Third Semester B.E. Degree Examination, December 2011
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. Explain the following in brief :
      i) Gross errors ;   ii) Relative errors ;   iii) Accuracy ;   iv) Resolution.   **(08 Marks)**
   b. Explain the working of a true RMS voltmeter with the help of a suitable block diagram. **(08 Marks)**
   c. Define sensitivity. Determine the value of the multiplier resistance on the 50V range of a dc voltmeter that uses a 250 μA meter movement with an internal resistance of 100Ω. **(04 Marks)**

2. a. Explain the ramp type digital voltmeter with the help of a block diagram. **(10 Marks)**
   b. With block diagram, explain the principle and operation of digital frequency meter. **(10 Marks)**

3. a. Explain the CRT features briefly. **(05 Marks)**
   b. Draw the basic block diagram of an oscilloscope. Explain the functions of each block. **(10 Marks)**
   c. Describe the following modes of operation available in a dual trace oscilloscope :
      i) ALTERNATE mode ;   ii) CHOP mode. **(05 Marks)**

4. a. Explain why time delay is necessary in oscilloscopes. **(04 Marks)**
   b. Explain the principle and operation of sampling oscilloscope with relevant block diagrams. **(08 Marks)**
   c. Explain the operation of digital storage oscilloscope with the help of a block diagram. Mention the advantages. **(08 Marks)**

PART – B

5. a. With block diagram, explain conventional standard signal generator. Mention the applications. **(10 Marks)**
   b. Explain the operation of a function generator with the help of a block diagram. **(10 Marks)**

6. a. Explain the Wheatstone bridge and derive the balance equation for Wheatstone bridge. Mention the limitations. **(08 Marks)**
   b. Find the equivalent parallel resistance and capacitance that causes a wein bridge to null with the following component values :
      $R_1 = 3.1$ kΩ, $C_1 = 5.2$ μF, $R_2 = 25$ kΩ, $f = 2.5$ kHz and $R_4 = 100$ kΩ. **(06 Marks)**
   c. Write a note on Wagner's earth connection. **(06 Marks)**

7. a. What are the factors to be considered for the selection of better transducer? Explain. **(08 Marks)**
   b. Explain the construction, principle and operation of LVDT. **(12 Marks)**

8. a. Explain piezo electric transducer, with circuit diagram. **(08 Marks)**
   b. Compare LED and LCD types of displays. **(06 Marks)**
   c. Write a short note on signal conditioning system. **(06 Marks)**

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