Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI-. EXAMINATION – WINTER 2013

Subject code: 160801 **Date: 27/11/2013**

Subject Name: Integrated Circuit & Application

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)**	Define Op-Amp. Draw and explain block diagram representation of a typical Op-Amp.	**07**
	(b)	Explain following performance parameters of Op-Amp. (i) Input Offset Voltage (ii) Input Offset Current (iii) Input Bias Current (iv) CMRR (v) Slew Rate.	**07**
Q.2	**(a)**	Explain Schmitt Trigger in detail.	**07**
	(b)	For a non-inverting amplifier, the values of R_1 and R_f are 1kΩ and 10kΩ respectively. The various op-amp parameters are, Open loop gain = 2 x 10^5, Input Resistance = 2 MΩ, Supply voltages = ± 12 V, Output Resistance = 75 Ω, Single break frequency = 5 Hz Calculate closed loop gain, input resistance, output resistance and bandwidth with feedback.	**07**
		OR	
	(b)	For the practical inverting amplifier, the values of R_1 and R_f are 470Ω and 4.7kΩ. The various op-amp parameters are, Open loop gain = 2 x 10^5 , input resistance = 2MΩ, Supply voltages = ± 15 V, Output resistance = 75Ω, single break frequency = 5 Hz Calculate the closed loop voltage gain, input resistance, output resistance and bandwidth with feedback.	**07**
Q.3	**(a)**	Write short note on practical and ideal Integrator Circuit.	**07**
	(b)	Explain Summing, Scaling and Averaging Amplifier circuit.	**07**
		OR	
Q.3	**(a)**	Explain V-I converter with (i) Floating Load, (ii) Grounded Load.	**07**
	(b)	Explain Instrumentation Amplifier using transducer bridge with its Applications.	**07**
Q.4	**(a)**	Write short note on Negative Clipper circuit.	**07**
	(b)	Explain the operation of Sample & Hold circuit with its applications.	**07**
		OR	
Q.4	**(a)**	Explain precision Full Wave Rectifier in detail.	**07**
	(b)	Write short note on Basic Log Amplifier using diode.	**07**
Q.5	**(a)**	Explain IC 555 as an Astable Multivibrator.	**07**
	(b)	Explain Monostable Multivibrator as a frequency divider and pulse width Modulator in detail.	**07**
		OR	
Q.5	**(a)**	Explain Phase locked loop as a frequency multiplier and FSK demodulator.	**07**
	(b)	Explain block diagram and operation of Phase Locked Loop.	**07**

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