15/11/13

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B.E Full Time Degree END SEMESTER EXAMINATIONS, Nov/Dec 2013

Fifth Semester, EEE / R- 2008

EE 9303 Linear Integrated Circuits

Time: 3 Hours Max. Marks: 100

Answer ALL Questions

PART – A (10 x 2 = 20 Marks)

1. How are Integrated Circuits categorized?
2. List the ideal characteristics of OpAmp.
3. If in a OpAmp IC ,a 0.3 mV 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.
5. What is the need for converting a First order Filter into a Second order filter?
6. Discuss on a suitable circuit suited to detect the aperiodic sinusoidal 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. What is meant by Lock range in a PLL circuit?
9. What is the need for optocoupler ICs?
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) For a 741 OpAmp IC Inverting mode ,with R1=1Kohm,Rf=4.7 Kohm, compute Af; Rif; Rof; BW; offset voltage.

    (iii) Develop a Comparator Logic of the circuit by finding for (A>B) ; (A=B) using differential mode OpAmp and suitable components if required. (6+6+4)

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?

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ii) For an open loop inverting mode OpAmp, if vin =2V peak to peak sine wave at 500Hz, supply voltages=15V DC fitted with external pot that changes the V(Ref)=0V; 0.2V; - .5V. 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 1.5 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. Diodes role in OpAmp Circuits.
iii. Clipper and Clamper circuits.

14. a. i) How are Filters categorized?

ii) Design a Analog First order Low pass Filter using OpAmp.

iii) How is the Low Pass filter converted to High pass filter of First order? (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=0.05μF, Frequency as 2.0KHz . (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 diode, Transistor.