Code No: R203104B **R20** SET - 1

III B. Tech I Semester Supplementary Examinations, July – 2023
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1. a) Define the sensitivity of a multimeter. Explain the operation of a multimeter using a simple block diagram. [7M]
   b) Two ammeters are joined in series in a circuit carrying 100 A. one ammeter has a resistance of 10000 ohm shunted by 0.10 ohm while the other ammeter has a resistance of 150 ohm shunted by 0.02ohm. If the shunts are interchanged what would be the readings of the instruments. [7M]

(OR)

2. a) Describe indetail about working principle of a potentiometer type digital voltmeter. [7M]
   b) Explain about the dynamic response of a second order instrument. [7M]

UNIT-II

3. a) Draw the block diagram of function generators and explain its operation. [7M]
   b) Explain the circuits and working of wave analyzers used for audio frequency and megahertz range. [7M]

(OR)

4. a) Explain indetail about Total harmonic distortion. [7M]
   b) Sketch and explain in detail about the Spectrum analyzer. [7M]

UNIT-III

5. a) Draw the block diagram of general purpose CRO and state the functions of each block. [7M]
   b) Explain the circuit diagram of delay line circuit with its operation. [7M]

(OR)

6. a) State about various probes used in CROs. [7M]
   b) Draw the block diagram of sampling oscilloscope and explain indetail about it. [7M]

UNIT-IV

7. a) State the limitations of Wheat stones bridge and Explain the principle of Kelvin's bridge to obtain the unknown resistance expression. [7M]
   b) The 3 impedances of AC bridge are Z1 = 200 Ω <600, Z2 = 400 Ω <900, Z3 = 300 Ω <00, calculate Z4 when the bridge is balanced? [7M]

(OR)

8. a) Determine the balance equation for Maxwell's bridge used for measurement of unknown inductance and draw the phasor diagram at balance condition. [7M]
   b) Draw the Wien bridge and derive the expression for the frequency of excitation signal at balance. [7M]

UNIT-V

9. a) Explain about the working principle of capacitive transducers. [7M]
   b) What is Piezo-electric effect? Explain the operation of Piezo-electric transducer. [7M]

(OR)

10. a) What is the principle and operation of a thermocouple type RF ammeter? [7M]
    b) Explain the working of bonded strain gauge for the measurement of force. [7M]