

314335

24225

3 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 answers 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) Name any two special Input modules used in PLCs
 - b) List any four instructions for logical functions used in PLC
 - c) Draw a simple PLC block diagram for a temperature Control system
 - d) List types of OPC servers
 - e) Draw the symbols of NO and NC contacts used in PLC
 - f) Name any four-communication protocol used in SCADA communication
 - g) Draw Ladder diagram for NOT gate to verify the truth table

P.T.O.

- 2. Attempt any THREE of the following.** **12**
- a) Describe sourcing and sinking in the context of PLC input / output connections
 - b) Explain the working of a bus topology using its structure
 - c) Draw and explain Count UP instruction of PLC in detail
 - d) Describe the method for integrating HMI panel with PLC
- 3. Attempt any THREE of the following** **12**
- a) State the full form of HART. Describe HART in detail
 - b) Draw and explain the architecture of OPC
 - c) Explain the architecture of MODBUS communication protocol using neat diagram
 - d) Describe PLC I/O addressing format
- 4. Attempt any THREE of the following** **12**
- a) Draw Format of TON instruction of PLC. Explain functions of Status Bits on Ton Timer
 - b) Compare fixed and modular PLCs with suitable examples
 - c) Differentiate between reactive and preventive maintenance in PLC system
 - d) Draw the block diagram of a PLC and explain its components.
 - e) Explain PLC Processor Scan cycle
- 5. Attempt any TWO of the following** **12**
- a) Draw the block diagram of SCADA. Describe MTU in detail
 - b) Explain the working of PLC based bottle filling system with the help of Ladder diagram
 - c) Describe the steps involved in developing SCADA Screen for car washing application.

6. Attempt any TWO of the following**12**

- a) Name any four arithmetic instruction. Describe any 2 with diagram
 - b) List any six editors in SCADA and describe the functions of each
 - c) Draw a ladder diagram of two lamps RED and YELLOW having the following condition.
 - i) When the start button is pressed, then both lamps Red and yellow will be ON.
 - ii) When the stop button is pressed, then Red lamp will immediately OFF, but the yellow lamp will OFF after 10 second
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