R09

Code No: C7505

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations, March/April-2011
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) Explain the principle and working of a potentiometric transducer and show that maximum percentage error due to non linearity is $15\left(\frac{R_p}{R_m}\right)$, with usual rotation.

b) A family of potentiometers having a power rating of 10W and resistance ranging from 10Ω to 10KΩ are available. The potentiometer output is to be connected to a recorder of 15KΩ input resistance. Non linearity is to be held within 0.5%. Choose from this family of potentiometers, that will give greatest sensitivity. [6+6]

2.a) Explain about different types of thermistors and their construction techniques. What are the materials used?

b) Draw the sketch and explain the principle and working of variable reluctance accelerometer. [6+6]

3.a) Draw the circuits for a feed back type capacitance transducer and derive the expression for output I_o. What are its applications?

b) Explain about magneto structure effect. What are the materials exhibiting this effect? Explain the principle and working of magneto structure torque transducer. [6+6]

4.a) Explain the principle and working of digital tachometer.

b) Write the helps of a sketch explain the principle and working of Ionization gauge. [6+6]

5.a) Explain the principle and working of ionization vacuum guage.

b) Explain about digital displacements transducers. [6+6]

6.a) Draw the block schematic and explain the operation of multi-channel data acquisition systems.

b) With the help of a block diagram explain the principle and operation of successive approximation type ADC. [6+6]

7.a) Explain about different types of data loggers.

b) Explain about various digital recording techniques. [6+6]

8. Write notes on any **two**
a) Magnetic tape recorders.
b) Land line telemetry system.
c) Digital multiplexers. [12]

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