Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- Vth SEMESTER–EXAMINATION – MAY/JUNE - 2012

Subject code: 150302 **Date: 02/06/2012**

Subject Name: Biomedical Transducers

Time: 02:30 pm – 05:00 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)**	Explain Electrical design consideration for Biomedical transducers.	**07**
	(b)	Explain Piezoelectric transducer with Piezoelectric materials and derive the output equation of Piezocrystal.	**07**
Q.2	**(a)**	Explain Construction, working and merits of LVDT.	**07**
	(b)	Explain thermo emf transducer with cold junction compensation.	**07**
		OR	
	(b)	Write a technical note on temperature sensor Thermister. Explain used of thermister for cardiac output measurement.	**07**
Q.3	**(a)**	Explain Transient type Ultrasonic blood flow transducer.	**07**
	(b)	Explain Phonocardiograph with block diagram.	**07**
		OR	
Q.3	**(a)**	Write a short note on Tonometry.	**07**
	(b)	Explain Electromagnetic Blood flow transducer.	**07**
Q.4	**(a)**	Explain strain gauge Displacement transducer.	**07**
	(b)	Explain Nuclear radiation transducers.	**07**
		OR	
Q.4	**(a)**	Derive the differential voltage equation for variable separation differential capacitive type displacement transducer.	**07**
	(b)	Write a short note on Enzyme based glucose sensor.	**07**
Q.5	**(a)**	Explain Polarographic Clark PO2 sensor and Transcutaneous PO2 sensor.	**07**
	(b)	Write a short note on microelectrodes.	**07**
		OR	
Q.5	**(a)**	Explain Electrode equivalent circuit.	**07**
	(b)	Write a short note on Smart Sensors.	**07**

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