Code No: R1931044 **R19** **SET - 1**

III B. Tech I Semester Supplementary Examinations, June/July-2022

ELECTRONIC MEASUREMENTS & INSTRUMENTATION

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

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UNIT-I

1. a) Explain in detail the different types of errors in measuring instruments. [8M]
   b) Explain with neat circuit diagram the working of any one type of digital voltmeter. [7M]

(OR)

2. a) A basic D'Arsonval movement with a full deflection of 50 μA and internal resistance of 500 Ω is used as voltmeter. Formulate the necessary equation and calculate the value of multiplier resistance needed to measure a voltage range of 0-10 V. [8M]
   b) How is multi-meter used to measure different parameters? Explain. [7M]

UNIT-II

3. a) Draw the block diagram of an audio spectrum analyzer. Explain its operation. [8M]
   b) Define a Wave Analyzer and list its types. [7M]

(OR)

4. a) With neat sketch explain the working principle of function generator. [8M]
   b) What are the different Types of Harmonic Distortion? Define Total Harmonic Distortion (THD). [7M]

UNIT-III

5. a) Explain the internal structure of CRT and describe the principle of electrostatic focusing. [8M]
   b) Compare analog storage oscilloscope and digital storage oscilloscope. [7M]

(OR)

6. a) Explain the modes of operation of digital storage oscilloscope. [8M]
   b) Describe the different types of sweeps used in CRO. [7M]

UNIT-IV

7. a) Describe the circuit of Kelvin double bridge used for measurement of low resistance. Derive the conditions for balance. [8M]

   b) An AC bridge has the following constants: [7M]
   Arm AB- Capacitor of 0.5 μF in parallel with 1 kΩ resistance.
   Arm AD- resistance of 2 kΩ.
   Arm DC-Capacitor of 0.5 μF.
   Arm CD-Unknown C_x and R_x in series, frequency 1 kHz.
   Determine the unknown capacitance and dissipation factor.

(OR)

8. a) Explain the theory and working principle of Whetstone's Bridge. Derive the relation for finding unknown resistance. [8M]

   b) With neat sketch explain the basic block diagram of the counter in time interval mode for measuring time interval. [7M]

UNIT-V

9. a) How the transducers are classified on the basis of principle of operation? Discuss. [8M]

   b) With neat diagram explain potentiometer resistance transducer. List advantages and disadvantages. [7M]

(OR)

10. a) With a neat sketch explain LVDT for velocity measurement. [8M]

    b) Explain how to measure temperature? [7M]

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