GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER–IV • EXAMINATION – WINTER • 2014

Subject Code: X41103   **Date: 31-12-2014**
Subject Name: Integrated Circuits and Applications
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)**	Explain application of Op-amp (Non Inverting Configuration) as Summing, Scaling and averaging circuit.	**07**
	(b)	Draw block diagram of a typical op-amp and explain functions of each block.	**07**
Q.2	**(a)**	Explain various types of open loop configuration.	**07**
	(b)	Define following terms 1.CMRR 2.PSRR 3.Slew Rate 4.Input Offset voltage 5.Input Offset current 6.Input bias current 7.Equivalent input noise voltage and current	**07**

OR

	(b)	Draw the high frequency model of an Op-Amp and Obtain the expression for the open loop gain as a function of frequency.	**07**
Q.3	**(a)**	What do you mean by precision rectifier? Explain with necessary diagram the working of precision full wave rectifier by using Op-amp.	**07**
	(b)	Draw the Schmitt trigger comparator circuit and explain threshold levels and hysteresis.	

OR

Q.3	**(a)**	Draw and explain log as well as antilog amplifier circuit by using Op-amp.	**07**
	(b)	Draw and explain voltage limiters circuits by Op-amp.	**07**
Q.4	**(a)**	Design a differentiator circuit by using Op-amp to differentiate an input signal that varies in frequency from 10 Hz to about 1 KHz.	**07**
	(b)	With the help of a circuit diagram explain the operation of first order active high pass filter and draw its frequency response characteristics.	**07**

OR

Q.4	**(a)**	Draw and explain the circuit diagram of voltage to current converter with grounded as well as floating load.	**07**
Q.4	**(b)**	Derive the expression for filter transfer function of first order active low-pass filter and draw its frequency response characteristics.	**07**
Q.5	**(a)**	Draw and explain square wave generator by using Op-amp.	**07**
	(b)	Explain with a neat circuit diagram and waveforms, the operation of monostable multivibrator using 555 timer.	**07**

OR

Q.5	**(a)**	Draw block diagram of the PLL system and explain function of each block. State the applications of PLL.	**07**
	(b)	Draw and explain the block diagram of 555 timer IC as well as explain the function of each pin of 555 timer IC.	**07**

****