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BIEL-009

01025

B. Tech. IN ELECTRONICS AND COMMUNICATION ENGINEERING

Term-End Examination

June, 2012

BIEL-009 : ELECTRONIC MEASUREMENT AND INSTR

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** questions. **Q.10** is **compulsory**. Each question carries **ten** marks.*

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1. Give a brief description of the functional elements of the instruments. What are the roles played by each element ? **10**

2. What is meant by loading ? Explain the concept of Impedance loading and matching with respect to a measuring instrument. **10**

   A voltmeter with internal resistance of 200 Ω is connected across an unknown resistance. It reads 250V and the milli-ammeter (with very small internal resistance)connected in series with the same resistance reads 10 mA. Determine the apparent resistance, actual resistance and the loading error due to the voltmeter

3. Define & discribe the following static performance parameters with respeet to measuring instruments 10
   (a) Accuracy
   (b) Precision
   (c) Resolution
   (d) Sensitivity,

4. The symmetrical square wave voltage of FIG. 4 (a) is applied to an average responding ac voltmeter with a scale calibrated in terms of rms value of a sinewave , calculate (a) the form factor of the square wave voltage (b) the error in the meter indication. 10

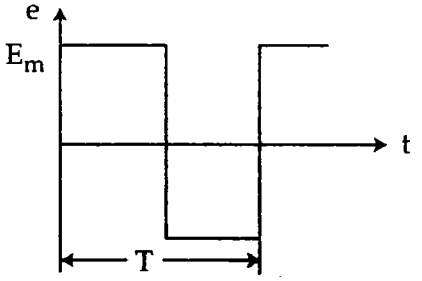

Fig. 4(a)

5. A quartz crystal has a charge sensitivity of 2 PC/N. Its dielectric constant is 4.5 and Young's modulus is 9×10^{10}Pa , Find the voltage sensitivity constant. 10

6. Explain the classification of transducers ? What is the criteria and guidlines for their selection ? Give examples. 10

7. What is telimetry ? What are various Telemetering Techniques used ? Explain position Telemetry synchros. **10**

8. With the aid of neat sketch , explain the principle and operation of X-Y Recorders. **10**

9. What is a wave - Analyser ? Explain a Heterodyne wave Analyser and draw its block diagram. Also explain its applications precisely. **10**

10. Explain ***any two*** briefly : **2x5=10**

    (a) Sweep Frequenency generator

    (b) LVDT

    (c) TRUE RMS voltmeter