

B.Tech III Year II Semester (R13) Supplementary Examinations December 2016

**ELECTRONIC MEASUREMENTS & INSTRUMENTATION**

(Electronics &amp; Communication Engineering)

Time: 3 hours

Max. Marks: 70

**PART - A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- A 500 Volts voltmeter is accurate within +/- 1% at full scale. Calculate the limiting error when the instrument is used to measure a voltage of 200 Volts.
  - What are the limitations of thermo couples used in RF ammeter?
  - What is the function of X – Y mode on CRO front panel?
  - What are the applications of CRO?
  - What are the basic characteristics of pulse?
  - What is the function of spectrum analyzer?
  - If the bridge arms are connected with  $R_1 = 2.2 \text{ K}$ ,  $R_2 = 3.9 \text{ K}$ ,  $R_3 = 10 \text{ K}$ , find  $R_4$ .
  - Why Wagner ground connection is used in bridges?
  - Name one passive and active sensors.
  - Categorize photo electric transducers.

**PART - B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT - I**

- 2 Design an ayrton shunt to provide ammeter with current range of 0 – 1 mA, 10 mA, 50 mA and 100 mA. A D'arsonval movement with an internal resistance of 100 ohms and full scale current of 50 uA is used.

**OR**

- 3 With necessary block diagram, explain the function of differential voltmeter.

**UNIT - II**

- 4 Derive the expression for deflection sensitivity of CRT.

**OR**

- 5 Explain the working principle of sampling and storage oscilloscopes.

**UNIT - III**

- 6 Draw the block diagram of logic analyzer and explain its operation.

**OR**

- 7 Draw the block diagram of pulse generator and explain its operation.

**UNIT - IV**

- 8 Draw the circuit of Hay bridge and explain its utility, also derive expressions for unknown components.

**OR**

- 9 Draw the circuit of Schering bridge and explain its utility, also derive expressions for unknown components.

**UNIT - V**

- 10 Explain strain construction principle and also derive expression for gauge factor.

**OR**

- 11 Explain the functioning of five types of free summing devices.

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