

Electronic Instrumentation
(REVISED COURSE)

Con. 2940-06.

TV-8353

(3 Hours)

[Total Marks : 100

- N.B. (1) Question No. 1 is compulsory.
 (2) Attempt in all five questions, including Question No.1.
 (3) Assume suitable data if necessary.
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|----|---|-------------------------------|
| 1. | (a) Draw a typical data acquisition system and explain function of each block. | 10 |
| | (b) What is telemetry system. | 5 |
| | (c) Compare the analog instrumentation system with digital instrumentation system. | 5 |
| 2. | (a) Describe different types of capacitive transducers and compare their sensitivities. | 10 |
| | (b) Draw a three opamp instrumentation amplifier and explain its gain adjustments. | 10 |
| 3. | (a) Describe in brief the Construction, Working Principle and Range of measurements for the following :— | 12 |
| | (i) Rotameter (ii) LVDT (iii) Hygrometer. | |
| | (b) Describe in brief PID controller. | 8 |
| 4. | (a) Consider a second-order system model of instrumentation system and discuss in brief response of the system to step input. | 10 |
| | (b) What are the Data Loggers ? | 6 |
| | (c) Differentiate between active and passive transducers. | 4 |
| 5. | (a) Describe in brief measurement of temperature with thermocouple, thermistors. | 10 |
| | (b) Draw basic block diagram to explain PLC system. | 10 |
| 6. | (a) Explain the working principle of the Bellow and Bourdon tube. | 8 |
| | (b) Discuss in brief the principle of Magnetic Flow Meter. | 6 |
| | (c) Design a second order butterworth filter for a cut-off frequency of 1 kHz. | 8 |
| 7. | Write short note on the following :— | 20 |
| | (a) Ultrasonic flowmeter. | (d) Piezoelectric transducer. |
| | (b) A to D conversion technique. | (e) Sample and hold circuit. |
| | (c) Strain gauge. | |