

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-2008

**II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS
LINER AND DIGITAL IC APPLICATIONS
(EEE,ECE)**

AUG/SEP 2008

TIME:3HOUR
MARK:80

ANSWER ANY FIVE QUESTIONS ALL QUESTIONS CARRY EQUAL MARKS .

MARK [16*5=80]

1. (a) Define the terms: SVRR, CMRR, input bias current, input offset voltage, Gain Bandwidth product.
(b) What are the differences between the inverting and non inverting terminals? What do you mean by the term "virtual ground"?
2. (a) Explain the operation of Zero crossing detector.
(b) Briefly mention the disadvantages of using Zero crossing detector and how it is overcome in Schmitt Trigger?
3. (a) Briefly describe three uses of an analog multiplier.
(b) What do you mean by sampling? Explain the basic circuit for sample and hold circuit.
4. (a) Explain the operation of Monostable multivibrator using 555 timer. Derive the expression of time delay of a Monostable multivibrator using 555 timer.
(b) Design a Monostable multivibrator using 555 timer to produce a pulse width of 100 m sec.
5. (a) Explain the terms Lock range, Capture range and Pull-in time a PLL. How are Lock Range and Capture range determined?
(b) Design a PLL circuit using IC 565 to get:
 - i. Free-running frequency = 4.5 KHz
 - ii. Lock range of 2 KHz and
 - iii. Capture range = 100 Hz. Assume a supply voltage of + or - 10V. Show the circuit diagram with all component values.
6. (a) Explain the operation of a delay equalizer circuit with neat sketches. Derive an expression relating input and output voltages of the equalizer.
(b) For the all pass filter, determine the phase shift between input and output at $f=2$ kHz. To obtain a positive phase shift. What modifications are necessary in the circuit?
7. For the given circuit explain its operation with the help of Truth Table. Find h_{FEmin} , Fan-out if $h_{FE}=30$, and Noise-Margin for the given circuit shown below.
8. (a) Explain the operation of the fastest analog to digital converter. What is the main draw back of this converter? Compare this converter with other types.
(b) Draw the circuit diagram sample and hold circuit and explain its working.