

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V(NEW) EXAMINATION – SUMMER 2022

Subject Code:3151708**Date:09/06/2022****Subject Name:Measurement in industry****Time:02:30 PM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Discuss the basic principle of resistive displacement transducer.	03
	(b) Define pH. Discuss any one measuring electrodes used for pH measurement.	04
	(c) Define turbidity with its units of measurement. Discuss the basic principle of turbidity measurement. Explain any one method of turbidity measurement.	07
Q.2	(a) Define viscosity. Discuss the construction of cone and plate type viscometer.	03
	(b) Define relative humidity. Discuss electrolytic hygrometer with neat sketch.	04
	(c) Explain flapper-nozzle transducer for displacement measurement with its characteristic curve.	07
OR		
	(c) Enlist moisture measurement techniques. Explain any one moisture measurement technique used in paper and textile industry.	07
Q.3	(a) What is fringing flux? Discuss its effect on capacitive displacement transducer.	03
	(b) Define interferometry. Discuss Michelson Microlaser interferometer with neat diagram.	04
	(c) Discuss the principle of direct digital displacement transducer. Explain 4-bit absolute encoder for angular displacement measurement.	07
OR		
Q.3	(a) “Excitation frequency in LVDT should be lower than the frequency of core movement”. State True or False. Justify the answer.	03
	(b) Give the difference between Position sensitive detector and CCD detectors used in Laser transducer.	04
	(c) Explain magnetostrictive displacement transducer with its merits and demerits.	07
Q.4	(a) Define gauge factor. Discuss the working principle of strain gauge.	03
	(b) Draw & discuss the signal conditioning circuits used in resistive strain gauge.	04
	(c) Discuss the basic principle of density measurement. Explain bubbler method for density measurement.	07
OR		
Q.4	(a) Define torque. Discuss the significance of torque measurement.	03

- (b) Discuss the construction and working of hydraulic load cell for force measurement. **04**
- (c) Discuss the basic principle of acceleration measurement. Explain piezoelectric accelerometer. **07**
- Q.5** (a) Discuss the basic principle of mass spectrometry. **03**
- (b) Define paramagnetism. Explain deflection type paramagnetic oxygen analyzer. **04**
- (c) Explain the atomic absorption spectrometry with its basic principle. **07**
- OR**
- Q.5** (a) Discuss the basic principle of thermal conductive analyzer used for gas analysis. **03**
- (b) Explain the basic principle of chromatography. Give its detailed classification. **04**
- (c) Draw the schematic diagram of a gas chromatograph. Discuss each of its components in detail. **07**
