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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. (07 Marks)

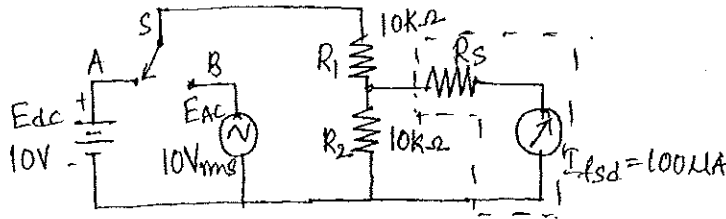


Fig.Q1(c)

(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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and or equations written eg. 42+8 = 50, will be treated as malpractice.

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

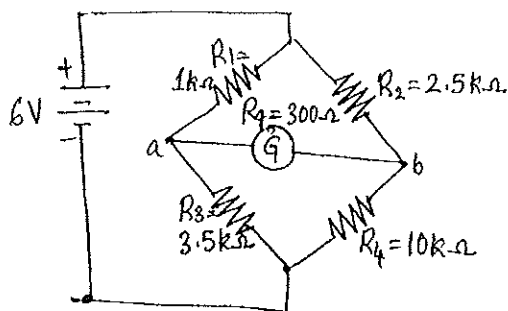


Fig.Q6(a)

(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  $100\ \Omega$  each, DA a standard variable reactor  $L_1$  of resistance  $32.7\ \Omega$  and CD consists of a standard variable resistor  $R$  in series with a coil of unknown impedance  $Z$ , balance was found with  $L_1 = 50\ \text{mH}$  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  $5\ \text{K}\Omega$ . The applied voltage  $V_t$  is 5V when the wiper is 0.9 in. from B, what is the value of output voltage?

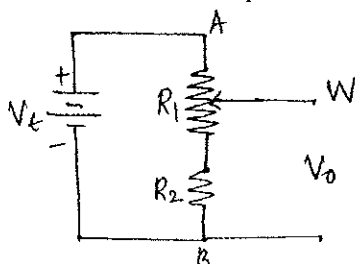


Fig.Q7(c)

(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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