Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V • EXAMINATION - SUMMER • 2015

	•	Code: 151003 Date: 05/05/201 Name: Integrated Circuits and Applications	15
Ti	•	2.30pm-05.00pm Total Marks: 70	
	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	What is need of feedback in op-amp? Derive all necessary expression for voltage gain,	07
	(b)	input resistance, output resistance and bandwidth for inverting amplifier using op-amp. What do you mean by Absolute value of an AC signal? Draw and explain working of circuit which gives Absolute value at output using op-amp.	07
Q.2	(a) (b)	Give applications of PLL .Draw and explain block diagram of the PLL system. Draw the differential amplifier circuit using two op-amp. State advantage of one additional op-amp in that. Show how its output is related to input using necessary derivations.	07 07
		OR	
	(b)	Show how op-amp can be used for making log amplifier. Draw and explain it with necessary derivations.	07
	(a)	What do you mean by magnitude and phase response of a filter? Draw and explain low pass filter using biquad circuit. Give expression for necessary parameters of filter.	07
	(b)	Draw and explain the Schmitt trigger circuit along with threshold levels and hysteresis. OR	07
Q.3	(a)	Where an Instrumentation amplifier is used? How op-amp can be used for that? Explain it for the case of temperature measurement.	07
((b)	Explain working of an astable multivibrator with necessary circuit diagram and waveforms using IC 555.	07
Q.4	(a)	Design an adjustable voltage regulator using LM317 which gives Output voltage Vo = 6 to 10 V and Output current Io = 750 mA.	07
	(b)	Using op-amp circuit diagram, explain and give steps to design first order high pass filter.	07
		OR	
· ·	(a)	Draw and explain peaking amplifier using op-amp. Give necessary expressions and steps to design it.	07
	(b)	What is need of clipper circuit? Explain op-amp as a positive and negative clipper along with necessary waveforms.	07
Q.5	(a) (b)	List any nine parameters of an op-amp. Define and explain any four parameters. State and explain how op-amp can be used as mixer of three audio signal along with different gain for each audio signal. OR	07 07
Q.5	(a) (b)	Write short note on sample and hold circuit along with its applications. Draw and explain Sallen key circuit. Where it can be used?	07 07
