GUJARAT TECHNOLOGICAL UNIVERSITY B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 162401 **Subject Name: Industrial Instrumentation** Time: 02.30 pm - 05.00 pm

Instructions:

Total Marks: 70

Date: 02/01/2013

- 1. Attempt any five questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- (a) Define the term 1. Precision 2. Resolution 3. MDS 4. Threshold 5. Hysteresis 07 **Q.1** 6. Sensor 7. Transducer
 - (b) Define LVDT. Explain the working and operation of an LVDT for measuring 07 displacement.
- Q.2 (a) List the types of variable resistance transducer and Explain construction and 07 working of Resistance Strain Gauge.
 - (b) How is 'bath tub' curve associated with failure of transducer? What are the 07 screening steps taken in standard silicon integrated wafers?

OR

(b) Describe the principles of a 'Smart transmitters'. What and where does it 07 transmit? Discuss some aspects of its development in recent years.

Q.3	(a)	Compare the following terms : Unbounded and Bounded strain gauge	07
	(b)	List similarities and dissimilarities between PZ and PLZT	07

OR

- (a) Compare the following terms : Primary and Secondary Temperature Sensor 07 **Q.3** 07
 - (b) List similarities and dissimilarities between J type and K type Thermocouple.
- **Q.4** (a) What is synchro resolver? Explain the operation of a synchro resolver for 07 measuring angular position. Append diagram as needed.
 - (b) Explain the working of electromagnetic flow meter with necessary diagram. 07

OR

- **Q.4** (a) Explain the level detector using optical fiber with neat diagram. 07
 - (b) Explain the working of Radiation Pyrometer with lens and mirror optics. 07
- **Q.5** (a) Write technical note on Geiger counter describes diagram, construction, 07 characteristics and application.
 - (b) Write technical note on Photovoltaic Cell describes diagram, construction, 07 characteristics and application.

OR

- (a) Write technical note on SHE describes diagram, construction, characteristics 07 Q.5 and application.
 - Write technical note on PH sensor describes diagram, construction, 07 **(b)** characteristics and application.
