Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (New) EXAMINATION – WINTER 2015

Subject Code:2141706 **Date:01/01/2016**

Subject Name: Analog Signal Processing

Time: 2:30pm to 5:00pm **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 the following terms: (i) Input offset voltage (ii) Differential Input resistor (iii) CMRR (iv) SVRR (v) output voltage swing (vi) Large signal voltage gain (vii) Input bias current	**07**
	(b)	Explain summing, scaling and averaging amplifier using inverting configuration of operational amplifier.	**07**
Q.2	**(a)**	Draw and explain the Voltage series feedback amplifier. Also derive the closed loop voltage gain.	**07**
	(b)	Explain basic comparator with its input and output waveforms.	**07**
		OR	
	(b)	Explain Schmitt trigger circuit along with circuit diagram and necessary waveforms. State its advantages and applications.	**07**
Q.3	**(a)**	What is Slew rate? What is cause of Slew rate? How we can measure slew rate? Explain effect of slew rate in AC application.	**07**
	(b)	Draw op-amp based full wave rectifier (absolute-value output) circuit. Explain its working with necessary input/output waveforms.	**07**
		OR	
Q.3	**(a)**	What is DAC? Explain operation of R-2R Ladder type DAC.	**07**
	(b)	Explain basic differentiator and practical differentiator circuit in detail.	**07**
Q.4	**(a)**	Explain Instrumentation amplifier with neat diagram. Derive the equation for output voltage.	**07**
	(b)	Draw the differential amplifier with one op-amp and derive its voltage gain.	**07**
		OR	
Q.4	**(a)**	Explain first order High pass filter operation with frequency response curve. Design first order High pass filter at a cut-off frequency of 1KHz with a passband gain of 2.Assume C=0.01μf.	**07**
	(b)	Explain Positive clipper with necessary waveform for +Vref and -Vref.	**07**
Q.5	**(a)**	Explain Logarithmic amplifier.	**07**
	(b)	Explain RC Phase shift Oscillator with frequency of oscillation.	**07**
		OR	
Q.5	**(a)**	Explain the operation of 555 IC based monostable multivibrator with necessary circuit diagram and waveforms and its applications.	**07**
	(b)	Explain Wien Bridge Oscillator.	**07**

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