RAMAKRISHNA MISSION VIDYAMANDIRA
(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2017
SECOND YEAR [BATCH 2016-19]
Date : 16/12/2017   **ELECTRONICS [General]**
Time : 11 am – 1 pm   **Paper : III**   Full Marks : 50

Answer _any five_ questions from the following: [5 X 10]

1. a) Define accuracy, resolution and sensitivity of measuring a variable.   3
    b) What do you mean by systematic error and random error.   2
    c) A voltmeter is accurate to 98% to its full scale reading.
        (i) If a voltmeter read 200V on 500V range, what is the absolute error?
        (ii) What is the percentage error reading of part (i)?   5

2. a) Draw a neat schematic diagram of CRT.   2
    b) Explain the operation of electron gun, vertical and horizontal amplifier within a CRT.   2+2+2
    c) Give brief idea of probes used in a CRT.   2

3. a) What is a transducer?   2
    b) How do you choose a transducer on the basis of different parameters — explain it.   3
    c) Draw and explain the working principle of a LVDT with its resultant output.   5

4. a) Comment on current ratings for TTL, ECL and MOS technology.   2
    b) Write a short note on CMOS inverter.   3
    c) Draw and explain the operation of NAND gate and NOR gate designed with CMOS.   5

5. a) What do you mean by scale of integration? In this context state Moor's law.   2+2
    b) Differentiate between MSI, LSI and VLSI.   3
    c) Write a short note on analog VLSI chips.   3

6. a) Write down different features of VHDL.   3
    b) Explain design units of VHDL.   3
    c) How package declaration is made in VHDL – explain with the help of an example.   4

7. a) Write a VHDL code for a 2 to 4 decoder.   7
    b) What are the steps to simulate a VHDL code?   3

8. Write short notes on **any two** of the following: 2 X 5
    a) Storage oscilloscope
    b) NOT gate using TTL
    c) FPGA
    d) Double beam CRO
    e) Strain gauge

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