# COMP 4 – 4 (RC)

## S.E. (Comp.) (Semester – IV) ( Revised Course)
## Examination, November/December 2012
## ELECTRONIC MEASUREMENTS

Duration : 3 Hours | Total Marks : 100

***Instructions*** : *1)* ***Assume*** *suitable data* ***wherever*** *required.*
*2) Attempt* ***any five*** *questions choosing atleast* ***one*** *question from* ***each*** *Module.*
*3) Draw neat sketches* ***wherever*** *necessary.*

MODULE – I

1. a) With an example explain the terms 'Accuracy' and 'Precision'. **5**

   b) A voltmeter having a sensitivity of 1,000 Ω/V, reads 100 V on its 150 V scale when connected across an unknown resistor in series with a milliammeter. When the milliammeter reads 6 mA ?

   Calculate :

   i) The apparent resistance of the unkown resistor.

   ii) Actual resistance of the unknown resistor.

   iii) Error due to loading effect of the voltmeter. **4**

   c) Explain the following standards. **4**

   i) Primary standards

   ii) Working standards

   d) What is resolution of a digital voltmeter ? With a neat diagram explain any one type of digital voltmeter. **7**

2. a) In calculating the voltage drop, a current of 31.8 A is recorded in a resistance of 35.68 Ω. Calculate the voltage drop across the resistor upto three significant figures. **2**

   b) Draw the circuit of a basic Q meter and explain its various sources of error. **10**

   c) Show how a Q meter can measure low impedance components. **8**

P.T.O.

## MODULE – II

3. a) With the help of a block diagram explain how an oscilloscope displays a signal on the screen. 7

   b) "Oscilloscope is well suited and indispensable for time and phase measurements". Explain. 7

   c) What is the function of a delay line ? Explain using necessary diagrams. 4

   d) What are the effects of incorrect probe compensation ? 2

4. Write a short note on :

   a) "Frequency synthesized signal generator". 8

   b) With a neat circuit diagram explain any one method to generate pulse waveform. 7

   c) Explain briefly Hartley oscillator. 5

## MODULE – III

5. a) What is THD ? Give formulation for THD. Explain with neat diagram Fundamental-Suppression Harmonic Distortion Analyser. 10

   b) What is spectrum analysis ? Discuss two applications. 5

   c) Bring out differences between cascading ripple counter and cascaded synchronous counter. 5

6. a) Explain Automatic Heterodyning unit for extending frequency range of frequency counter. 7

   b) With neat block of frequency counter. Explain counting with wave-forms associated to gating function. 7

   c) Briefly explain measurement errors associated with frequency and time measurement. 6

## MODULE – IV

7. a) Explain gage factor. With neat diagram explain how external applied force can be measured. 6

   b) Show how differential transformer may serve as a component in force-balancing servo system. 6

   c) What is multiplexing ? Explain the following :

      i) Analog to digital multiplexing

      ii) Digital to analog multiplexing. 8

8. a) Show how transducer is encorporated in digital acquisition system. 6

   b) Explain how voltage to frequency and vice-versa are brought about while interfacing transducer. 8

   c) Classify transducer on the basis of their application explain :

      1) Photo multiplier tube

      2) Photo conductive cells. 6

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