

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (OLD) EXAMINATION – WINTER 2018****Subject Code: 170904****Date: 29/11/2018****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) Explain the following characteristics of a Transducer. **07**
 (i) Linearity (ii) Resolution (iii) Sensitivity (iv) Threshold (v) Repeatability
 (vi) Calibration (vii) Hysteresis.
- (b) What is Transducer? Explain factors influencing the choice of transducers. **07**
- Q.2** (a) What is Gauge factor and Piezo resistive effect? Derive the expression for that in terms of piezoelectric coefficient's ratio. **07**
- (b) Write short note on Hall effect transducer. **07**
- OR**
- (b) Differentiate unbonded and bonded type strain gauge. How is the temperature compensation carried out using strain gauge in a bridge circuit? **07**
- Q.3** (a) Explain the construction and working of LVDT used for measurement of displacement. **07**
- (b) Explain construction and working principle of Thermocouple. Also explain Cold junction compensation. **07**
- OR**
- Q.3** (a) State different methods for torque measurement. Explain any one in detailed. **07**
- (b) State different type of Load cell used for force measurement. Explain any one in detail. **07**
- Q.4** (a) Explain construction and working of Piezoelectric pressure transducer. **07**
- (b) Write short note on Hot wire anemometer. **07**
- OR**
- Q.4** (a) Explain how inductive transducer used for Linear measurement and Capacitive transducer used for angular displacement. **07**
- (b) Describe with neat sketch the construction and working of Rotameter. State Advantages and Disadvantages of Rotameter. **07**
- Q.5** (a) Write short note on Venturi tube.. **07**
- (b) Write short technical note on X-Y Recorders. **07**
- OR**
- Q.5** (a) Explain n-Channel Data Acquisition System with block diagram. **07**
- (b) What is sample and hold circuit? Why it is needed? Explain with circuit diagram. **07**
