B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2011.

Fourth Semester

Electrical and Electronics Engineering

EE 2254 — LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

(Common to Instrumentation & Control Engineering and Electronics & Instrumentation Engineering)

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the basic processes used in IC Fabrication.

2. What is meant by ion implantation?

3. What is thermal drift?

4. Define Input offset voltage.

5. Draw the circuit of first order active filter.

6. Draw the circuit diagram of sample and hold circuit.

7. Define capture range of PLL.

8. What are one, two and four quadrant multipliers?

9. What are the disadvantages of linear voltage regulators?

10. What is isolation amplifier?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the process of epitaxial growth in IC fabrication process with neat diagrams.(8)

(ii) With neat sketches explain the fabrication of diodes. (8)

Or

(b) (i) Explain the different isolation techniques. (8)

(ii) Describe in detail about the diffusion process of IC fabrication.(8)

12. (a) Explain in detail about the frequency compensation applied to operational amplifiers. (16)

Or

(b) Draw and explain the working of operational amplifier as,

(i) Integrator. (8)

(ii) Differentiator. (8)

13. (a) Explain the following applications of operational amplifiers.

(i) Voltage to current converter. (8)

(ii) Clamper. (8)

Or

(b) Explain in detail the working of,

(i) Weighted resistor type DAC. (8)

(ii) Dual slope type ADC. (8)

14. (a) (i) Explain the working of voltage controlled oscillators. (8)

(ii) What is PLL? Explain its application as frequency multiplier. (8)

Or

(b) Explain the astable and bistable operation of IC 555 with necessarywaveforms. (16)

15. (a) Draw and explain the application of IC 723 as low voltage regulator and high voltage regulator. (16)

Or

(b) (i) Explain the block diagram of ICL 8038 function generator IC. (8)

(ii) Write short notes on opto couplers. (8)