Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Integrated Circuits & Applications
Subject Code: 4TE04ICA1 Branch: B.Tech (Electrical)
Semester: 4 Date: 05/05/2017 Time: 02:00 To 5:00 Marks: 70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 Attempt the following questions: (14)

1) When a step-input is given to an op-amp integrator, the output will be
(a) a ramp. (b) a sinusoidal wave. (c) a rectangular wave. (d) a triangular wave with dc bias.

2) A certain non-inverting amplifier has R_i of 1 kΩ and R_f of 100 kΩ. The closed-loop voltage gain is ……
(a)100,000 (b)1000 (c)101 (d)100

3) What is the voltage gain of the unity follower?
(a) 0 (b) 1 (c) –1 (d) infinity

4) In the common mode,____
(a)both inputs are grounded (b)the outputs are connected together (c)an identical signal appears on both the inputs (d) the output signal are in-phase

5) How many op-amps are required to implement this equation Vo = V1
(a)3 (b)2 (c)1 (d)4

6) Specified value of CMRR for 741 op-amps is _____.
(a)30 dB (b) 40dB (c) 90 dB (d) 0 dB

7) In a positive clipper, the diode conducts when
(a)Vin < Vref (b) Vin = Vref (c)None of the mentioned (d) Vin > Vref

8) Find the frequency shift in FSK generator
(a)230Hz (b) 200 Hz (c) 250 Hz (d) 0 Hz

9) Bistable Multivibrator has _____.
(a) two stable states (b) one stable states (c)quasi stable states (d) None of the above

10) What is lock range?

11) The output of a relaxation oscillator is
(a) sine wave (b) square Schmitt trigger uses (c) ramp (d) spike

12) A positive small signal half wave rectifier can
(a) Rectify signals with peak value only (b) Rectify signals with value of few milli volts only (c) Rectify signals with both peak value and down to few milli volts (d) None of the

mentioned

13) Schmitt trigger uses
(a)positive feedback (b) negative feedback (c) compensating capacitors (d) pull up resistors

14) Define: CMRR

Attempt any four questions from Q-2 to Q-8

Q-2		**Attempt all questions**	**(14)**
	(a)	What is op-amp? Draw and explain the block diagram representation of a typical Op-amp.	**(07)**
	(b)	Draw & Explain Constant Current source Circuit.	**(07)**
Q-3		**Attempt all questions**	**(14)**
	(a)	Define: 1) Input Bias Current 2) PSRR 3) Slew rate 4) Input offset current 5) Input offset voltage	**(05)**
	(b)	Explain the open loop op-amp configuration with waveform.	**(05)**
	(c)	Why op-amp is generally not used in open loop mode?	**(04)**
Q-4		**Attempt all questions**	**(14)**
	(a)	Draw and explain the Block Diagram of IC 555 Timer.	**(05)**
	(b)	Explain the Block Diagram of Voltage Controlled Oscillator(566/VCO)	**(05)**
	(c)	Explain Phase Shift Oscillator.	**(04)**
Q-5		**Attempt all questions**	**(14)**
	(a)	Explain the Practical Differentiator circuit. Explain its advantages.	**(07)**
	(b)	Draw and Explain Differential input Differential output amplifier.	**(07)**
Q-6		**Attempt all questions**	**(14)**
	(a)	Explain the working of inverting summing amplifier.	**(07)**
	(b)	Explain Basic Inverting Schmitt trigger circuit with input & output waveforms.	**(07)**
Q-7		**Attempt all questions**	**(14)**
	(a)	Compare Butterworth filter & Chebychev Filters.	**(07)**
	(b)	Design a practical integrator circuit with a d.c gain of 10, to integrate a square wave of 10 KHz	**(07)**
Q-8		**Attempt all questions**	**(14)**
	(a)	Explain the Frequency Shift keying Demodulator circuit using PLL.	**(05)**
	(b)	Explain the operation of Voltage to current converter with floating load.	**(05)**
	(c)	Explain Window Detectors.	**(04)**