



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Honours 4th Semester Examination, 2020

**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.*

**Answer Question No. 1 and any two from the rest**

**GROUP-A**

1. Answer any *five* questions from the following: 2×5 = 10
- (a) State one difference between active and passive probe.
  - (b) What is the function of aquadag in CRO?
  - (c) State two advantages of R-2R ladder over weighted-resistor method.
  - (d) Define an active transducer.
  - (e) Define (i) Resolution and (ii) Accuracy of a measuring instrument.
  - (f) What is the function of a blanking circuit in a CRO?
  - (g) What is the drawback of rectifier-type a.c. voltmeter?
  - (h) State one reason why Hay's bridge is preferred over Maxwell's Bridge.

**GROUP-B**

2. (a) With a neat sketch, explain construction and working of an LVDT. 8
- (b) What is gauge factor? Derive an expression of gauge factor and prove that  $k = 1 + 2\mu$ . 7
3. (a) Derive with necessary diagram expression for self-inductance and resistance of an unknown inductor using Anderson's bridge. 8
- (b) Draw diagram of a 4-bit weighted resistor Digital to Analog converter and derive Expression for its resolution. 7

4. (a) Explain electrostatic focusing system in a C.R.O. 6  
(b) Draw the block diagram of the Horizontal deflection system in a C.R.O. What is the need for a delay line? 2+2  
(c) Explain working of time-base generator circuit. 5
5. (a) A basic D'Arsonval movement with an internal resistance of  $50\Omega$  and a full-scale deflection current of  $2\text{mA}$  is to be converted to a voltmeter with a range  $0\text{-}10\text{V}$ . Determine the resistance required. 4  
(b) Explain working of a true-RMS voltmeter with necessary diagram. 6  
(c) Draw the block diagram and explain the working principle of successive approximation type DVM. 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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