

22475

24225

03 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) Assume suitable data, if necessary.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

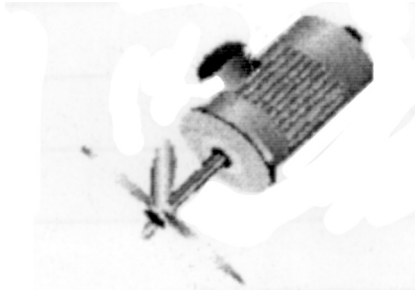
Marks

- 1. Attempt any FIVE of the following: 10**
- a) List the four main components of a typical SCADA system.
 - b) Define 'trends' with respect to SCADA.
 - c) List the types of alarms with respect to SCADA software.
 - d) State the concept of dynamic data exchange.
 - e) State the need of Electric drives in industries.
 - f) List any four names of commercial HMI Manufactures with their product name.

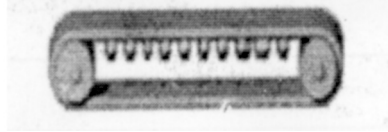
P.T.O.

g) Identify the following Objects from the SCADA Object library

i)



ii)



2. Attempt any THREE of the following: 12

- a) Explain any four features of Rsvision 32 software used in SCADA system
- b) Explain Tree topology with a neat diagram, give its advantages and disadvantages.
- c) List 4 differences between SCADA and HMI.
- d) Draw a ladder logic diagram for a water level control system where a pump turns on when the tank is empty and turns off when the tank is full.

3. Attempt any THREE of the following: 12

- a) State the meaning of the word MTU in the SCADA system. Give its function.
- b) Explain the difference between Bus arbitration and Token passing method.
- c) Explain / Give four data handling features of a good HMI Panel.
- d) Explain double acting pneumatic cylinder with neat diagram.

- 4. Attempt any THREE of the following:** **12**
- a) Draw and explain Hierarchical control in Automation
 - b) Explain typical MODBUS architecture with a neat diagram.
 - c) Explain the function of HMI in automation.
 - d) Explain a single acting pneumatic cylinder with a neat diagram.
 - e) Compare single acting and double acting pneumatic cylinders.
- 5. Attempt any TWO of the following:** **12**
- a) For a specific automation application, to establish communication between PLC and SCADA over OPC DA server, Explain the steps to follow in order to automate the application.
 - b) For a pick and place mechanism, Prepare the following
 - i) OPC tag database
 - ii) PLC ladder program
 - iii) List SCADA library object to be selected to design a graphic screen.
 - c) Compare AC/DC drives on any six points
- 6. Attempt any TWO of the following:** **12**
- a) Develop PLC based application for Sorting system using conveyor. Assume suitable components.
 - b) Develop PLC based application for road traffic signal, assume suitable components.
 - c) Which type of Bus access method is used for the following protocol variants? Explain
 - i) Modbus TCP/IP
 - ii) Profibus DP
 - iii) Foundation FieldBus H1
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