Code No: R05310401

Set No. 2

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

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1. (a) Explain how large open circuit voltage gain of an op - amp can be obtained by using cascading of differential amplifier stages.
   (b) Explain ac analysis of differential amplifier. [8+8]

2. (a) Discuss the Pole - Zero and Dominant pole compensation techniques for an op - amp.
   (b) An op - amp has a slew rate of 1.5V/μs. What is the maximum frequency of an output sinusoid of peak value 10 V at which the distortion sets in due to the slew rate limitation? [8+8]

3. (a) Design a differentiator to differentiate an input signal that varies in frequency from 10 Hz to about 1KHz. If a sine wave of 1V peak at 1000 Hz is applied to this differentiator draw the output waveforms.
   (b) Why active differentiator circuits are not used in analog computer to solve differential equations. [10+6]

4. (a) Describe the operation of logarithmic amplifier using op - amp.
   (b) List the conditions for oscillation in all the three types of oscillators, namely, RC phase shift, Wien - bridge and quadrature oscillators. [8+8]

5. (a) Draw the wide band reject filter circuit and also the frequency response of it.
   (b) Draw the schematic diagram of an all pass filter and determine the phase shift ϕ between the input and output at f = 2kHz. [8+8]

6. (a) Configure a 555 timer as a Schmitt trigger and explain.
   (b) Explain frequency translation and FSK demodulation using 565 PLL. [8+8]

7. (a) Explain the difference between Analog to Digital converter and Digital to Analog converters through underlying equations.
   (b) Illustrate one application each of Analog to Digital and Digital to Analog converters. [6+10]

8. (a) Explain the function of a typical adjustable voltage regulator. How can you increase the current driving capacity of the regulator?
   (b) Describe the principle of working of a balanced modulator using op - amp. Give the applications of it. [6+10]

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