Third Semester B.E. Degree Examination, June/July 2015
Electronics Instrumentation

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Define the following with example:
      i) Accuracy   ii) Precision   iii) Resolution   iv) Significant figures.   **(08 Marks)**
   b. With a schematic, explain a true rms voltmeter.   **(06 Marks)**
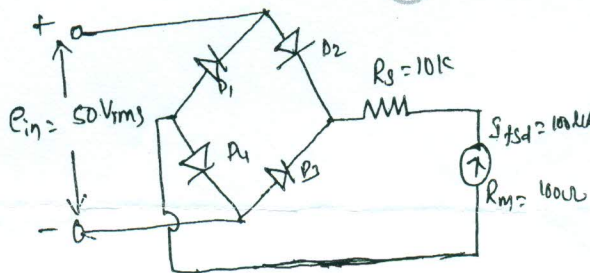   c. Calculate the value of the multiplier resistor for a 50V rms ac range on the voltmeter as shown in Fig.Q.1(c).   **(06 Marks)**

Fig.Q.1(c)

2 a. Give the working principle of following:
      i) V – F type DVM   ii) Successive approximation.   **(12 Marks)**
   b. Explain the principle, construction and working of a digital frequency meter.   **(08 Marks)**

3 a. Draw the basic block diagram of an oscilloscope and explain the functions of each block and mention the advantages of negative HV supply.   **(10 Marks)**
   b. Explain dual trace oscilloscope with a neat block diagram.   **(10 Marks)**

4 a. Explain the need for a delayed time base oscilloscope. Draw the block diagram of a delayed time base, and explain how it operates.   **(10 Marks)**
   b. With block diagram, explain the operation of an analog storage oscilloscope. **(10 Marks)**

PART – B

5 a. Explain the operation of conventional standard signal generator with the help of block diagram.   **(06 Marks)**
   b. Write a brief note on function generator.   **(04 Marks)**
   c. Explain the operation of a sweep frequency generator with the help of a suitable block diagram. Mention its applications.   **(10 Marks)**

6 a. Explain the operation of the Maxwell's bridge, with a neat circuit diagram. Derive an expression for unknown values of resistance and inductance. What are the limitations of Maxwell's bridge? **(10 Marks)**

b. Explain the operation of the capacitance comparison bridge, with a neat circuit diagram and derive the necessary equations. **(06 Marks)**

c. A capacitance comparison bridge is used to measure a capacitive impedance at a frequency of 2kHz. The bridge constants at balance are $C_3 = 100\mu F$, $R_1 = 10K\Omega$, $R_2 = 50K\Omega$, $R_3 = 100K\Omega$. Find the equivalent series circuit of the unknown impedance. **(04 Marks)**

7 a. List at least five advantages of electrical transducer. **(05 Marks)**

b. Explain the method of measuring displacement using LVDT with a suitable diagram. State the advantages and disadvantages of LVDT. **(10 Marks)**

c. Write a note on differential output transducers. **(05 Marks)**

8 a. Write a note on photo transistor. **(05 Marks)**

b. List at least five classifications of digital displays. **(05 Marks)**

c. Explain the operation of the measurement of power by means of bolometer bridge, with the suitable circuit. **(10 Marks)**

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