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06EE663

Sixth Semester B.E. Degree Examination, May/June 2010
Electronic Instrumentation

Time: 3 hrs. Max. Marks:100

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. What are the sources of errors in the measurement? **(06 Marks)**

b. What are the different types of static errors? Explain how they can be minimized. **(10 Marks)**

c. The expected value of the voltage across a resistor is 90 volts. However while measuring, it gave a value of 88 volts. Determine : i) Absolute error ; ii) Percentage error. **(04 Marks)**

2 a. With a neat sketch, explain the TRUE RMS voltmeter. **(10 Marks)**

b. With a neat sketch, explain the micro – voltmeter. **(10 Marks)**

3 a. With a neat figure explain the digital tachometer. **(05 Marks)**

b. Explain the principle of operation of a digital frequency meter. With a neat sketch, explain the frequency measurement using flip flops. **(10 Marks)**

c. With the necessary figure, explain a digital capacitance meter. **(05 Marks)**

4 a. Why recorders are essential? Classify them. **(03 Marks)**

b. With a neat figure, explain the strip chart recorder. What are the different types of marking systems used in strip chart recorders? **(10 Marks)**

c. Explain the operating principle of null recorders. Explain any one of it. **(07 Marks)**

PART – B

5 a. Differentiate between function generator and signal generator. **(04 Marks)**

b. With a neat sketch, explain function generator. **(10 Marks)**

c. With a neat figure, explain AF sine and square wave generator. **(06 Marks)**

6 a. Explain practical Q-meter circuit, with a neat figure. What are the applications of Q-meter? **(08 Marks)**

b. With a neat figure, explain the R – X meter. **(08 Marks)**

c. Determine the self capacitance of the coil, when following measurements were made. At frequency (f_1) = 2 Mhz, the capacitance of capacitor (c_1) = 450 PF. When the frequency is increased to (f_2) = 6 Mhz, the capacitance of capacitor (c_2) = 60 PF. **(04 Marks)**

7 a. For the wire wound resistance guage, , obtain the equation of guage factor neglecting the piezoresistive effect **(08 Marks)**

b. With a neat sketch, explain LVDT. Bring out any two merits and demerits of LVDT. **(08 Marks)**

c. A resistance strain guage with the guage factor of 3, cemented to a steel member, is subjected to strain of 2.5×10^{-6}. If the original value of resistance is 115 Ω, calculate the change in the resistance. **(04 Marks)**

8 Write briefly on the following :

a. Megger b. Thermister

c. X – Y recorder d. Dual slope integrating tpe DVM. **(20 Marks)**

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