Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI(NEW) EXAMINATION – WINTER 2022

Subject Code:3161008 Date:16-12-2022

Subject Name:Sensors and 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Give sensor classification	**03**
	(b)	Define following term: 1) Sensitivity 2) Hysteresis 3) Precision 4) Accuracy	**04**
	(c)	Explain Transducer with its characteristics and also give advantages and disadvantages.	**07**
Q.2	**(a)**	Explain calibration technique	**03**
	(b)	Explain the function block of the measurement system with neat diagram.	**04**
	(c)	Describe the RTD and explain how it can be used to measure temperature.	**07**
		OR	
	(c)	Explain the principle of operations of LVDT with the help of neat sketch and characteristics.	**07**
Q.3	**(a)**	What is smart sensor? Mention application of smart sensor.	**03**
	(b)	Explain RVDT.	**04**
	(c)	What is gyroscope sensor? Explain its type and give its application.	**07**
		OR	
Q.3	**(a)**	Explain GPS (Global Positioning System.) Also give advantages.	**03**
	(b)	Explain types of stain gauges.	**04**
	(c)	Explain thermocouple construction and also give advantages, limitations of it.	**07**
Q.4	**(a)**	Define: Amplifiers.	**03**
	(b)	Explain orifice meter for flow measurement.	**04**
	(c)	Explain heat transfer using thermal conduction.	**07**
		OR	
Q.4	**(a)**	Explain RTD with advantages.	**03**
	(b)	Explain uses of data acquisition system.	**04**
	(c)	Explain MEMS sensor, working principle also give advantage and applications.	**07**
Q.5	**(a)**	Give principle and construction of Load cell.	**03**
	(b)	What is sample and hold circuit? Explain with circuit diagram.	**04**
	(c)	Explain Direct Digitization and processing.	**07**
		OR	
Q.5	**(a)**	Describe about DAQ? What is the need for DAQ?	**03**
	(b)	Explain Touch screen sensor.	**04**
	(c)	Explain how the fiber optic sensor work and list out its advantages.	**07**

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