No. of Printed Pages : 2

BIEL-009

00201

B. Tech. ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

December, 2013

BIEL-009 : ELECTRONIC MEASUREMENT AND INSTRUMENTATIONS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **any seven** questions.*
*Each question carry **equal** marks.*

---

1. Define the following terms : **2x5=10**

(a) Instrumental error
(b) Limiting error
(c) Calibration error
(d) Random error
(e) Probable error

2. Two resistes have the following ratings : **5x2=10**

$R_1 = 36\Omega \pm 5\%$, $R_2 = 75\Omega \pm 5\%$

Determine:

(a) The magnitude of error in each resister.
(b) The limiting error in ohms and in percent when the resisters are connected in parallel.

3. (a) Describe the method of calibration of DC instruments. **5x2=10**

(b) What is power factor meters ? Describe in brief.

4. Describe the characteristics of digital voltmeter and also discuss the block diagram of a ramp-type digital voltmeter. 10

5. (a) Discuss the selection criterian of a transducer. 5x2=10
   (b) Describe the displacement transducer.

6. Name four types of electrical pressure transducer and describe an application of each type. 10

7. A resistance strain gage with a gage factor of 2.4 is mounted on a steel beam whose modulus of elasticity is 2×10^6 kg/cm^2. The strain gage has an unstrained resistance of 12.0Ω which increases to 120.1Ω when a beam is subjected to a stress. Determine the stress at the point where the strain gage is mounted. 10

8. (a) Discuss the block diagram of a general purpose oscilloscope. 5x2=10
   (b) Explain how phase angle and time delay can be measured by a CRO.

9. Explain the working principle of digital oscilloscope with suitable block diagram. 10

10. Write short notes on the following (**any two**) : 5x2=10
   (a) RMS voltmeter
   (b) LVDT
   (c) Wave analyzer