

# 17665

**15162**

**3 Hours / 100 Marks**

Seat No.

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- 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. a) **Attempt any THREE of the following:** **12**
- (i) List out any four benefits of process Automation.
  - (ii) State the different transmitters used in field device management.
  - (iii) Give comparison between profibus and modbus (four points)
  - (iv) Describe any four characteristics of TCP/IP.
- b) **Attempt any ONE of the following:** **6**
- (i) State any six selection criteria for CPU.
  - (ii) What are the different types of network cabling?  
Describe any one in detail.
2. **Attempt any TWO of the following:** **16**
- a) Develop and explain system architecture for any one continuous process plant.
  - b) List and explain different types of graphic displays.
  - c) Explain the basic concept of device net and profibus DP for intelligent motor control.

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- 3. Attempt any FOUR of the following:** **16**
- a) Describe with diagram SIL safety controller.
  - b) Differentiate between proprietary network and open network.  
(any four)
  - c) Describe the role of DCS in automation.
  - d) Explain the use of historian in plant.
  - e) Describe local operator stations for use in hazardous area.
- 4. a) Attempt any THREE of the following:** **12**
- (i) State any four features of HART.
  - (ii) Draw and explain PC based work station.
  - (iii) List different stages of petrochemical plant and develop modular program for any one stage.
  - (iv) Explain the evolution of process automation system.
- b) Attempt any ONE of the following:** **6**
- (i) Explain in details different trends in DCS.
  - (ii) Describe with a neat diagram interfacing of VFD control with DCS.
- 5. Attempt any TWO of the following:** **16**
- a) Compare any three internationally recognized process automation system. (four points)
  - b) What are the different network topologies? Explain each in brief?
  - c) State functions of engineering and operating stations. Describe the use of system diagnostics in DCS.
- 6. Attempt any FOUR of the following:** **16**
- a) Explain the batch operation in food process industry.
  - b) Draw system architecture of a typical process automation system.
  - c) State any four features of input devices and output devices used in hazardous areas.
  - d) Describe the role of PLC in automation system.
  - e) Develop a program for motor speed control using FBD.
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