GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VI Examination-Nov/Dec-2011

Subject code: 162401   **Date: 21/11/2011**
Subject Name: Industrial Instrumentation
Time: 10.30 am -1.00 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)**	Give classification of transducer based on different criteria.	**07**
	(b)	Explain working principle of capacitive sensors and any one type of it.	**07**
Q.2	**(a)**	What is a strain gauges? What may be different applications of it ?	**07**
	(b)	Explain working principle of Thermo-couple with necessary diagrams.	**07**

<div align="center">OR</div>

	(b)	How does an acoustic temperature work ? What are the different types of acoustic sensors?	**07**
Q.3	**(a)**	Why Platinum is preferred to other materials for making resistance thermometers? Give advantages and disadvantages of Platinum thermometer.	**07**
	(b)	What are differences between Matteucci effect, Villari effect and Wiedemann effect ? How are these three effects used in developing magneto-elastic sensors ?	**07**

<div align="center">OR</div>

Q.3	**(a)**	Explain hall effect and hall effect sensor.	**07**
	(b)	How does an LVDT measure displacement? How is the nonlinearity attempted to be eliminated?	**07**
Q.4	**(a)**	Write a short note on Photoconductive Cell.	**07**
	(b)	Write a short note on Photovoltaic Cell.	**07**

<div align="center">OR</div>

Q.4	**(a)**	Describe in detail Electromagnetic flow meter.	**07**
	(b)	Explain what are smart sensors ? Describe its elements.	**07**
Q.5	**(a)**	Explain static characteristics of a transducer.	**07**
	(b)	Explain working principle and applications of opto-coupler.	**07**

<div align="center">OR</div>

Q.5	**(a)**	Write short note on Ultrasonic transducer.	**07**
	(b)	Briefly discuss about the operation of synchro-sensors in (i)torque type and(ii) control type mode.	**07**

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