

17641

21819

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

20

- (a) Describe operation of solenoid valve with neat diagram.
- (b) Explain construction and working of Electronic overload relay.
- (c) Draw diagram of DOL starter power and control circuit for 3-phase Induction Motor for forward stop-reverse operation. Explain its working.
- (d) State operating principle of dc servo-motor.
- (e) State any four advantages of PLC.
- (f) Draw ladder diagram for NOT and EXOR gate.
- (g) Explain any two PLC input instructions.

- 2. Attempt any TWO of the following : 16**
- (a) Describe working of AC servomotor with neat diagram. State their application.
 - (b) Draw and explain block diagram of PID controller.
 - (c) List types of counter's available in PLC. Explain any one with examples.
- 3. Attempt any FOUR of the following : 16**
- (a) Explain OFF delay timer operation with neat diagram.
 - (b) Draw a ladder diagram of star delta starter.
 - (c) List the specification of digital I/O module.
 - (d) Draw star/delta starter circuit diagram for 3-phase induction motor semi-automatic type. Explain its working.
 - (e) Explain working of reed switch. State its advantages.
 - (f) Describe working of up/down counter.
- 4. Attempt any TWO of the following : 16**
- (a) Draw ladder diagram for two motor system with following condition :
 - (i) Starting push button starts motor-1.
 - (ii) After 10 sec. Motor-2 is ON
 - (iii) Stopping switch stops motor 1 & 2
 - (b) Draw and explain power & control circuit of dc injection breaking for Induction motor.
 - (c) Draw and explain block diagram of PI module in PLC.

5. Attempt any TWO of the following : **16**

- (a) Draw block diagram of PLC. State functions of its components.
- (b) Draw and explain standard start-stop-seal circuit in details.
- (c) Draw power & control circuit diagram of starter for slip ring Induction motor with current limit acceleration starter. Explain its working in details.

6. Attempt any FOUR of the following : **16**

- (a) Explain the following with diagram :
 - (i) Temperature switch
 - (ii) Pressure switch
 - (b) State the function of following :
 - (i) PROM
 - (ii) EPROM
 - (c) Differentiate between RAM & ROM in PLC memory.
 - (d) Explain ON Delay timer operation with diagram.
 - (e) Define integral controller. State their advantages.
 - (f) Explain proportional controller process control action.
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