ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : JUNE 2009

REGULATIONS : 2007

FOURTH SEMESTER

070290029 - LINEAR INTEGRATED CIRCUITS

(COMMON TO ELECTRONICS & COMMUNICATION ENGG. / MEDICAL ELECTRONICS)

TIME : 3 Hours   Max.Marks : 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1.   Define unity gain bandwidth of an OP-Amp.

2.   In response to a square wave input,   the output of an OP AMP changed from -3V to +3V over a time interval of 0.25s. Determine the slew rate of the OP AMP.

3.   Define CMRR.

4.   How do you compensate input and output offset voltages?

5.   What are the limitations of an ideal op-amp differentiator?

6.   State the important features of an instrumentation amplifier.

7.   Give any four applications of a comparator.

8.   An input of 3V is fed to the non-inverting terminal of an op-amp.   The amplifier has a R_i of 10 KΩ and R_f of 10 KΩ. Find the output voltage.

9.   Using an OP AMP, draw the circuit diagram of a phase shift oscillator.

10.   What is a two quadrant multiplier?

11.   Draw the circuit of AM detector using PLL.

12.   With reference to a PLL, define 'Pull in Time'.

13.   The basic step of a 9 bit DAC is 10-3mV. If 000000000 represents OV, what is the output for an input 101101111?

14.   Draw the sample and hold circuit.

15.   What is adaptive delta modulation?

16.   Determine the resolution of an 8 bit A/D converter for a 10V input range.

17.   In a linear voltage regulator, the input voltage is 20V and output voltage is 15V. For a load current of 1A, Calculate the power dissipated in the series pass element.

18.   List the applications of astable multivibrator circuit.

19.   What is the switched capacitor filter?

20.   What is the limitation of conventional rectifier? How it is eliminated in precision rectifier?

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21.   Draw the circuit diagram of a symmetrical emitter coupled difference amplifier and derive an expression for the difference mode gain Ad and the common mode gain Ac.

22.   Design a fourth order Butterworth low pass filter having a upper cutoff frequency of 1KHz

23.   Using neat sketches, explain how a PLL can be used as (i) a frequency translator and (ii) a AM demodulation.

24. a) With neat diagrams explain the working of successive approximation A/D converter.   (6)

    b) Explain the working of an exponential amplifier with a circuit diagram   (6)

25. a) Discuss the operation of IC 555 as a monostable multivibrator. Draw the   (6)
       waveform and explain.

    b) Draw the functional block diagram of switching regulator and explain it briefly   (6)

26. a) With a neat sketch, explain the working of variable transconductance   (8)
       multiplier

    b) Write notes on frequency synthesizer.   (4)

27. a) Explain the operation of Instrumentation amplifier.   (6)

    b) Detail the working of Log and Antilog amplifiers.   (6)

28. What is a current mirror? Discuss in detail the wildar current source.   (12)

*****THE END*****