Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 170904 **Date: 26/11/2011**

Subject Name: Industrial Instrumentation

Time: 10.30 am-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)**	Define transducer and classify transducers on different basis.	**07**
	(b)	Describe with neat sketches the construction and working of L.V.D.T. with its advantages and disadvantages. Also draw its output characteristics.	**07**
Q.2	**(a)**	What is Piezo-resistive effect? Explain the term Gauge Factor with respect to resistance strain gauge and obtain its expression in terms of poission's ratio.	**07**
	(b)	Define the following terms (**Any Seven**) (1) Hysteresis (2) Reproducibility (3) Resolution (4) Accuracy (5) Dead Zone (6) Drift (7) Sensitivity (8) Gauge Pressure (9) Absolute Pressure (10) Static Pressure	**07**
		OR	
	(b)	Explain temperature compensation in Strain gauges using Dummy gauge.	**07**
Q.3	**(a)**	Explain working of Hall-effect transducer. Also state its applications.	**07**
	(b)	What is Torque? State different types of torque measurement techniques and explain any one in brief.	**07**
		OR	
Q.3	**(a)**	What is load cell? Explain Proving ring and Hydraulic load cell.	**07**
	(b)	Explain measurement of vacuum pressure using Pirani gauge.	**07**
Q.4	**(a)**	With a neat sketch explain the construction and working of Rota meter.	**07**
	(b)	Explain working of Ultrasonic level detector.	**07**
		OR	
Q.4	**(a)**	Explain flow measurement technique using Hot wire anemometer.	**07**
	(b)	Describe the construction and working principle of Thermocouples.	**07**
Q.5	**(a)**	Explain Resistance Temperature Detector (R.T.D.) with its merits and demerits.	**07**
	(b)	Explain the construction and working of X-Y recorders.	**07**
		OR	
Q.5	**(a)**	Explain construction and working of Optical Pyrometer.	**07**
	(b)	Draw a generalized diagram of digital data acquisition system and explain each component briefly. Also mention the essential functional operations of it.	**07**

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