Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2170808 **Date: 04/05/2017**

Subject Name: Sensor Networks & 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.**

Q.1	**(a)**	What is Sensor? Give classification of sensors with respect to various parameters.	**07**
	(b)	Explain Thermal & Capacitive sensors in detail.	**07**
Q.2	**(a)**	How to select a sensor? Explain selection of sensor in detail.	**07**
	(b)	Explain Block Diagram & Ideal characteristics of Op-Amp.	**07**
		OR	
	(b)	What is Negative Feedback? What are its advantages? Derive expression of negative feedback of Op-Amp in Inverting mode.	**07**
Q.3	**(a)**	Explain V-I and I-V converters using Op-Amp.	**07**
	(b)	Explain CO_2 sensor with neat block diagram, working and applications in detail.	**07**
		OR	
Q.3	**(a)**	Explain Instrumentation Amplifier in detail using Op-Amp.	**07**
	(b)	Explain Trasnducer Bridge Amplifier using Op-Amp with Application.	**07**
Q.4	**(a)**	Explain applications of WSN in detail with suitable examples.	**07**
	(b)	Explain various factors influencing WSN design.	**07**
		OR	
Q.4	**(a)**	Explain KRC filters and derive its equations.	**07**
	(b)	Explain first order Low Pass active filter and derive its equation.	**07**
Q.5	**(a)**	Derive equation of second order high pass active filter with its advantages and limitations.	**07**
	(b)	Explain first order High pass passive filter in detail.	**07**
		OR	
Q.5	**(a)**	Explain Zigbee Network in detail.	**07**
	(b)	Explain Multiple Feedback filters.	**07**

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