Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Subject code: 713102N **Date: 17-06-2014**

Subject Name: Biosensors and Biomems

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)**	Write a short note on Vortex detection system.	**07**
	(b)	Write a Short Note on Switching Phase sensitive detector.	**07**
Q.2	**(a)**	Discuss various Characteristics of Bio Sensors in detail.	**07**
	(b)	Explain Thermocouple Calibration Techniques.	**07**
		OR	
	(b)	Explain Thermocouple interfacing with Cold Junction Compensation.	**07**
Q.3	**(a)**	Derive the formula for Gauge Factor of wire resistive Strain Gauge with full Bridge with voltage excitation circuit.	**07**
	(b)	Write a short note on Cross correlation Flow Meters.	**07**
		OR	
Q.3	**(a)**	Write a Short Note on Ultrasonic Flow Meters.	**07**
	(b)	Write a Short Note on Force Measurement using Load Cell.	**07**
Q.4	**(a)**	Short Note: Radiation Thermometers.	**07**
	(b)	Explain LVDT. Derive the equation for output Potential generated by LVDT.	**07**
		OR	
Q.4	**(a)**	How the level of liquid can be measured using Capacitance level sensors explain with its necessary interfacing circuit.	**07**
	(b)	Short note: Smart sensors	**07**
Q.5	**(a)**	What is Biosensors? Explain Catalytic Biosensor with its major Components	**07**
	(b)	Discuss various surgical Applications of Bio MEMS.	**07**
		OR	
Q.5	**(a)**	How liquid conductivity can be measured? Explain with necessary Interface.	**07**
	(b)	Discuss various Diagnostic Applications of Bio MEMS.	**07**

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