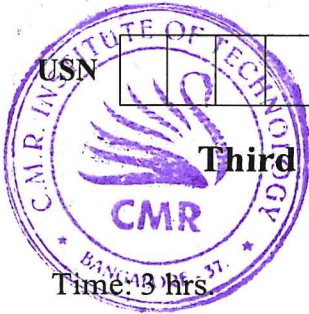


# CBCS SCHEME



15EC35

Third Semester B.E. Degree Examination, Jan./Feb. 2021

## Electronic Instrumentation

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 electronic instruments.  
i) Accuracy ii) resolution iii) Error iv) Sensitivity. (08 Marks)
- b. What is systematic error? Explain the different types of systematic error by listing them. (08 Marks)

OR

- 2 a. Explain the operation of true RMS voltmeter with neat diagram. (06 Marks)
- b. With neat diagram, explain the operation of DC differential voltmeter. (06 Marks)
- c. A D'Arsonval movement with a full scale deflection current of  $50\mu\text{A}$  and internal resistance of  $500\Omega$  is to be converted into a multirange voltmeter. Determine the value of multiplier required for 0 – 20V, 0 – 50V and 0 – 100V. (04 Marks)

### Module-2

- 3 a. With neat block diagram, explain dual slope integrating meter and also derive the unknown voltage equation. (08 Marks)
- b. Describe the operation of a successive approximation type DVM with a neat sketch. (08 Marks)

OR

- 4 a. Explain digital pH meter with a neat diagram. (08 Marks)
- b. With a neat sketch, explain the working of a digital frequency meter. (08 Marks)

### Module-3

- 5 a. Draw the basic block diagram of an oscilloscope and explain the function of each block. (08 Marks)
- b. Explain the operation of a digital storage oscilloscope with a neat diagram. (08 Marks)

OR

- 6 a. Describe the operation of a function generator with a neat diagram. (08 Marks)
- b. List the basic requirements of a pulse. (04 Marks)
- c. Sketch the block diagram and explain the AF sine and square wave generator. (04 Marks)

**Module-4**

- 7 a. Explain the operation of a phase meter with relevant diagrams. (08 Marks)  
b. Describe the operation of Q-meter with relevant diagrams and equations. (08 Marks)

**OR**

- 8 a. Find the equivalent parallel resistance and capacitance that causes a Wien bridge to null with the following component values.  $R_1 = 3.1k\Omega$ ,  $C_1 = 5.2\mu F$ ,  $R_2 = 25K\Omega$ ,  $f = 2.5KHz$  and  $R_4 = 100K\Omega$ . Draw the bridge circuit for the above. (08 Marks)  
b. Explain the operation of a Wheat stone's bridge with relevant diagram and derive the equation when the bridge is balanced. (08 Marks)

**Module-5**

- 9 a. Explain the working of LVDT with relevant diagrams. (08 Marks)  
b. Explain briefly the working of a resistive position transducer with neat diagram. (08 Marks)

**OR**

- 10 a. What is a transducer? Explain how to select a transducer. (08 Marks)  
b. Explain the different types of thermistor with neat diagrams. Mention its advantages and limitations. (08 Marks)

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