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15EC35

Third Semester B.E. Degree Examination, June/July 2019
Electronic Instrumentation

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Explain different types of static errors of a measuring instrument. (08 Marks)
    b. What is a thermocouple? Explain different type of thermocouple. (08 Marks)

OR

2   a. Explain the operation of true RMS voltmeter with diagram. (08 Marks)
    b. Two different voltmeters are used to measure the voltage across R_b in the circuit of Fig.Q2(b)
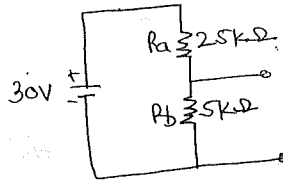

Fig.Q2(b)

The meters are as follows:
meter1: S = 1 kΩ/V   Range = 10V
meter2
: S = 20 kΩ/V   Range = 10V
Calculate :
(i)   The voltage across R_b without any meter across it.
(ii) The voltage across R_b when meter1 is used.
(iii) The voltage across R_b when meter2 is used.
(iv) Error in the voltmeters. (08 Marks)

Module-2

3   a. Describe the principle operation of successive approximation DVM. (08 Marks)
    b. Explain the operation of a microprocessor based instrument with a block diagram. (08 Marks)

OR

4   a. Explain the working of Dual-Slope integrating type DVM with the block diagram. (08 Marks)
    b. With the help of diagram, explain the operation of a Digital Tachometer. (08 Marks)

Module-3

5   a. Draw the block diagram of CRT and explain the function of each block. (08 Marks)
    b. Explain the principle of operation of square and pulse generator with its block diagram. (08 Marks)

OR

6   a. Explain the operation of a digital read out oscilloscope with block diagram. (08 Marks)
    b. Describe the operation of a AF sine and square wave generator with diagram. (08 Marks)

Module-4

7   a. Explain the operation of an Analog pH meter using hydrogen electrode.   (08 Marks)
    b. Derive the balance equation for Wheatstone's bridge and mention its advantages and
        limitations.   (08 Marks)

OR

8   a. Explain Wagner's earth connection.   (08 Marks)
    b. Explain the principle operation of a field strength meter with its block diagram.   (08 Marks)

Module-5

9   a. Explain the operation of a Resistive Position Transducer with block diagram. (08 Marks)
    b. Explain construction and principle operation of LVDT.   (08 Marks)

OR

10 a. Explain the operation of a resistance thermometer and mention its advantages and
        limitations.   (08 Marks)
    b. Write note on:
        (i) Piezoelectric Transducers   (ii) Strain Gauges.   (08 Marks)

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