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06EE663

Sixth Semester B.E. Degree Examination, December 2010
Electronic Instrumentation

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. State the three types of systematic errors giving examples for each. **(06 Marks)**

b. The current through a resistor is 2.5 A, but the measurement yields a value of 2.45 A. Calculate the absolute error, percentage error, relative accuracy and percentage accuracy. **(04 Marks)**

c. How is voltage in microvolts range measured? Explain with the help of a neat diagram. What is the use of chopper in micro voltmeter? **(10 Marks)**

2 a. Differentiate between shunt type and series type ohm meter. **(04 Marks)**

b. A series ohm meter uses a 50 Ω basic measurement requiring a full scale deflection of 1 mA. The internal battery voltage is 3 V. The desired scale marking for half scale deflection is 2000 Ω. Calculate :

i) Values of R_1 and R_2

ii) Maximum value of R_2 to compensate 10% drop in battery. **(06 Marks)**

c. Explain with the help of a neat circuit diagram, the working of dual slope DVM. **(08 Marks)**

d. An integrator contains 100 KΩ and 1 μf capacitor. If the applied voltage to the integrator input is 1 V, what voltage will be present at the output of integrator after 1 sec? **(02 Marks)**

3 a. Explain the operation of digital multimeter. **(07 Marks)**

b. Explain with the help of a neat sketch, the working of digital frequency meter. **(06 Marks)**

c. Explain the operation of digital capacitance meter. **(07 Marks)**

4 a. List specifications that should be considered while selecting a recording instrument. **(04 Marks)**

b. Explain the working of X – Y recorder. **(06 Marks)**

c. Describe applications of recording instruments. **(04 Marks)**

d. Explain the working of strip chart recorder. **(06 Marks)**

PART – B

5 a. Draw a block diagram of a function generator. Explain the method of producing sine waves. **(10 Marks)**

b. Mention standard specifications of signal generator. **(04 Marks)**

c. List the various controls on the front panel of a pulse generator. Mention their uses. **(06 Marks)**

6 a. Explain with the help of a neat diagram, the working of vector impedance meter. **(08 Marks)**

b. How is field strength measured? **(06 Marks)**

c. How can a Q-meter be used for the measurement of:

i) D.C resistance of a circuit

ii) Stray capacitance. **(06 Marks)**

7 a. On what principle does R-X meter operate? Explain. **(06 Marks)**

b. How can transistor tester be used for measurement of the following?

i) Faulty transistor

ii) Beta gain **(06 Marks)**

c. What are the functions of transducer? **(04 Marks)**

d. List four types of electrical pressure transducer. Describe the application of each type. **(04 Marks)**

8 a. Explain the operating principle of LVDT. **(06 Marks)**

b. Explain seven segment LED display. **(04 Marks)**

c. What are the advantages of LCD display over Nixie tube and LED display? **(04 Marks)**

d. What are the operating principles of LCD display? **(06 Marks)**

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