

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2152408****Date: 31/05/2019****Subject Name: Industrial Instrumentation****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.

- Q.1** (a) Explain generalized Measurement System. **03**
(b) Discuss IC's used for Pressure Measurement. **04**
(c) List advantages of electrical transducers. Discuss the basic requirements of a transducer. **07**

- Q.2** (a) Explain the Hall effect principle. **03**
(b) Compare Unbounded and Bounded strain gauge. **04**
(c) Define transducer. List the different criteria for classification of it. Explain classification on the basis of transduction principle. **07**

OR

- (c) Explain the construction and working of LVDT. List out limitation of LVDT. **07**
- Q.3** (a) Explain in brief Piezoelectric Torque Transducers. **03**
(b) Explain Pressure Switch. **04**
(c) Derive the equation of the gauge factor for the resistance strain gauge. **07**

OR

- Q.3** (a) Explain in brief Load Cell. **03**
(b) Discuss Proximity Torque Sensors. **04**
(c) Explain the construction, working and characteristics of thermocouples. List the advantages and disadvantages of thermocouples. **07**

- Q.4** (a) Discuss Ultrasonic Level Sensor. **03**
(b) Enumerate the advantages and disadvantages of Ultrasonic Flow Meter. **04**
(c) Explain the construction, working of Pirani Gauge. List the advantages of Pirani Gauge. **07**

OR

- Q.4** (a) List out advantages of LVDT. **03**
(b) Explain about Hot Wire Anemometer. **04**
(c) Explain the construction, working and characteristics LASER level sensor. List the advantages of LASER level sensor. **07**

- Q.5** (a) Explain in brief Thermistor. **03**
(b) Write a technical note on: Resonant Tachometer. **04**
(c) What is basically the concept of 'Smart Sensor'? Explain with the help of a Diagram the arrangement of its elements. **07**

OR

- Q.5** (a) Explain in brief Chemical Sensors. **03**
(b) Discuss Ultrasonic Level Sensor. **04**
(c) Explain the construction and working of RTD. Also enlist the advantages and disadvantages. **07**
