

316329

25226

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) 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) State the benefits of Automation.
 - b) Classify PLCs according to size.
 - c) Draw the symbol of following Bit type instructions :
XIC, OTE
 - d) State the function of Seal in CKT.
 - e) State any two applications of DCS.
 - f) State the domain represented by International standard of PLC-IEC 61131-2.
 - g) Prepare a I/O list for following PLC application : DOL starter

P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) Explain SCAN cycle of PLC.
 - b) Draw the ladder diagram for NOR and EX-OR along with truth table.
 - c) Explain latching relay using PLC with neat diagram.
 - d) Illustrate a generalized block diagram of DCS.
- 3. Attempt any THREE of the following : 12**
- a) State and explain the concept of Redundancy.
 - b) Explain following comparison type PLC instruction : LES and EQU.
 - c) Explain ladder logic of DOL starter with OLR.
 - d) Illustrate a generalized block diagram of SCADA system.
- 4. Attempt any THREE of the following : 12**
- a) Enlist any four specifications of PLC.
 - b) Explain SCP Scaling instruction.
 - c) Draw and explain Ladder logic of forward reverse control of three phase Induction motor.
 - d) Prepare a comparison between SCADA, PLC and DCS on any four aspects.
 - e) Illustrate a ladder logic of stepper motor control system.
(any one direction)

5. Attempt any TWO of the following : 12

- a) Draw and explain hoist control circuit and power circuit diagram.
- b) Draw a neat block diagram of PLC. Explain input and output modules in detail.
- c) List different programming languages and explain any four in detail with its advantages.

6. Attempt any TWO of the following : 12

- a) Prepare a comparison of PLC based automation with relay based automation on any six aspects.
 - b) Explain following PLC instructions in detail with example - Off Timer
 - c) Illustrate application of PLC for traffic light control with a neatly drawn ladder logic diagram.
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