Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2170808 **Date: 28/11/2019**

Subject Name: Sensor Networks & Instrumentation

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.**

Q.1	**(a)**	Explain V-I converters using OP-AMP.	**03**
	(b)	What is Negative Feedback? What are its advantages?	**04**
	(c)	What is Sensor? Give classification of sensors with respect to various parameters.	**07**
Q.2	**(a)**	Explain KRC filters.	**03**
	(b)	Explain Humidity sensors in details.	**04**
	(c)	Explain first order low pass filter and derive all equations with neat figure	**07**
		OR	
	(c)	Explain Second Order Band Pass Filter in detail	**07**
Q.3	**(a)**	Explain Multiple Feedback filters.	**03**
	(b)	Explain Capacitive sensor.	**04**
	(c)	How to select a Sensor? Explain selection of sensor in detail.	**07**
		OR	
Q.3	**(a)**	Explain Temperature Sensor in detail	**03**
	(b)	Explain I to V converter.	**04**
	(c)	Explain with neat sketch Co_2 Sensing techniques with necessary equations and graphs.	**07**
Q.4	**(a)**	Explain characteristics of an Ideal OP-AMP.	**03**
	(b)	Explain Zigbee Network.	**04**
	(c)	Explain general architecture of smart sensor.	**07**
		OR	
Q.4	**(a)**	Explain Block Diagram of OP-AMP.	**03**
	(b)	What is the application area of Smart Sensors?	**04**
	(c)	Explain various factors influencing WSN design.	**07**
Q.5	**(a)**	What is wireless sensor network?.	**03**
	(b)	Explain loading effect on sensors output	**04**
	(c)	Explain First Order RC filters and derive its equations	**07**
		OR	
Q.5	**(a)**	Explain Cascade design for Active Filters.	**03**
	(b)	Derive equations for KRC filters.	**04**
	(c)	Explain Transducer Bridge Amplifier using Op-Amp with Application.	**07**

****