CBCS SCHEME

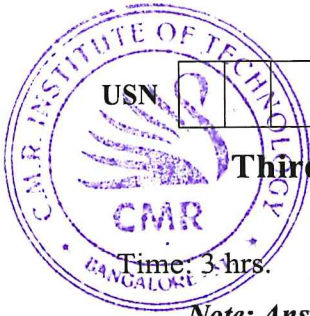**15EC35**

Third Semester B.E. Degree Examination, July/August 2022
Electronic Instrumentation

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define the following terms as applied to an electronic instruments:
   (i) Accuracy (ii) Precision (iii) Error (iv) Sensitivity (v) Resolution **(10 Marks)**
   b. Calculate multiplier resistance for a voltage range of (0-10)V. If a full-scale deflection current is 40 μA and internal resistance of the meter is 500 Ω. **(06 Marks)**

OR

2 a. Explain the various types of thermocouples used in RF ammeter with a sketch. **(08 Marks)**
   b. Explain the operation of True RMS voltmeter with a diagram. **(08 Marks)**

Module-2

3 a. Explain the working principle of successive approximation DVM with a help of block diagram. **(10 Marks)**
   b. Draw a neat block diagram and explain Digital pH meter. **(06 Marks)**

OR

4 a. Describe the working of V-F conversion integrating type DVM. **(08 Marks)**
   b. Explain the operation of Digital frequency meter with a block diagram. **(08 Marks)**

Module-3

5 a. Explain the operation of vertical amplifier used in CRO with a block diagram. **(08 Marks)**
   b. With a neat block, explain the operation of function generator. **(08 Marks)**

OR

6 a. Explain Digital Storage Oscilloscope with a block diagram. **(10 Marks)**
   b. Explain AF sine and square wave generator with a block diagram. **(06 Marks)**

Module-4

7 a. Explain the measurement of phase using phase meter with a neat sketch. **(06 Marks)**
   b. Describe the operation of Wien's bridge with a neat circuit diagram and derive the expression for the frequency. **(10 Marks)**

OR

8 a. The self-inductance of a coil is to be measured by Q-meter. The first measurement results are $f_1 = 8$ MHz and $C_1 = 550$ pF. The second measurement result is 3 times f_1 with a tuning capacitance of 50 pF. Find the stray capacitance and the inductance. **(08 Marks)**
   b. State and derive the expression for Wheatstone bridge at balance condition. **(08 Marks)**

Module-5

9 a. Explain the Resistance Thermometer with a neat sketch. **(06 Marks)**
   b. Explain the construction and working of LVDT with a necessary diagram. **(10 Marks)**

OR

10 a. Define gauge factor. Derive the expression for gauge factor and prove that $K = (1 + 2\mu)$. **(10 Marks)**
    b. Explain the working of piezo-electric transducer with a neat sketch. **(06 Marks)**

* * * * *