

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015

Subject Code: 2151706**Date: 10/12/ 2015****Subject Name: Industrial Measurement II****Time: 10:30am to 1:00pm****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) Explain Opacity Measurement in Detail. **07**
(b) Explain Turbidity Measurement in Detail. **07**
- Q.2** (a) Explain UV Visible Spectroscopy in Detail **07**
(b) Explain NMR in Details. **07**
- OR**
- (b) Explain Resistive Transducer for Displacement Measurement. **07**
- Q.3** (a) Explain Hydrometers In Detail. **07**
(b) Explain Radiation Detectors In Detail **07**
- OR**
- Q.3** (a) Explain Hygrometers in Detail **07**
(b) What is Chromatography? Explain Gas Chromatography in Detail. **07**
- Q.4** (a) What is meant by Gauge Factor? Derive the expression for the gauge factor. **07**
(b) A potentiometer is used to measure the displacement of a hydraulic arm. The potentiometer is 25 cm long, has a total resistance of 2500 ohms and is operating at 4 W with a voltage source. It has linear resistance-displacement characteristics. Determine **07**
1) Sensitivity of Potentiometer in volts/cm (without loading effect)
2) Loading error in the measurement of displacement at actual input displacement of 15 cm, when the potentiometer is connected to a recorder having a resistance of 5000 ohms.
- OR**
- Q.4** (a) Explain the Absolute type Digital Displacement Transducer. **07**
(b) A bridge circuit has two fixed resistors and two strain gauges all of which have a value of 120 ohms. The gauge factor is 2.04 and the strain applied to twin strain gauges, one in tension and the other in compression, is 0.000165. if the battery current in the initial balanced condition of the bridge is 50 mA, determine **07**
1) The voltage output of the bridge
2) The sensitivity in volt per unit strain
If the galvanometer is connected to output terminals reads 100 μV per scale division & if $1/10^{\text{th}}$ of a division can be read, determine the resolution.
- Q.5** (a) Explain Voltage Sensitive Quarter Bridge & Half Bridge Circuit. **07**
(b) Classify Load Cells. Explain Piezoelectric Load Cell. **07**
- OR**
- Q.5** (a) Explain the definition of Torque. Why we measure the Torque? Explain Driving Type Dynamometer. **07**
(b) Explain Nozzle Flapper type transducer for displacement Measurement. **07**
