Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–I(New course)• EXAMINATION – WINTER- 2015

Subject Code: 2713102 **Date: 04/01/2016**

Subject Name: Biosensors & Biomems

Time: 2:30 pm to 5:00 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 following terms • Calibration process of any transducers • Random error sources • Sensor fusion	**07**
	(b)	Explain signal transduction principle with the example for blood pressure measurement.	**07**
Q.2	**(a)**	Write a short note on performance factors of biosensors.	**07**
	(b)	Explain potentiometric type transducers with example.	**07**
		OR	
	(b)	Explain FET based transducers with necessary example.	**07**
Q.3	**(a)**	Discuss working of biosensors for glucose enzyme.	**07**
	(b)	For the parallel plate capacitive transducers, derive relation between changes in area of plates with change in capacitance.	**07**
		OR	
Q.3	**(a)**	Write a short note on biosensor arrays with Problems and limitations.	**07**
	(b)	Discuss any two applications of photo sensors in biomedical field.	**07**
Q.4	**(a)**	Explain designing aspects of Implantable sensors for long-term monitoring.	**07**
	(b)	Explain major fabrication steps of biomems.	**07**
		OR	
Q.4	**(a)**	Discuss role of modern sensors in drug detection technology.	**07**
	(b)	Write a short note on material selections for BIOMEMS design.	**07**
Q.5	**(a)**	Discuss design of any mechanical sensors for medical parameter measurement.	**07**
	(b)	Write a short note on polymer based gas sensor.	**07**
		OR	
Q.5	**(a)**	Enlist the application of thermal biosensors. Discuss actuator based on thermal expansion.	**07**
	(b)	Write a short note on Cholesterol Monitoring.	**07**

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