram describe hot standby architecture in detail.
- c) Write SFC (sequential flow chart) program for temperature control loop system for following conditions.
 - (i) System is used for measurement and control of temperature in the range $+275^{\circ}\text{C}$ to $+300^{\circ}\text{C}$.
 - (ii) If temperature below 275°C , heater will 'ON' and fan will 'OFF'.
 - (iii) If temperature above 300°C , heater will 'OFF' and fan will 'ON'.
 - (iv) Use separate ON/OFF switches for overall system.

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

- a)
 - (i) State any four application of automation.
 - (ii) State role of PLC and DCS in automation.
- b)
 - (i) Describe intelligent transmitters and buses.
 - (ii) State features of mod bus (any four points)
- c) List different local operator stations used in safe and hazardous area explain any one in detail.

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

- a) Draw generalized block diagram of distributed control system (DCS). State function of each block.
 - b)
 - (i) State any four remote input devices and four remote output devices used in hazardous area.
 - (ii) State their features.
 - c)
 - (i) Draw and describe co-axial network cabling.
 - (ii) State characteristics of:
 - 1) Copper network cabling
 - 2) Fiber optic cabling
-