Reg. No. _____

Karunya University

(Karunya Institute of Technology and Sciences)

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – April/May 2011

Subject Title: LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

Time: 3 hours

Subject Code: EC211 **Maximum Marks: 100**

Answer ALL questions

PART – A (10 x 1 = 10 MARKS)

1. What are the advantages of integrated circuits?
2. The n-p-n transistors are preferred over p-n-p transistor. (True / False)
3. In a practical OP-AMP, the equivalent Thevenin voltage is equal to _____.
4. In a multiplier, if both inputs may be either positive or negative, then the IC is called _____ multiplier.
5. Name few square wave generators.
6. In a high pass transistor the gain is equal to _____.
7. At audio frequencies, inductors are bulky, expensive and have poor electrical characteristics. (True / False)
8. Timer is available in _____ packages.
9. Define capture range in a PLL.
10. How many clock pulses are required for an eight bit successive approximation type ADC?

PART – B (5 x 3 = 15 MARKS)

11. List the basic process used in the Silicon Planar Technology.
12. State the characteristics of an ideal OP-AMP.
13. Define Load regulation in a regulator.
14. What is a switched capacitor filter?
15. What are the specifications for a digital to analog converter given by the manufacturer?

PART – C (5 x 15 = 75 MARKS)

16. Explain the steps involved in the IC fabrication technology.

(OR)

17. Write notes on various types of Integrated circuits resistors and capacitors.

18. a. Draw the open loop frequency response of an op-amp and mark the important points and explain briefly. (7.5)
    b. Draw an op-amp differentiator circuit and explain its function with relevant waveforms. (7.5)

(OR)

19. a. There are three input voltage sources V_1, V_2 and V_3. Using op-amp, design a circuit to obtain $V_0 = - (V_1 + 10V_2 + 15V_3) / 5$ (10)
    b. Design an op-amp circuit to obtain the difference between two voltages V_1, V_2 . (5)

[P.T.O]

20. Design a square wave to triangular wave conversion circuit using op-amp without giving any input signal.

(OR)

21. Explain the operation of switching regulator with waveforms.

22. a. What are the merits of active filters over passive filters? (2)
    b. Draw a schematic of an active Butter worth high pass filter (2^{nd} order) and explain the circuit. (13)

(OR)

23. Explain with a circuit diagram, monostable operation of the 555 Timer IC. Draw the necessary waveforms.

24. Discuss how a phase locked loop IC can be used as a frequency translator, AM detector and FSK demodulator.

(OR)

25. Explain with a neat circuit diagram the methods used in weighted resistor, R-2R digital to analog converter.