

CBCS SCHEME

15EC35



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Third Semester B.E. Degree Examination, Aug./Sept. 2020 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. Explain the following with examples.
 - i) Accuracy
 - ii) Resolution
 - iii) Significant Figures. (06 Marks)
- b. Explain the working of True RMS voltmeter with the help of a suitable block diagram. (08 Marks)
- c. What is loading effect in voltmeters? (02 Marks)

OR

- 2 a. Convert a basic D'Arsonval movement with internal resistance of 50Ω and full scale deflection current of 2mA into a multirange dc voltmeter with voltage range of 0-10V, 0-50V, 0-100V and 0-250V. Connect the multiplier resistances in series with D'Arsonval movement. (10 Marks)
- b. Explain the operation of a Transistor voltmeter with a neat sketch. (06 Marks)

Module-2

- 3 a. With a block schematic, explain the principle and working of Dual slope integrating type DVM. (08 Marks)
- b. Explain the working of a Digital, Tachometer. (06 Marks)
- c. Determine the resolution of $3\frac{1}{2}$ digit display on 1V and 10V ranges. (02 Marks)

OR

- 4 a. Explain the working of a successive Approximation DVM with its block diagram. (08 Marks)
- b. With neat circuit diagrams, explain its operation of Digital Frequency Meter. (08 Marks)

Module-3

- 5 a. Explain the CRT features briefly. (06 Marks)
- b. List the advantages of using -ve supply in CRO? (02 Marks)
- c. Explain the operation of an AF sine/square generator with the help of block diagram. (08 Marks)

OR

- 6 a. Explain in detail the working of Digital Storage Oscilloscope. (08 Marks)
- b. Explain in detail the working of function generator with a neat block diagram. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-4

- 7 a. Explain the working of a Meggar instrument with a neat sketch. (07 Marks)
b. Write a note on Stroboscope principle and working. (05 Marks)
c. A capacitance comparison bridge is used to measure a capacitive impedance at a frequency of 2KHz. The bridge constants at balance are $C_3 = 100\mu\text{F}$, $R_1 = 10\text{ K}\Omega$, $R_2 = 50\text{ K}\Omega$, $R_3 = 100\text{ K}\Omega$. Find the equivalent series circuit of the unknown impedance. (04 Marks)

OR

- 8 a. With a neat circuit diagram, explain the operation of a Q-meter. (06 Marks)
b. Derive the balance condition of Whetstone's bridge. (05 Marks)
c. Explain in detail the circuit of Wagner's earth connection. (05 Marks)

Module-5

- 9 a. List at least five designed properties of electrical transducers. (03 Marks)
b. What are the factors to be considered for the selection of transducer? (03 Marks)
c. Explain the construction, principle and operation of LVDT. (10 Marks)

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OR

- 10 a. Explain the principle of working of a resistive position transducer with a block diagram. (06 Marks)
b. Write a note on Piezoelectric transducer with a neat sketch. (04 Marks)
c. Define the term Thermistor. Explain the various configurations of thermistor. Mention its advantages and limitations. (06 Marks)
