

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018****Subject Code:2152408****Date:16/11/2018****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) List the advantages and disadvantages of thermocouples. **03**
(b) Write a short-note on Thermistor. **04**
(c) List advantages of electrical transducers. Discuss the basic requirements of a transducer. **07**

- Q.2** (a) Explain about Unbounded and Bounded strain gauge. **03**
(b) Define followings:- **04**
(1) Resolution (2) Precision (3) Repeatability (4) Accuracy
(c) Explain the construction, working and characteristics of LVDT. List the advantages of LVDT. **07**

OR

- (c) Write Technical Note on: Piezo-electric Transducers. **07**
Q.3 (a) Explain load cell. **03**
(b) Explain Ultrasonic Flow Meter. **04**
(c) Derive the equation of the gauge factor for the resistance strain gauge. **07**

OR

- Q.3** (a) Discuss factors affecting strain measurements. **03**
(b) Explain Hot Wire Anemometer. **04**
(c) Explain the construction and working of magnetic-drag tachometer. **07**
Q.4 (a) Explain Pressure Switch. **03**
(b) Discuss IC's used for Pressure Measurement. **04**
(c) Explain the construction, working and characteristics LASER level sensor. List the advantages of LASER level sensor. **07**

OR

- Q.4** (a) Discuss Capacitive Sensors for Level Measurement. **03**
(b) Discuss Optical Level Sensor. **04**
(c) Explain Electrodynamical Pressure Transducer used for pressure measurement. **07**
Q.5 (a) Discuss Proximity Torque Sensors. **03**
(b) Write a Note on: Micro sensors. **04**
(c) Explain the construction and working of RTD. Also enlist the advantages and disadvantages. **07**

OR

- Q.5** (a) Define Indicating, recording and controlling Instrument. **03**
(b) Discuss Hall effect Transducer. **04**
(c) What is basically the concept of 'Smart Sensor'? Explain with the help of a Diagram the arrangement of its elements. **07**
