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06IT35

Third Semester B.E. Degree Examination, June-July 2009
Electronic Instrumentation

Time: 3 hrs. Max. Marks:100

Note: *1.Answer any FIVE full questions, selecting at least TWO questions from each part.*
2.Missing data to be assumed suitably.

PART – A

1 a. Write a note on Gross and Systematic errors. How these errors can be controlled? **(06 Marks)**

b. Component manufacturer constructs certain resistances to be between 1.33K and 1.47K. What tolerance should be stated? If the resistance values are specified at 25°C, calculate maximum resistance at 75°C if temperature coefficient is +500 ppm/°C. **(06 Marks)**

c. Explain the working of AC voltmeter using Full wave bridge rectifier. **(08 Marks)**

2 a. A 4½ digit DVM has an accuracy of ± 0.5% of reading ± 1 digit.
i) What is the possible error, in volts when the instrument is reading 5V on 200V range.
ii) What is the possible error, in volts when the instrument is reading 0.1V on 2V range? **(10 Marks)**

b. With the help of block diagram explain the working of Dual slope DVM. **(10 Marks)**

3 a. Explain the working of dual trace CRO. **(10 Marks)**

b. Compare alternate sweep with chopped-sweep. **(04 Marks)**

c. Write a note on following controls available on CRO panel:
i) Time-base ii) X – shift iii) Y – shift **(06 Marks)**

4 a. Explain the operation of Delayed time-base system. **(10 Marks)**

b. Sketch a diagram to show the construction of a variable persistence storage CRT. Explain its operation. **(10 Marks)**

PART – B

5 a. Draw the block diagram of function generator and explain the working of each block. **(10 Marks)**

b. Explain the working of frequency – synthesizer. **(10 Marks)**

6 a. Derive an expression for deflection current (I_g) of an unbalanced Wheatstone's bridge. **(10 Marks)**

b. A capacitance comparison bridge is used to measure a capacitive impedance at a frequency of 2 kHz. The bridge constant at balance are C3=100 μF, R_1 = 20 kΩ , R_2 = 50 kΩ, R_3=100kΩ. Find the equivalent series circuit of the unknown impedance. Show the bridge diagram. **(10 Marks)**

7 a. What is the difference between active and passive transducers? **(04 Marks)**

b. Explain how to use a bonded resistance wire strain gauge. **(06 Marks)**

c. Show the construction of LVDT. Explain its operation and list any three advantages. **(10 Marks)**

8 a. Describe the operation of photo electric transducer. **(08 Marks)**

b. Name any four display devices. **(04 Marks)**

c. What is a signal conditioner? Briefly explain the operation of DC signal conditioning system. **(08 Marks)**

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