

III B.Tech I Semester Regular Examinations, November 2007
LINEAR IC APPLICATIONS
(Electronics & Communication Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Discuss the differences between the differential amplifiers used in the first two stages of op - amp.
(b) Compare and contrast an ideal op - amp and practical op - amp.
(c) Draw an ideal voltage transfer curve of an op - amp. [8+5+3]
2. (a) What are the three factors that effect the electrical parameters of an op - amp
(b) Compare and contrast an ideal op - amp and practical op - amp.
(c) What are the features of 741 op - amp and also draw the pin diagram.[3+6+7]
3. (a) Draw the circuit diagram of a two input non-inverting type summing amplifier and derive the expression for the output voltage.
(b) Briefly explain why negative feedback is desirable in amplifier applications.
(c) How does negative feedback affect the performance of an inverting amplifier? [7+5+4]
4. (a) Derive the expression of the output voltage of an antilog amplifier using op - amp.
(b) Design a saw tooth wave form generator using op - amp and plot the waveforms for the given specifications frequency: 5kHz, $V_{sat} = \pm 15V$ (Assume necessary data). [8+8]
5. (a) List the conditions for oscillation in all the three types of oscillators, namely, RC phase shift, Wien - bridge and quadrature oscillators.
(b) Design an op ? amp based relaxation oscillator and derive the frequency of oscillation. [8+8]
6. (a) Draw the circuit of PLL as frequency multiplier and explain its working.
(b) Explain with neat diagram how 555 timers can be used as a Schmitt trigger. [8+8]
7. (a) Sketch and explain the transfer characteristic of a DAC with necessary equations.
(b) LSB of a 9 - bit DAC is represented by 19.6mv. If an input of 9 zero bits is represented by 0 volts.
 - i. Find the output of the DAC for an input 10110 1101 and 01101 1011.
 - ii. What is the Full scale reading (FSR) of this DAC? [8+8]

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Set No. 4

8. (a) Describe the operation of four quadrant multiplier with neat diagram.
(b) Explain the operation of IC 1496 as mixer circuit. [8+8]
