

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:3151708****Date:15/09/2021****Subject Name:Measurement in industry****Time:10:30 AM TO 01:00 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

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|------------|---|-----------|
| Q.1 | (a) Explain difference between Absolute and Incremental Encoder. | 03 |
| | (b) Explain in detail Eddy current proximity sensor for displacement measurement. | 04 |
| | (c) Explain LVDT Transducer with Construction, Working, Output Characteristics and Circuit Analysis in detail. | 07 |
| Q.2 | (a) Explain Ultrasonic Displacement Transducer. | 03 |
| | (b) Explain principle, working and construction of Magnetostrictive Transducer for displacement measurement. | 04 |
| | (c) Explain Time-of-flight method and triangulation measurement method of Laser type Displacement Transducer. | 07 |
| | OR | |
| | (c) Explain Resistive Transducer for Displacement Measurement. | 07 |
| Q.3 | (a) Explain Wire Wound type Strain Gauges. | 03 |
| | (b) Explain Foil type and Semiconductor type Strain Gauges with diagram. | 04 |
| | (c) Explain Strain. Derive the expression of Gauge Factor for Strain Measurement. | 07 |
| | OR | |
| Q.3 | (a) Explain Proving Ring in detail. | 03 |
| | (b) Explain the piezoelectric accelerometer with neat diagram. | 04 |
| | (c) Explain the detail of industrial weighing system. | 07 |
| Q.4 | (a) Explain Hydrometer in detail with sketch. | 03 |
| | (b) Explain Torque Tube Displacer Method for Density Measurement. | 04 |
| | (c) Define Relative humidity. What are the different methods of Humidity and moisture measurement? Explain any one method with basic Principle, working & suitable application. | 07 |
| | OR | |
| Q.4 | (a) Explain Bubbler system for Density measurement. | 03 |
| | (b) Explain ORP Measurement Method in detail. | 04 |
| | (c) Define conductivity. What are the different methods of conductivity measurement? Explain any one method with basic Principle, working & suitable application. | 07 |
| Q.5 | (a) Explain Flame Ionization Detector with diagram. | 03 |
| | (b) What is chromatography? Draw block diagram of Gas Chromatography. | 04 |
| | (c) Explain Mass Spectrometers in detail. | 07 |
| | OR | |
| Q.5 | (a) Explain with sketch NMR Spectroscopy. | 03 |
| | (b) Explain in detail IR gas analyzer . | 04 |
| | (c) Explain in detail UV Visible Spectroscopy. | 07 |
