CBCS Scheme

USN | | | | | | | | | | | 15EC35

Third Semester B.E. Degree Examination, Dec.2016/Jan.2017
Electronic Instrumentation

Time: 3 hrs.   Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1   a. Convert a basic D'Arsonval movement into a dc voltmeter and derive the resistance equation. **(04 Marks)**
    b. The expected value of the voltage across a resistor is 80 V. However the measurement gives a value of 79 V calculate (i) absolute error   (ii) % error   (iii) Relative accuracy (iv) % of accuracy. **(04 Marks)**
    c. State different types of thermocouples used for RF current measurement and explain each one of them in brief. **(08 Marks)**

OR

2   a. Explain with diagram the operation of true RMS voltmeter. **(08 Marks)**
    b. Explain with diagram the operation of a dc differential voltmeter. **(08 Marks)**

Module-2

3   a. Describe with a diagram, the operation of a voltage to time conversion type DVM. **(08 Marks)**
    b. Explain with a diagram, the working of digital pH meter. **(08 Marks)**

OR

4   a. Describe with a diagram the operation of a successive approximation type DVM. **(08 Marks)**
    b. Describe with the help of a diagram the operation of universal counter-timer. **(08 Marks)**

Module-3

5   a. Draw the basic block diagram of an oscilloscope and explain the function of each block. **(08 Marks)**
    b. Describe with the help of neat block diagram the operation of modern laboratory signal generator. Explain the technique used to improve stability. **(08 Marks)**

OR

6   a. Sketch the block diagram and explain the AF sine and square wave generator. List the various controls on the front panel of AF sine and square wave generation. **(08 Marks)**
    b. Discuss the important features of cathode ray tube (CRT). **(08 Marks)**

Module-4

7   a. Derive the balance equation for wheat stone bridge and mention the limitation. **(06 Marks)**
    b. Determine the value of unknown resistance R_x in a wheat stone bridge if $R_1 = 10$ kΩ, $R_2 = 20$ kΩ and $R_3 = 40$ kΩ. **(02 Marks)**
    c. What is Meggar? Explain basic Meggar circuit. **(08 Marks)**

OR

8 a. Draw the circuit diagram and obtain balance condition for Maxwell's bridge, if bridge constants are $C_1 = 0.5\ \mu F$, $R_1 = 1200\ \Omega$, $R_2 = 700\ \Omega$, $R_3 = 300\ \Omega$, find resistance and inductance of the coil. **(08 Marks)**

   b. Explain with a diagram the operation of stroboscope. **(08 Marks)**

Module-5

9 a. What is a thermistor? Explain different types of thermisters. **(08 Marks)**

   b. List the factors to be considered while selecting transducers. **(08 Marks)**

OR

10 a. Explain with a diagram the operation of resistive pressure transducer. **(08 Marks)**

   b. Explain construction, principle and working of LVDT. **(08 Marks)**

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