00045

B.TECH. - ELECTRICAL ENGINEERING

Term-End Examination

June, 2012

BIEE-019 : ELECTRICAL INSTRUMENTATION

Time : 3 hours *Maximum Marks : 70*

Note : 1. *Attempt **any five** questions*

2. ***All** questions carry **equal marks**.*

---

1. (a) Explain the construction of wire wound strain gauge and derive the expression for the gauge factor. 7

(b) An LVDT has an output of 6 V rms when the displacement is 0.4×10^{-3} mm. Determine the sensitivity of this instrument in V/mm. A 10 V voltmeter with 100 scale division is used to read output. Two tenth of a division can be estimated with ease. Determine the resolution of voltmeter. 7

2. (a) Describe the properties of material used for Piezoelectric transducers. Describe different modes of operation of Piezoelectric transducers. 7

(b) Describe working and theory of an ultrasonic flow meter. List its advantages. 7

3. (a) Explain land-line telemetering system. Describe its advantages. 7

(b) Explain time division multiplexing and frequency division multiplexing as applied to telemetery. 7

4. (a) Draw block diagram of digital data acquisition system. Explain various components and their functions. 7

(b) Draw block diagram of modern digital data acquisition system. Describe its advantages. 7

5. (a) Explain the functioning of strip chart recorder. Explain different types of marking mechanism used in it. 7

(b) Describe the different methods used for digital tape recording. Explain its advantages and disadvantages. 7

6. (a) Draw microprocessor based instrumentation architecture. Explain it in detail. 7

(b) Explain with suitable diagram the working of electronic PI controller. Also obtain its transfer function. 7

7. Write short notes on ***any two*** of the following : **7+7**

(a) Smart transmitters

(b) Digital oscilloscope.

(c) Pneumatic controller

(d) R V D T