Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME- SEMESTER II– EXAMINATION – SUMMER 2015

Subject Code: 2723113 **Date: 03/06/2015**

Subject Name: Introduction to Biomedical Engineering

Time: 2:30 PM – 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 the Basic components of a Biomedical system with suitable diagram.	07
	(b)	What do you mean by "Sensor" and "Transducer"? Give the differences between them. Also give example of each.	07
Q.2	(a)	Draw and Explain Cell and its structure.	07
	(b)	"Ramesh is walking in the garden. He saw an iron bench and want to seat on it. He seats on the bench and suddenly gets stood as the bench is hot due to sun light." Describe the role of "Nervous system" in described event.	07
		OR	
	(b)	Ramesh and Mahesh are friends. Ramesh is doctor and Mahesh is an industrial engineer working with 1000 degree centigrade furnace. Both went market to buy the temperature sensor. Help both in selection of sensor. Give your justification for selection of sensor type.	07
Q.3	(a)	Draw and Explain the structure and function of "Cardiovascular system".	07
	(b)	Draw and Explain the structure and function of "Respiratory system".	07
		OR	
Q.3	(a)	What do you understand by the term "ECG"? Explain its relation to physical activity of human body.	07
	(b)	What do you understand by the term "EEG"? Explain its relation to physical activity of human body.	07
Q.4	(a)	Describe the structure, function and components of "nerve cell".	07
	(b)	What do you understand by the terms "Resting and Action Potential"? Explain with necessary diagram.	07
		OR	
Q.4	(a)	Explain with diagram "The Nervous system". Also Explore "central nervous system (CNS)" and "peripheral nervous system (PNS)".	07
	(b)	What do you mean by the term "Blood Pressure"? Explain any method to measure it.	07
Q.5	(a)	Define the term "Transducer". Explain Piezo-electric Transducer in brief. Suggest its application in biomedical engineering.	07
	(b)	Describe the working principal of "ultrasonic transducers". Enlist its applications related to industry, biomedical. Explain them in brief.	07
		OR	
Q.5	(a)	Enlist the Transducers for Temperature measurements. Describe each in brief with working principal.	07
	(b)	Describe the structure, function and components of "nerve cell".	07

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