

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 3134103

Date: 28/11/2019

Subject Name: Sensor and Instrumentation

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) Differentiate between sensor and transducers.	03
	(b) Define following term: 1) Sensitivity 2) Hysteresis 3) Precision 4) Accuracy	04
	(c) Explain the principle of operations of LVDT with the help of neat sketch and characteristics.	07
Q.2	(a) Define following terms: 1) Gauge Factor 2) CMRR 3) Span	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) Discuss about the construction of thermistor and its resistance temperature characteristics.	07
Q.3	(a) What is smart sensor. Mention application of smart sensor.	03
	(b) Explain Piezo resistive effect.	04
	(c) What is Amplifier ? Describe the ideal characteristics of operational amplifier	07
	OR	
Q.3	(a) Define noise. write the classification of noise.	03
	(b) Explain seeback and Peltier effects	04
	(c) Explain voltage follower .	07
Q.4	(a) Write application of tactile sensor.	03
	(b) Explain the strain gauge.	04
	(c) Explain heat transfer using thermal conduction.	07
	OR	
Q.4	(a) Define gyroscope. Write working principle of gyroscope.	03
	(b) Explain Square wave Oscillator.	04
	(c) Explain Zener diode with circuit Diagram and Draw the voltage – current characteristics.	07
Q.5	(a) Describe about DAQ? What is the need for DAQ?	03
	(b) Explain two wire Data Transmission.	04
	(c) Explain how the fiber optic sensor work and list out its advantages.	07
	OR	
Q.5	(a) What is the purpose of the sample and hold circuit?	03
	(b) Explain null balance bridge circuit .	04
	(c) Explain successive – Approximation type A-D converter.	07
