

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Electronics & Communication Engg.)(Sem.-4)
ELECTRONIC MEASUREMENT & INSTRUMENTATION

Subject Code : BTEC-404

M.Code : 57596

Date of Examination : 09-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly:

- a. Name three detectors used in AC bridges.
- b. Write the working principle of Nixie Tube.
- c. Differentiate between Accuracy and Precision.
- d. What will be the output on screen of CRO if a sinusoidal voltage is applied to the vertical deflection plates but no voltage is applied to horizontal deflection plate?
- e. What is the relation between true and apparent value of resistance and Q for a seriesresonant circuit?
- f. What is the principle of harmonic distortion analyzer?
- g. What controls the frequency of the displayed signal on CRO? Explain.
- h. What are the various dynamic characteristics of instrumentation system?
- i. What do you understand by LVDT?
- j. Give the diagram and description of 7-segmental LED display.

SECTION-B

2. With the help of block diagram and suitable waveforms, explain Ramp type digital voltmeters.
3. Explain the working of Strain Gauge as Force Sensor.
4. Explain the principle and various components used for magnetic recorders.
5. How can the capacitance be measured? Give its circuit and derive the relations.
6. Explain the principle and various components used for digital tape recorders.

SECTION-C

7.
 - a) Give construction and working of PMMC instruments with torque equation.
 - b) A PMMC has a coil dimension of $17\text{mm} \times 13\text{mm}$. The flux density in the air gap is $1.9 \times 10^{-3} \text{ Wb/m}^2$ and spring constant is $0.17 \times 10^{-6} \text{ Nm/rad}$. Determine the number of turns required to produce an angular deflection of 90° when a current of 7mA flows through the coil.
8.
 - a) Explain how Wein bridge can be used for experimental determination of frequency. Derive the expression for frequency in terms of bridge parameters.
 - b) Explain the circuit and working of Kelvin Double bridge.
9.
 - a) Explain the block diagram of CRO in detail. Give the application of CRO for measurement of phase and frequency.
 - b) Explain the working of spectrum analyzer.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.