R09

Code No: C8009

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS, APRIL/MAY-2012
INSTRUMENTATION AND SENSOR TECHNOLOGY
(MECHATRONICS)

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

Answer any five questions
All questions carry equal marks
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1. With reference to the measurement of pressure using a pressure gauge explain the following functional elements with examples:
   a) Primary Sensing Element b) Variable Conversion Element
   c) Data Transmission Element d) Data Presentation Element.

2.a) Explain briefly about Errors and Uncertainties in a measurement System and Dynamic Characteristics of a measurement system.
   b) Explain the construction and principle of working of a Linear Variable Differential Transformer (LVDT). Explain how the magnitude and direction of displacement of core of LVDT is detected?

3.a) What is a Thermistor? State its applications.
   b) Explain the different principles of working of capacitive transducers.

4.a) Describe the working of a thermocouple and its sources of errors.
   b) With a neat sketch, explain the working of turbine type flow meter and its salient features.

5.a) Explain the functioning of Electromagnetic flow meter with a neat diagram.
   b) Explain with neat sketch the principle of working of McLeod Gauge.

6.a) Explain the principle and working of Hotwire anemometer.
   b) Explain the working of Ionization gauge for measurement of low pressure.

7.a) Explain the different types of Amplifiers.
   b) Explain the functioning of ultrasonic flow meter with a neat diagram.

8. Explain the principle of working of the following sensors.
   a) Inductive proximity sensor
   b) Capacitive proximity sensor
   c) Ultrasonic sensors.

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