

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

Subject code: 141702**Date: 31/12/2012****Subject Name: Transducers (Institute Elective – 1)****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** How we do the selection of transducer and Explain in detail 'which are points we consider when select transducer for particular process application'. **07**
- (b)** Explain the following terminology used in transducer and given two example of each. **07**
- 1) Sensor 2) Transducer 3) Final Control Element
- Q.2 (a)** Given the functional elements of an instrumentation system. Explain it with any one suitable example. **07**
- (b)** List out various type of transmitters. Explain any one with all details. **07**
- OR**
- (b)** List out various type of recorders. Explain any one of them with all details. **07**
- Q.3 (a)** Draw and explain capacitance level measurement technique. Also given it's merits and demerits. **07**
- (b)** List out various quantity flowmeters. Explain any one of them with details of construction, operation, principle and application. **07**
- OR**
- Q.3 (a)** Draw and explain ultrasonic level measurement technique. Also given it's merits and demerits. **07**
- (b)** Draw and explain variable head(differential) flow meter with details of operation, necessary equations, merits and demerits. **07**
- Q.4 (a)** What you mean by pressure? Define absolute pressure, gauge pressure and vacuum pressure. Also given the relationship among them(in term of conversion). **07**
- (b)** Given the comparison of RTD, Thermistor and Thermocouple temperature measurement devices. **07**
- OR**
- Q.4 (a)** What are different type of manometers? Why mercury used in manometer? Explain the working of any one of them with a neat sketch. **07**
- Q.4 (b)** Explain the working of ultrasonic thermometer. Also given it's advantages, disadvantages and applications. **07**
- Q.5 (a)** Explain eddy current tachometer used for speed measurement with neat sketch. **07**
- (b)** What is hydrometer? What are the advantages and disadvantages of hydrometers? **07**
- OR**
- Q.5 (a)** With neat sketch, explain the construction and working of inductive methods of thickness measurements. **07**
- (b)** With a neat sketch, explain the construction and working of a glass electrode pH measurement system along with the electronic circuits used for converting emf into corresponding pH values. **07**
