

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2152408****Date: 04/12/2019****Subject Name: Industrial Instrumentation****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.

- Q.1** (a) Differentiate Indicating and recording Instruments. **03**  
(b) Define measurement. Explain generalized measurement System. **04**  
(c) Define followings:- (1) Controlling Instrument (2) Transducer **07**  
(3) Resolution (4) Precision (5) Linearity (6) Accuracy (7) Threshold
- Q.2** (a) Explain in brief Radiation Level Detector. **03**  
(b) Discuss Hall effect Transducer. **04**  
(c) Explain the construction, working and characteristics of LVDT. List the advantages of LVDT. **07**
- OR**
- (c) What is basically the concept of 'Smart Sensor'? Explain with the help of a Diagram the arrangement of its elements. **07**
- Q.3** (a) Explain in brief Piezoelectric Torque Transducers. **03**  
(b) Discuss Proximity Torque Sensors. **04**  
(c) What is strain gauge? Derive the equation of the gauge factor for the resistance strain gauge. **07**
- OR**
- Q.3** (a) Explain load cell. **03**  
(b) Explain in details about various types of Strain Gauges. **04**  
(c) Explain about Resonant Tachometer and Hot Wire Anemometer. **07**
- Q.4** (a) Explain Ultrasonic Flow Meter. **03**  
(b) Discuss Optical Level Sensor. **04**  
(c) Explain the construction and working of RTD. Also enlist the advantages and disadvantages. **07**
- OR**
- Q.4** (a) List advantages of electrical transducers. **03**  
(b) Enlist Methods of Flow measurement. Explain any one in brief. **04**  
(c) Explain the construction, working and characteristics LASER level sensor. List the advantages of LASER level sensor. **07**
- Q.5** (a) Explain Pressure Switch. **03**  
(b) Explain the construction of magnetic-drag tachometer. **04**  
(c) Explain the construction, working and characteristics of thermocouples. List the advantages and disadvantages of thermocouples. **07**
- OR**
- Q.5** (a) Explain in brief about Thermistor. **03**  
(b) Discuss IC's used for Pressure Measurement. **04**  
(c) Explain the construction, working of Pirani Gauge. List the advantages of Pirani Gauge. **07**

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