

(Time: 3 Hours)

Total Marks: 80

- N.B.:** (1) Question No. 1 is Compulsory.  
(2) Attempt any three questions out of the remaining five.  
(3) Each question carries 20 marks and sub-question carry equal marks.  
(4) Assume suitable data if required.

- Q.1** Solve Any Four from the following **20**
- a State the significance of Industrial Automation
  - b Draw Basic Block Diagram of Programmable Logic Controller.
  - c What are different communication modules preferred in Industrial Automation.
  - d Compare Electrical, Pneumatic and Hydraulic systems
- Q.2** a Discuss the different types of automation with a suitable examples. **10**  
b Explain different composite controllers **10**
- Q.3** a List the applications of SCADA and explain any one of them in detail **10**  
b. State Significance of HMI in Automation **10**
- Q.4** a Draw the master **10**  
b State different types of cylinders used in instrumentation System design. **10**
- Q.5** a Design the wiring diagram for switching ON the a DC Motor using NO Pushbutton START switch and switch it OFF using NC Pushbutton STOP switch. switch it OFF using NC Pushbutton STOP switch. Switching of the Motor is indicated by RED lamp. The presence of supply is indicated by the GREEN lamp. **10**  
b Design a 4 and 20 mA converter for the digital signal (VCC= 10 Volts for both the circuit as well as OP-AMP: Chose signal supply OP-AMP such as LM 324) **10**
- Q.6** Write short notes on Any Two **10**
- a Reset Windup **10**
  - b SIS
  - c DCS
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