B.E Full Time Degree END SEMESTER EXAMINATIONS, April/May2013

Fifth Semester, EEE Reg 2008

EE 9303 Linear Integrated Circuits

Time: 3 Hours Max. Marks: 100

Answer ALL Questions

PART – A (10 x 2 = 20 Marks)

1. What is advantage of digital circuits over analog circuits?
2. List the ideal characteristics of OpAmp.
3. If in a OpAmp IC ,a 0.3 V change in common mode input causes a DC output offset change of 3mV,determine the CMRR in dB.
4. Write briefly on the R-2R ladder type D/A converter for 8421 code conversion.
5. What is the need for converting a Lowpass Filter into a High pass filter?
6. Discuss on a suitable circuit suited to detect the nonsinusoidal input waveform using OpAmp.
7. If V (DC) is 15V, v(ripple: peak to peak) is .25v determine the ripple factor & the percentage ripple.
8. How is frequency division realized in a PLL circuit?
9. What are the need for optocouplers?
10. Distinguish the principle of Linear regulator and a switched mode power supply.

PART – B (5 x 16 = 80 Marks)

11. i) Derive the functional parameters for an Inverting mode feedback circuit with OpAmp. ii) How is it better than the non-inverting Amplifiers?
    iii) For a 741 OpAmp IC Inverting mode ,with R1=1Kohm,Rf=2.5 Kohm, compute Af; Rif; Rof; BW; offset voltage. (7+2+7)

12. a. i. What are the advantages of integrating type A/D converters?
    ii. Design a OpAmp based Integrator circuit.
    iii. Discuss on the Integrating type ADC realization using OpAmp.

    (2 + 7+7)

    (OR)

12. b. i). What are the types of voltage comparator techniques?
    ii). For an open loop inverting mode OpAmp,if vin =2V peak to peak sinewave at 500Hz, supply voltages=12V DC fitted with external pot that changes the V(Ref)=0V; 0.5V; - .2V. Draw the output waveforms.
    iii) Design & explain a Schmitt Trigger circuit. (2 + 7+7)

13.a Design a Sine wave Generator using OpAmp to output a frequency of 3 KHz . with C =.01 μF. What is the design attribute in the circuit to obtain a cosine wave generation?

(10 + 6)

(OR)

13.b. Write briefly on any two of the following: (8 + 8)

i. Successive Approximation Type A/D converter.
ii. Opamps as Comparators
iii. Clipper and Clamper circuits.

14.a. i) How are Filters categorized?
ii) Design a Analog First order Low pass Filter using OpAmp.
iii) Why is the first order Butterworth Low Pass filter converted to second order filter

(2+10+4)

(OR)

14.b. Design a Square Wave Generator. Explain how a Triangular Wave ; Sawtooth wave is Generated with this circuit. (8+4+4)

15.a. (i)Describe the 555 Timer IC .(ii)Design a Astable Multivibrater Circuit to generate output Pulses of 25%,50% duty cycle using a 555 Timer IC, with choice of C=0.1μF, Frequency as 3.0KHz .

(8+8)

(OR)

15. b. Answer any two of the following: (8+8)

i. Switched capacitor filters.
ii. LM 380 power amplifier.
iii. IC Fabrication technique to realize capacitor, Transistor.