NR/R09

Code No: A7506/C7505

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations, October/November-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) Derive the expression for $\frac{e_o}{e_{ex}}$ in the case of a potentiometric transducer.

If $\frac{R_p}{R_m}$ is < 0.1, what is the maximum error?

b) Explain the principle of a potentiometer to generate the function $V = kd^2$ with usual notation. [6+6]

2.a) Draw the circuit and derive the expression for $\left(\frac{e_o}{e_{en}}\right)$ of the transducer.

b) Explain about constructional features and applications of LVDT. [6+6]

3.a) What are the naturally occurring and synthetic Piezoelectric materials used for Transducers? Explain about their properties.

b) Define various Piezoelectric Coefficients and deduce the relationships between them. [6+6]

4.a) Draw the schematic and explain the principle and working of self balancing potentiometric transducers.

b) Explain the principle and working of feedback pneumatic load cell. [6+6]

5. What are the salient features of Dual slope Integrating type ADC? With the help of equations, prove the same. Explain the principle and working of this type of ADC with the help of graphs. [12]

6.a) Compare Land Line and Radio Telemetry systems in all respects.

b) Explain about FDM Telemetry system. [6+6]

7.a) Explain about Direct Recording Type of Magnetic Tape Recording system.

b) Draw the schematic of X-Y Recorder system and explain about the same. [6+6]

8. Write notes on any TWO:
a) Floppy Discs
b) Non-contact position measurement
c) S/H circuits. [4+4+4]

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