R09

Code No: C7505

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS, APRIL/MAY-2012
ADVANCED INSTRUMENTATION SYSTEMS
(CONTROL SYSTEMS)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

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1.a) In the case of potentiometer resistance transducers. Show that for $\left(\frac{Rp}{Rm}\right) < 0.1$, the maximum error in approximately $15\left(\frac{Rp}{Rm}\right)$ percentage of full scale reading.

b) A recorder having input resistance of $12K\Omega$ is to be connected to a potentiometer. Non-Linearity is to be held within 1%. Potentiometers with power ratings of 6W and resistance values ranging from 100Ω to $10K\Omega$ in a $100\,\Omega$ steps are available.
Determine the value of potentiometer that will give greatest sensitivity.

2.a) Explain the principle and working of Inductive Thickness transducers.

b) Explain the principle of capacitive displacement transducer and show that $e_o \alpha d$.

3.a) Explain about Magnetostrictive phenomenon. Describe the principle and working of Magnetostrictive Accelerometer.

b) With the help of a neat sketch, explain the principle and working of a Tachometer.

4.a) Draw the sketch and explain the principle of working of Ionization gauge.

b) Explain the principle and working of Photo-emissive Transducers.

5.a) Explain the principle of successive Approximation type ADC.

b) Draw the Schematic and explain the working of the above type of ADC.

6.a) What are the different types of Land Line Telemetry Systems? Explain about each of them.

b) Explain about TDM Telemetry system.

7.a) Explain the principle and working of Oscillographic Recorders.

b) What is the principle of Frequency Modulation Recording Type of system?

8. Write notes on any **TWO:**
a) Data Loggers
b) Digital Multiplexers
c) Sampled data pulse modulation.

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