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)
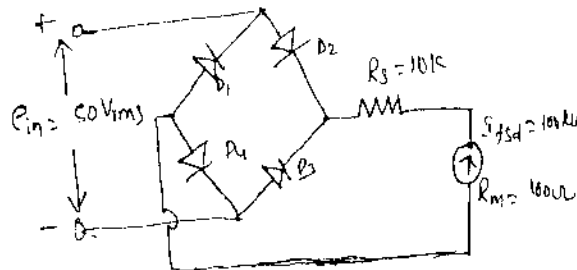

Fig.Q.1(c)

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 = 100μF, R_1 = 10KΩ, R_2 = 50KΩ, R_3 = 100KΩ. 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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