

IV B.Tech I Semester Supplementary Examinations, April/May 2005
INSTRUMENTATION
(Electrical & Electronic Engineering)

Time: 3 hours**Max Marks: 70**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Briefly describe the different criteria for selection of transducer for a particular application.
(b) Explain the differences between Primary and secondary transducers.
2. (a) Derive the expression for time response of first order system subjected to step input.
(b) A RC circuit consists of a capacitor of $1\mu\text{F}$ in series with a resistor of $1\text{k}\Omega$. A dc voltage of 50V is suddenly applied across the circuit. Calculate the value of voltage after 10 mSecs .
3. Draw and explain the circuit of a digital frequency meter. What are the different methods used for high frequency determination? Explain each of them briefly.
4. Describe the circuits and working of wave analysers used for audio frequency and megahertz ranges.
5. (a) A resistive position transducer with a resistance of $5\text{ k}\Omega$ and a shaft stroke of 8 cm is applied with a voltage of 5V . When the wiper is 3cm from the Reference, what is the value of the output voltage?
(b) A resistance strain gauge with a gauge factor 2.04 is fastened to a beam. Which is subjected to a strain of 1×10^{-6} . If the original resistance of the gauge is 120Ω , calculate the change in resistance?
6. (a) Explain the principle of thermistor? And state the applications?
(b) What is the principle behind inductive transducer?
7. (a) What is a strain gauge? Explain the construction of different types of strain gauges with neat sketches.
(b) Explain in general how pressure is measured with electrical transducer as secondary transducers.
8. (a) Discuss the merits demerits of constant temperature method over constant current method of measurement at flow using hot wire anemometer.
(b) With a neat sketch explain the measurement by constant temperature anemometer.
