R07

Code: R7410304

B.Tech IV Year I Semester (R07) Supplementary Examinations, May 2013

INSTRUMENTATION & CONTROL SYSTEMS

(Mechanical Engineering)

Time: 3 hours Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

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1. (a) Classify errors. Elaborate on why they occur and how to eliminate them.
   (b) Discuss about dynamic performance characteristics of instruments.

2. (a) Explain the concept of resistive transducer for measuring displacement.
   (b) Explain by means of neat sketches, the working of thermocouples. What is ambient temperature compensation?

3. (a) Discuss types of elastic pressure sensing elements used in electrical transducers.
   (b) Explain about vacuum measurement using ionization gauge.

4. What are the different direct methods for the measurement of liquid level? Explain any two of them.

5. Describe the basic concept of the seismic instrument. Under what conditions is a seismic instrument suitable for amplitude measurement and acceleration measurements?

6. (a) Describe the advantages of semiconductor type strain gauge over the other types.
   (b) Explain the construction details and working principle of the un-bonded strain gauge. List the advantages and limitations of un-bonded strain gauge.
   (c) Explain the factors affecting the strain measurement.

7. (a) What is psychrometer? Discuss about any one type with neat diagram.
   (b) Explain briefly how a stroboscopic is used to measure torque.

8. (a) Sketch and explain position control using servo motor.
   (b) Sketch and explain open loop and closed loop temperature control system with block diagrams.

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