Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV(NEW) – EXAMINATION – SUMMER 2019

Subject Code: 2140306 **Date: 17/05/2019**

Subject Name: Biosensors & Transducers

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.**

			MARKS
Q.1	**(a)**	What is Piezoelectric Phenomena? Enlist various types of Natural & Synthetic Piezocrystals.	**03**
	(b)	Define: Accuracy, Precision, Sensitivity & Threshold.	**04**
	(c)	Enlist various Types of radiation sensors & Explain Ionization Chamber & Scintillation Detector in detail.	**07**
Q.2	**(a)**	Give Importance of Thermo receptors & Baroreceptors.	**03**
	(b)	Draw neat structure of neuron & Explain Functions of Axon & Dendrites.	**04**
	(c)	Enlist various types of Temperature transducers & Explain RTD with its characteristic Curve Merits & Demerits.	**07**
		OR	
	(c)	Write a short note on LVDT.	**07**
Q.3	**(a)**	Enlist different types of Liquid & Gas Flow sensors.	**03**
	(b)	Explain basic Block Diagram of general Instrumentation system.	**04**
	(c)	Explain displacement measurement using Potentiometric Transduction.	**07**
		OR	
Q.3	**(a)**	Explain working principle of Hot Wire Anemometer.	**03**
	(b)	Explain Biomedical Application of Goniometer.	**04**
	(c)	Enlist different types of pressure Transducer & Explain Strain Gauge as pressure Transducer.	**07**
Q.4	**(a)**	Differentiate between Direct & Indirect Methods of blood Pressure measurement & Explain Hall effect Transducer.	**03**
	(b)	Write a Brief note on Half-cell Potential.	**04**
	(c)	Write a Brief note on ISFET for Glucose Monitoring.	**07**
		OR	
Q.4	**(a)**	What is Biosensors? Give application of Enzyme Electrode.	**03**
	(b)	Differentiate between Invivo & Invitro. Explain working principle of Pneumotachometer.	**04**
	(c)	Explain pO2 measurement using Clark Electrode.	**07**
Q.5	**(a)**	What is Potentiometry?	**03**
	(b)	Short Note: Tactile Sensors.	**04**
	(c)	Write a short note on smart sensors.	**07**
		OR	
Q.5	**(a)**	What is Conductometry?	**03**
	(b)	Explain working principle of Pulse Oximeter.	**04**
	(c)	Describe Construction of Glass electrode for the pH measurement.	**07**

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