Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – WINTER • 2014

Subject Code: 160801 **Date: 26-11-2014**

Subject Name: Integrated Circuits and Application

Time: 02:30 pm - 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)**	Draw and Explain the block diagram representation of a typical Op-Amp.	**07**
	(b)	Draw and explain the functional block diagram of IC 555.	**07**
Q.2	**(a)**	What is an ideal Op-Amp? Explain the equivalent circuit of an 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**
		OR	
	(b)	Derive the expression for Voltage gain (A_V) and input resistance with feedback (R_{iF}) for voltage series feedback amplifier.	**07**
Q.3	**(a)**	Draw non-inverting amplifier using Op-Amp and derive the expression for its output voltage.	**07**
	(b)	Explain the Peaking Amplifier.	**07**
		OR	
Q.3	**(a)**	Explain the Ideal and practical differentiator circuit with its frequency response.	**07**
	(b)	Explain Instrumentation Amplifier using transducer bridge with its application.	**07**
Q.4	**(a)**	Describe a sample and hold circuit and give its applications.	**07**
	(b)	What are precision rectifiers? Explain the operation of half wave positive & negative precision rectifier.	**07**
		OR	
Q.4	**(a)**	Explain the operation of Phase Locked Loop with its block diagram	**07**
	(b)	Explain IC 555 as a Monostable multivibrator with wave shaping network. Design the circuit to produce a time delay of 10ms.	**07**
Q.5	**(a)**	Explain Astable multivibrator using Op-Amp.	**07**
	(b)	Write short note on Basic Log Amplifier using diode.	**07**
		OR	
Q.5	**(a)**	Explain summing, scaling and averaging amplifier using Op-Amp.	**07**
	(b)	Write a short note on Schmitt trigger.	**07**

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