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BIEL-009

00451

B. Tech. ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

December, 2012

BIEL-009 : ELECTRONIC MEASUREMENT AND INSTRUMENTATIONS

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** questions. Each question carry **equal** marks. Use of scientific calculator is permitted.*

1. Explain the Dynamic characteristics of any measurement system. What is the output response of Ist order system when the input is a step signal ? **10**

2. Explain the term limiting error. The solution of unknown resistance for a wheat stone bridge is **10**

$$R_x = \frac{R_2 R_3}{R_1} \text{ where } R_1 = 100 \pm 0.5\% \ \Omega$$

$R_2 = 1000 \pm 0.5\% \ \Omega$. $R_3 = 842 \pm 0.5\% \ \Omega$.

Determine the magnitude of unknown resistance and limiting error in percent and in ohm for unknown resistance R_x.

3. Explain the block diagram and wave-form of Ramp type Digital Voltmeter (DVM). **10**

4. Explain the working of potentiometer. State its types. Discuss the advantages and disadvantages of potentiometer. **10**

5. A Piezo-Electric transducer has a capacitance of 1000 PF and a charge sensitivity of 40×10^{-3} c/m. The connecting cable has a capacitance of 300 PF, while the oscilloscope used for readout has a readout input resistance of 1 MΩ with a paralleled capacitance of 50 PF. **10**

   (a) What is the sensitivity (V/m) of the transducer alone ?

   (b) What is the high frequency sensitivity (V/m) of the entire measuring system ?

6. Describe the Principle of Temperature Transducer. Explain the Temperature characteristics of Thermistors. **10**

7. Explain the General Telemetry System with block diagram. **10**

8. With neat diagram, explain the working principle of LCD. Explain how it can function as a display device. **10**

9. Explain the working principle of Potentiometric Type Digital Voltmeter with a block diagram. **10**

10. Write short notes on ***any two*** of the following : **2x5=10**

(a) Spectrum analyzer

(b) Universal Counter

(c) Hall effect transducer