

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Linear Integrated Circuits

Subject Code: 4TE04LIC1

Branch: B.Tech (EC)

Semester: 4

Date: 15/05/2017

Time: 02:00 To 05:00

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.
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- Q-1 Define the following terms: (14)**
- a) ICs.
 - b) Input bias current.
 - c) Input offset voltage.
 - d) Thermal Drift.
 - e) PSRR.
 - f) CMRR.
 - g) Slew rate.
 - h) Input offset current.
 - i) Output offset voltage.
 - j) Balanced output.
 - k) Floating load.
 - l) Virtual ground.
 - m) Oscillator.
 - n) Multivibrator.

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

- Q-2 Attempt all questions (14)**
- (a) Draw the block schematic of an op-amp and explain the function of each stage.
 - (b) Derive the expression for voltage gain of Non-inverting amplifier using op-amp.
- Q-3 Attempt all questions (14)**
- (a) List four types of Differential Amplifier configuration and explain AC analysis of the Dual Input Balanced Output Differential Amplifier in detail.
 - (b) Explain in detail the Differential Amplifier with Constant Current Bias circuit.
- Q-4 Attempt all questions (14)**
- (a) Derive expression for voltage gain of a Differential Amplifier with two Op-Amp.



- (b) Draw schematic of AC inverting amplifier single supply based op-amp. Explain its working along with necessary input and output waveforms.

Q-5 **Attempt all questions** (14)

- (a) Draw and explain working of basic differentiator circuit. What are the limitations of this circuit? How it can be corrected?
(b) Explain Summing, Scaling and Averaging amplifier using inverting op-amp configuration in detail.

Q-6 **Attempt all questions** (14)

- (a) Explain working of op-amp based Schmitt trigger circuit along with schematic and input/output waveforms.
(b) Explain with necessary diagrams the working of Peak detector circuit.

Q-7 **Attempt all questions** (14)

- (a) Explain the application of op-amp as a positive and negative clipper circuit.
(b) Draw and explain working of Sample and Hold circuit using op-amp.

Q-8 **Attempt all questions** (14)

- (a) Explain the operation of 555 IC based Astable Multivibrator with necessary circuit diagram and waveforms.
(b) Describe operation of each block of phase locked loop. List out PLL applications.

