Seat No.: _____   *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY
B E Sem-VI Examination May 2011
Subject code:160801
Subject Name: Integrated Circuits & Application

Date:16/05/2011   **Time: 10.30 am – 01.00 pm**
                                       Total Marks: 70

Instructions:
1. **Attempt all questions.**
1. **Make suitable assumptions wherever necessary.**
2. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is Op-Amp? Draw and Explain the block diagram representation of a typical Op-Amp.	**07**
	(b)	Draw and explain the block diagram of IC 555 Timer	**07**
Q.2	**(a)**	1).Explain the ideal voltage transfer curve.	**04**
		2).Explain the equivalent circuit of practical op-amp.	**03**
	(b)	Why Op-Amp is generally not used in open loop mode? Explain close loop configuration of Op-Amp. And give the advantages of negative feedback.	**07**

OR

	(b)	1.An Op-Amp having the following parameters is connected as a non inverting amplifier with R_1=1 kΩ and R_F=10 kΩ: And A=200,000, Ri= 2 MΩ, Ro=75Ω, fo= 5Hz, supply voltage= ±15 V, output voltage swing = ±13 v Compute the values of A_F, R_{IF}, R_{OF}, F_F, and V_{OOT}.	**05**
		2.Define following terms a. CMRR b. PSRR	**02**
Q.3	**(a)**	Define Error voltage and Derive its equation for Op-Amp.	**07**
	(b)	Explain the Effect of input offset voltage and input bias current on output offset voltage of Op-Amp.	**07**

OR

Q.3	**(a)**	Explain the difference between Bandwidth, Transient Response and Slew Rate.	**07**
	(b)	Design a differentiator to differentiate an input signal that varies in frequency from 10 Hz to about 1 kHz. Draw output waveform if a sine wave of 1V peak at 1000Hz is applied to this differentiator	**07**
Q.4	**(a)**	Explain the practical integrator circuit and obtain its output voltage.	**07**
	(b)	Explain the Peaking Amplifier.	**07**

OR

Q.4	**(a)**	Write a Short note on very high input impedance circuit.	**07**
	(b)	What are precision rectifiers? Explain the operation of half wave positive & negative precision rectifier.	**07**
Q.5	**(a)**	Explain the monostable multivibrator operation of IC 555 Timer and Derive expression for output pulse width.	**07**
	(b)	Explain the operation of Phase Locked Loop with its block diagram.	**07**

OR

Q.5	**(a)**	Write a short note on Schmitt trigger.	**07**
	(b)	Explain basic Log-amplifier using diode.	**07**

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