

Con. 2718-08.

(REVISED COURSE)

CO-2953

(3 Hours)

[Total Marks : 100]

- N.B. : (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions out of remaining **six** questions.
 (3) Draw neat **sketches** wherever **necessary**.

1. Answer the following questions :- 20
 - (a) Explain supervisory computer control in brief.
 - (b) Explain any one method of analog-to-digital conversion.
 - (c) Describe cascade control with a neat diagram.
 - (d) Write a short note on pressure sensors.

2. (a) Enumerate and discuss the various sources of error encountered in a measurement system. 10
 (b) Explain what you understand by the terms "accuracy" and "precision". 5
 (c) Explain the dynamic analysis of measurement systems. What is the need of obtaining mathematical models of measurement systems? 5

3. (a) (i) Describe the different criteria for selection of transducers for a particular application. 5
 (ii) What are the various uses of capacitive transducers? 5
 (b) Describe various methods to measure temperatures above 2000 °C in a system. 10

4. (a) With neat diagrams, explain any two configurations of a multi-channel data acquisition system. 10
 (b) What is a signal conditioner? Explain any four signal conditioning circuits. 10

5. (a) Describe the need of a controller in process instrumentation industry with a suitable example. 6
 (b) Describe the operation of a Typical Electronic proportional + Integral + Derivative Controller and explain how the tuning of such a controller is carried out. 10
 (c) Explain the terms :- 4
 - (i) Process lag
 - (ii) Control lag.

6. (a) With the help of a block diagram explain a PLC system. Describe the modes of operation of a PLC. State advantages of PLC over an analog controller. 12
 (b) Write a note on Fuzzy Control. 8

7. (a) What are neural networks? Explain the various methods of training the neural networks. 10
 (b) What are data loggers? With the help of a neat block diagram explain the function of each block in a data logger. 10