22232

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Figures to the right indicate full marks.

Marks

1. Attempt any FIVE of the following : **10**

(a) State the use of proximity switch & pressure switch.

(b) State any two benefits of automation.

(c) State any two PICs available in market with no. of IO's.

(d) Draw ladder diagram for AND gate.

(e) Draw ladder diagram for XOR gate.

(f) State the function of seal in circuit w.r.t. PLC.

(g) Define SCADA.

2. Attempt any THREE of the following : **12**

(a) Explain the working of FWD-STOP-REV control circuit of an Induction motor.

(b) Explain Digital output module of PLC.

(c) Develop ladder diagram & wiring diagram of DOL starter.

(d) Explain latching relay using PLC.

3. Attempt any THREE of the following : **12**

(a) Explain down counter module with example.

(b) Explain the instruction T_{ON} and T_{OFF}.

(c) Develop Bottle filling system using Ladder diagram.

(d) Explain SCADA architecture with neat sketch diagram.

4. Attempt any THREE of the following : **12**

(a) Explain solenoid valve with neat sketch diagram.

(b) Explain function of different parts of PLC.

(c) Explain any two input and output devices of automation.

(d) Develop ladder diagram & wiring diagram of DOL starter with OLR.

(e) Explain :

(i) Stepper motor control module

(ii) Communication module in PLC.

5. Attempt any TWO of the following : **12**

(a) Draw control & power circuit diagram of conveyor control.

(b) Develop Traffic light control using ladder diagram.

(c) Compare the salient features of SCADA, PLC & DCS system.

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

(a) Draw a ladder diagram for 3 motor operation for following condition :

(i) Start push button starts motor M_1. After 15 seconds M_2 & M_3 starts.

(ii) Stop push button stops M_3 and after 15 seconds motor M_2 and M_1.

(b) Explain IF-CLOSED, IF-OPEN & internal relay instructions.

(c) Explain PLC based water level controller with neat ladder diagram.

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