Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2170808 **Date:25/01/2021**

Subject Name:Sensor Networks & Instrumentation

Time:10:30 AM TO 12:30 PM **Total Marks: 56**

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Explain loading effect on sensors output.	**03**
	(b)	Explain KRC filters equations.	**04**
	(c)	Explain with neat sketch Co_2 Sensing techniques with necessary equations and graphs.	**07**
Q.2	**(a)**	Explain sensors parameter.	**03**
	(b)	Explain humidity sensors in details.	**04**
	(c)	Explain Second Order Band Pass Filter in detail.	**07**
Q.3	**(a)**	Explain characteristics of an Ideal OP-AMP.	**03**
	(b)	Explain advantages of smart sensors.	**04**
	(c)	Explain Transducer Bridge Amplifier using Op-Amp with Application.	**07**
Q.4	**(a)**	What is Negative Feedback? What are its advantages?	**03**
	(b)	Explain Zigbee Network.	**04**
	(c)	Explain general architecture of smart sensor.	**07**
Q.5	**(a)**	Explain Switched capacitor filter.	**03**
	(b)	Explain Temperature Sensor in detail.	**04**
	(c)	What is wireless sensor network? Explain structure of WSN in detail.	**07**
Q.6	**(a)**	Explain First Order RC filters.	**03**
	(b)	Explain capacitive sensor.	**04**
	(c)	Explain first order band stop filter in detail and derive its equation.	**07**
Q.7	**(a)**	Explain I-V converters using OP-AMP.	**03**
	(b)	Explain instrumentation amplifier using OP-AMP in detail.	**04**
	(c)	Explain Multiple Feedback filters.	**07**
Q.8	**(a)**	Explain KRC filters.	**03**
	(b)	Explain V-I converters using OP-AMP.	**04**
	(c)	Explain first order low pass filter and derive all equations with neat figure.	**07**

****