WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 4th Semester Examination, 2021

ELSACOR10T-ELECTRONICS (CC10)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

GROUP-A

1. Answer any ***five*** questions from the following**:** 2×5 = 10

   (a) What is the function of aquadag in a CRT?

   (b) Write two advantages of Semiconductor Strain Gauge.

   (c) What do you mean by dynamic characteristics of an instrument?

   (d) The Lissajous pattern on an CRO is stationary and has five horizontal and two vertical tangencies. The frequency of the horizontal input is 1000 Hz. Determine the frequency of the vertical input.

   (e) What is Piezo-resistive effect?

   (f) The current through a resistor is 2.5 A, but the measurement yields a value of 2.45. Calculate the absolute error and the percentage error of the measurement.

   (g) What are the disadvantages of weighted resistor DAC?

   (h) What is loading effect? Explain with one example.

GROUP-B

Answer any *six* questions from the following 5×6 = 30

2. (a) What are the resolutions of a $3^{1/2}$ digit display on 1 V and 10 Volt ranges of a digital meter? 2

   (b) By using a meter, the following readings were taken 1+2

   1.34 , 1.38 , 1.56 , 1.47 and 1.42

   Calculate (i) mean , (ii) variance of the obtained data.

3. Draw the circuit diagram of Anderson Bridge. Find out the expression of unknown inductance of the Bridge. 1+4

4. (a) Write down the advantages and disadvantages of Kelvin double bridge. 2

   (b) Calculate the frequency of unknown a.c. supply using Wien's Bridge. Given that R_1 =1 Kohm, R_3 = 10 Kohm, C_1 = 5 mF and C_3 = 0.5 mF. 3

5. Give the circuit diagram of a R-2R ladder DAC and explain its operation. 5

6. Define deflection sensitivity. Find out its expression for electrostatic deflection system of a CRO. 1+4

7. (a) Why is a delay line used in the vertical section of an oscilloscope? Explain with the block diagram. 3

   (b) What are the advantages of dual trace over dual beam CROs for multiple trace? 2

8. (a) What are the advantages and disadvantages of LVDT? 3

   (b) A LVDT has a secondary voltage of 5 V for displacement of 12.5 mm. Determine the output voltage for a core displacement of 8 mm from its central position. 2

9. (a) What is a load cell? Where is it used? 3

   (b) What is the basic difference between active and passive transducers? 2

10. (a) What are the advantages of an electronic voltmeter over a multimeter? 2

    (b) Draw the block diagram of an integrating type DVM. 3

11. Explain the working principle of Resistance Temperature Detector. 5

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within* 1 *hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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