Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code:3161008 Date:22-05-2024

Subject Name:Sensors and Transducers

Time:10:30 AM TO 01:00 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)**	Define: (1) Precision (2) Drift (3) Range/Span.	**03**
	(b)	Define: (1) Speed of Response (2) Fidelity (3) Lag (4) Dynamic Error.	**04**
	(c)	Write down types of Errors and explain any two errors in detail.	**07**
Q.2	**(a)**	Write any three applications of LVDT.	**03**
	(b)	Write a short note on Thermocouple.	**04**
	(c)	Compare RTD and thermocouple in detail.	**07**
		OR	
	(c)	Describe the construction and working of LVDT.	**07**
Q.3	**(a)**	Write down limitations of Wheatstone bridge.	**03**
	(b)	Compare MEMS Sensors and Nano Sensors.	**04**
	(c)	Discuss working of Maxwell's bridge for measurement of inductance.	**07**
		OR	
Q.3	**(a)**	Write any three applications of sensors in drone.	**03**
	(b)	Write any two advantages and any two disadvantages of Hay's bridge.	**04**
	(c)	Explain the Kelvin double bridge method for measurement of low resistance.	**07**
Q.4	**(a)**	Compare Magnetic and Ultrasonic flow meter.	**03**
	(b)	Explain Photo Conductive cell.	**04**
	(c)	Explain strain gauge. Give classification and describe any one in detail.	**07**
		OR	
Q.4	**(a)**	Write any three applications of fiber optic sensor.	**03**
	(b)	Explain LDR.	**04**
	(c)	Explain any one capacitive transducers.	**07**
Q.5	**(a)**	Write down any three requirements of Instrumentation amplifier.	**03**
	(b)	Write short note on GPS.	**04**
	(c)	Provide a comprehensive explanation of Successive Approximation method for ADC.	**07**
		OR	
Q.5	**(a)**	Draw a Sample and Hold the circuit.	**03**
	(b)	Write a short note on Bluetooth.	**04**
	(c)	Compare weighted Resistor DAC and R-2R ladder DAC.	**07**

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