

17641

15116

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. Attempt any FIVE of the following:** **20**
- Explain concept of two wire control circuit.
 - Describe control and power circuit for simple plugging of Induction motor with neat diagram.
 - Describe block diagram of PLC power supply with neat diagram.
 - Describe off delay timer instructions.
 - State the principle of derivate control action. Write its standard equation.
 - Describe inductive proximity switch with neat diagram.
 - Describe standard start-stop-seal circuit with neat diagram.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Describe electromagnetic relay with neat diagram.
 - b) Describe the construction and working of AC servomotor.
 - c) Describe capacitive type proximity switches with neat diagram.
 - d) Describe control and power circuit for dynamic braking.
 - e) Describe on delay timer instruction.
 - f) Describe the principle of integral control action. Write its standard equation.
- 3. Attempt any TWO of the following:** **16**
- a) Draw a ladder diagram for two motor system having following conditions:
 - (i) Starting push button starts motor 1
 - (ii) After 10 seconds, motor – 2 is ON
 - (iii) Stopping the switch stops motor 1 and 2
(Time base = 1 sec)
 - b) Describe in detail the memory organisation list and explain types of memory.
 - c) Describe power and control circuit diagram of forward stop reverse type DOL starter with neat sketch.
- 4. Attempt any FOUR of the following:** **16**
- a) Describe bimetallic thermal overload relay with neat sketch.
 - b) Describe power and control circuit diagram of current limit acceleration starter for slipping induction motor with neat diagram.
 - c) Describe classification of PLC I/O module.
 - d) Draw the ladder diagram to verify the truth table of:
 - (i) AND gate
 - (ii) OR gate
 - e) Describe control action of proportional - Integral controllers.
 - f) Describe control action of Integral controllers.

- 5. Attempt any FOUR of the following:** **16**
- a) Differentiate power and control wiring.
 - b) Describe power and control action circuit diagram of definite time limit starter for slipring induction motor with neat diagram.
 - c) List two advantages and two disadvantages of PLC.
 - d) Draw ladder diagrams for following logic operations:
 - (i) NOT
 - (ii) Ex-OR
 - e) Describe proportional - Integral derivative controllers.
 - f) Explain the concept of NO and NC contact.
- 6. Attempt any TWO of the following:** **16**
- a) Draw block diagram of PLC and explain each block in detail.
 - b) Describe power and control circuit diagram of forward and random reversing type DOL starter with neat sketch.
 - c) Draw a ladder diagram for a two motor system having following conditions:
 - (i) When start button is pushed, motor lamp 1 is ON.
 - (ii) After 10 sec, lamp 2 is ON and lamp 1 turns OFF.
 - (iii) After step 2, lamp 2 turns OFF after 5 sec and lamp 1 turns ON.
 - (iv) When stop button is pressed, both the lamps turn OFF.
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