

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER – VI EXAMINATION – WINTER 2015****Subject Code:162401****Date:15/12/ 2015****Subject Name: Industrial Instrumentation****Time:2:30pm to 5:00pm****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) Define following. **07**
1. Accuracy 2. Precision 3. Repeatability 4. Resolution
5. Threshold 6. Hysteresis 7. Minimum Detectable Signal
(b) Derive the equation of the gauge factor for the resistance strain gauge. **07**
- Q.2** (a) Explain the construction and working of LVDT. List advantages of LVDT. **07**
(b) Explain electrical and mechanical characterization of transducers. **07**
- OR**
- (b) Explain the construction and working of Capacitive transducer for displacement measurement. **07**
- Q.3** (a) Explain the construction and working of Resistance thermometer. List advantages and disadvantages of RTD. **07**
(b) Explain the construction and working of electromagnetic flow meter. **07**
- OR**
- Q.3** (a) Explain the pyroelectric thermal sensors for temperature measurement. **07**
(b) Explain the working principle and construction of Hall effect sensors. **07**
- Q.4** (a) Explain the construction, working and characteristics of Photovoltaic cell. **07**
(b) Write technical note on: Standard Hydrogen Electrode. **07**
- OR**
- Q. 4** (a) Explain the fiber optic liquid level sensing in detail. **07**
(b) Write technical note on: Ion Selective Membrane Electrode. **07**
- Q.5** (a) Explain the data communication in smart transducers. **07**
(b) Explain the oxygen sensors in detail. **07**
- OR**
- Q.5** (a) Explain the thin film sensors in detail. **07**
(b) Explain the static pressure sensor in detail. **07**
