

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 K Ω and 1.26 K Ω and classifies them to be 1.2 K Ω 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.

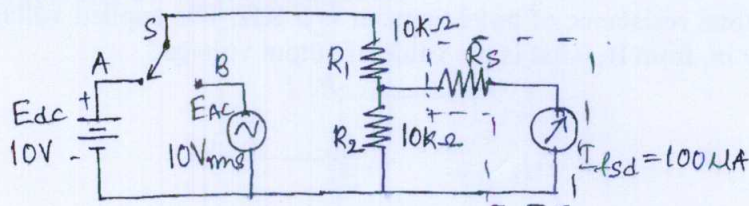


Fig.Q1(c)

(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.

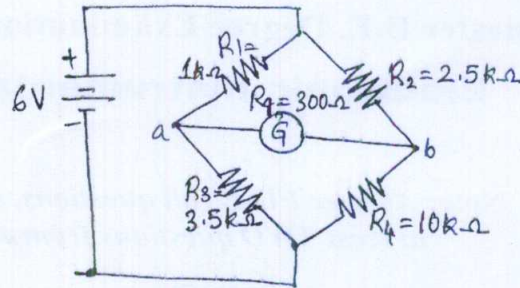


Fig.Q6(a)

(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 100Ω each, DA a standard variable reactor L_1 of resistance 32.7Ω 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_i is 5 V when the wiper is 0.9 in. from B, what is the value of output voltage?

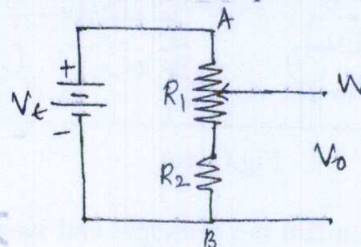


Fig.Q7(c)

(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)
