

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – SUMMER 2013****Subject Code: 170803****Date: 28-05-2013****Subject Name: Electrical and Electronics Measuring Instruments****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Classify the different types of standards used in measurements. Also discuss the differences between the primary and Secondary standards. **07**
(b) Explain different types of errors that may occur in measurements. **07**

- Q.2** (a) Explain Maxwell's bridge for measurements of unknown inductance. Determine condition for balance. Also mention its applications. **07**
(b) Explain what do you mean by Low, Medium and High resistances. Suggest various suitable methods for measuring them giving justification. Describe any one method to measure a low resistance with accuracy. **07**

OR

- (b) What are the difficulties associated with the measurement of low resistance? Describe how low resistance is measured accurately by Kelvin's double bridge. **07**

- Q.3** (a) Explain (1) Primary transducer – Secondary transducer **07**
(2) Active transducer – Passive transducer.
(b) Describe any one method to measure insulation resistance of a Cable. **07**

OR

- Q.3** (a) A Schering bridge is used for measuring the power loss in dielectrics. The specimens are in the form of discs 0.3 cm thick and have a dielectric constant of 2.3. the area of each electrode is 314 cm² and the loss angle is known to be 9° for the frequency of 50 Hzs. The fixed resistor of the network has a value of 1,000Ω and the fixed capacitance is 50 pF. Determine the variable resistor and capacitor required. **07**
(b) What is transducer? Classify and explain the different types of transducers briefly. **07**

- Q.4** (a) What is Gauge factor? Derive an expression for gauge factor in terms of Poisson's ratio. **07**
(b) Explain construction and working of Thermocouple. Also state merits ,demerits and application of thermocouple. **07**

OR

- Q.4** (a) What are Thermistors? Explain the construction and working of it. **07**
(b) Explain Hall effect transducer. Also state its applications. **07**

- Q.5** (a) Draw the block diagram of basic CRO. Also describe procedure to measure Time, frequency and phase angle using CRO. **07**
(b) Explain construction and working of potential transformer. Also explain ratio and phase angle error. **07**

OR

- Q.5** (a) Explain with block dia. the working of Digital Storage Oscilloscope. **07**
(b) Write short note on Data Acquisition System **07**
