

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions out of remaining **six** questions.
 (3) Draw **neat sketches** wherever **necessary**.
 (4) Assume **suitable** data if **required** with justification.

1. Write notes on (any two) :- 20
 - (a) Analog to digital converters
 - (b) Data loggers
 - (c) ISA Logic symbols.

2. (a) Explain the different dynamic characteristics of measurement systems. 10
 (b) With a neat diagram, explain the various components of a digital data acquisition system. 10

3. (a) What are neural networks ? Explain feedforward neural network. List the various applications of neural networks. 10
 (b) Explain the method for measurement of vibrations. 10

4. (a) Explain how the basic strategy of control is employed in a room air-conditioning system. What is the controlled variable ? What is the manipulated variable ? Is the system self-regulating ? 10
 (b) Explain the different methods used for measurement of humidity. 10

5. (a) Explain the various uses of capacitive transducers. 10
 (b) What are relay sequencers ? Explain hardwired programming. What is the use of patch panels ? 10

6. (a) Describe the factors that govern the choice of transducers for a given application. 10
 (b) Describe the elements of fuzzy logic. Explain any one application where fuzzy controller is used. 10

7. (a) Explain the different control system parameters. 12
 (b) Explain supervisory control. 8
