GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3160620   **Date:07-12-2023**
Subject Name: Instrumentation and Sensors
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.**

Q.1	**(a)**	Differentiate between sensor and transducer.	**03**
	(b)	Explain various specifications of sensor.	**04**
	(c)	What is sensor? Explain different types of sensors in detail.	**07**
Q.2	**(a)**	Explain sensor selection.	**03**
	(b)	Explain types of error in measurement.	**04**
	(c)	Write note on type of instruments.	**07**
		OR	
	(c)	Explain basic concepts in frequency domain signal processing and analysis.	**07**
Q.3	**(a)**	Define measurement and instrumentation.	**03**
	(b)	Explain sensor siting.	**04**
	(c)	Explain in brief sensor installations.	**07**
		OR	
Q.3	**(a)**	Explain Piezometer.	**03**
	(b)	Write a note on Inclinometer.	**04**
	(c)	Explain in brief sensor monitoring (or measurement).	**07**
Q.4	**(a)**	What is aliasing? How can it remove?	**03**
	(b)	Explain in brief sensor installations.	**04**
	(c)	Write a note on Strain Gauge sensor.	**07**
		OR	
Q.4	**(a)**	Explain the need for frequency domain analysis and its principles.	**03**
	(b)	Define: (i) Average value (mean) (ii) Standard deviation (iii) Median (iv) Mode.	**04**
	(c)	Explain types of filters used in frequency domain analysis.	**07**
Q.5	**(a)**	Define: (i) Discrete Signal (ii) Noise(iii) Signal to Noise ratio	**03**
	(b)	Explain Noise reduction with filters.	**04**
	(c)	Explain the principle of operations of LVDT with the help of neat sketch.	**07**
		OR	
Q.5	**(a)**	Explain in brief Load Cell.	**03**
	(b)	Explain Data Reduction and Interpretation.	**04**
	(c)	Explain Time domain signals processing.	**07**

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