10IT35

Third Semester B.E. Degree Examination, June/July 2016
Electronic Instrumentation

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a.   Explain the following with examples:
         i) Accuracy   ii) Precision   iii) Resolution   **(06 Marks)**
    b.   A component manufacturer constructs certain resistances to be anywhere between 1.14 KΩ
         and 1.26 KΩ and classifies them to be 1.2 KΩ resistors. What tolerance should be stated? If
         the resistance values are specified at 25°C and resistor have a temperature coefficient of
         +500 ppm/°C. Calculate the maximum resistance that one of these components might have
         at 75°C.   **(07 Marks)**
    c.   Determine the reading obtained with a dc voltmeter in the circuit Fig.Q1(c). When the
         switch is set to position 'A', then set the switch to position 'B' and determine the reading
         obtained with a HWR and FWR ac voltmeter.
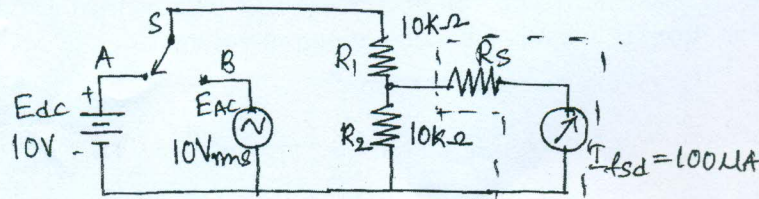

Fig.Q1(c)   **(07 Marks)**

2   a.   With a neat block diagram, explain the principle and working of successive approximation
         DVM.   **(07 Marks)**
    b.   Explain with the help of block diagram the operation of a DFM.   **(07 Marks)**
    c.   With a block schematic, explain the principle and working of dual slope integrating type
         DVM.   **(06 Marks)**

3   a.   Explain C.R.T. features briefly.   **(08 Marks)**
    b.   List the advantages of using negative supply in C.R.O.   **(04 Marks)**
    c.   Describe with a diagram and waveform the operation of a dual trace CRO in ALTERNATE
         and CHOP Mode.   **(08 Marks)**

4   a.   With a block diagram, explain construction and working of digital storage oscilloscope.
                                                                                    (10 Marks)
    b.   Draw basic block diagram of a delayed-time-base (DTB) system. Sketch waveform and
         explain the operation.   **(10 Marks)**

PART – B

5   a.   With a block diagram, explain modern laboratory signal generator.   **(10 Marks)**
    b.   Draw the block diagram of a frequency synthesizer using PLL. Explain its operation.
                                                                                    (10 Marks)

6 a. An unbalanced Wheatstone bridge given in Fig.Q6(a). Calculate the current through Galvanometer.

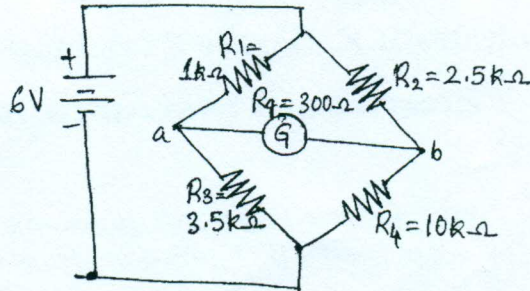Fig.Q6(a)   (07 Marks)

   b. State and derive the two balance conditions for a Wein bridge.   (07 Marks)

   c. The arms of an ac Maxwell's bridge are arranged as follows:
      AB and BC are non-reactive resistors of 100 Ω each, DA a standard variable reactor L_1 of resistance 32.7 Ω and CD consists of a standard variable resistor R in series with a coil of unknown impedance Z, balance was found with L_1 = 50 mH and Z_1 = 1.36 R. Find R and L of coil.   (06 Marks)

7 a. With a neat diagram, explain differential output transducer.   (07 Marks)

   b. State the advantages and limitations of thermistor.   (07 Marks)

   c. A displacement transducer with a shaft stroke of 3.0 in. is applied to circuit of Fig.Q7(c). The total resistance of potentiometer is 5 KΩ. The applied voltage V_t is 5V when the wiper is 0.9 in. from B, what is the value of output voltage?
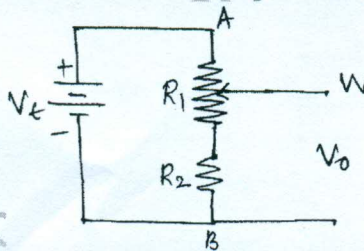

Fig.Q7(c)   (06 Marks)

8 a. With a diagram, explain self balancing bolometer bridge.   (05 Marks)

   b. Explain piezo electrical transducer with a circuit diagram.   (05 Marks)

   c. State important features of LCD displays.   (05 Marks)

   d. Write short notes on LabVIEW.   (05 Marks)

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