Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER V • EXAMINATION – WINTER - 2012

Subject code: 150302 **Date: 12-01-2013**

Subject Name: Biomedical Transducer

Time: 02:30 pm to 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 the Generalized Instrumentation.	**07**
	(b)	Explain temperature compensation in the strain gauge type transducers.	**04**
	(c)	Explain fiber optic temperature sensor.	**03**
Q.2	**(a)**	Explain used of Thermister for the measurement of cardiac output and nasal air flow.	**07**
	(b)	Explain working of optical pyrometer with schematic diagram.	**07**
		OR	
	(b)	Explain construction, working principle and merits of LVDT.	**07**
Q.3	**(a)**	Explain measurement of Intra vascular fibre optic pressure transducer and Fibre optic pressure transducer for intracranial pressure measurement in new born.	**07**
	(b)	Explain working of Nuclear radiation transducer with necessary figures.	**07**
		OR	
Q.3	**(a)**	Explain working of Electromagnetic Blood flow meter with schematic diagram.	**07**
	(b)	Explain Intraocular pressure measurement technique.	**07**
Q.4	**(a)**	Explain Air flow transducer for Fleish pneumotachometer.	**07**
	(b)	Explain resistive Potentiometric transducers for translational and angular displacement measurement	**07**
		OR	
Q.4	**(a)**	Give brief idea about Electrode-Electrolyte interface, half cell potential, motion artifacts and polarization.	**07**
	(b)	Explain capacitive displacement transducer for respiration sensing.	**07**
Q.5	**(a)**	Explain construction and working of Transcutaneous PO2 sensor.	**07**
	(b)	Explain construction of various microelectrodes.	**07**
		OR	
Q.5	**(a)**	Explain Microbial biosensor for ammonia and nitrogen dioxide.	**07**
	(b)	Write a short note on role of Smart sensors in Biomedical measurement.	**07**

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