Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

B 2155

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2008.

Fourth Semester

Electronics and Communication Engineering

EC 244 — LINEAR INTEGRATED CIRCUITS

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define slew rate of an operational amplifier.

2. State the characteristics of an ideal operational amplifier.

3. Design a non-inverting amplifier with a gain of 3 with an input resistance of 10 KΩ.

4. State the characteristics to be met by an instrumentation amplifier intented to be used for medical application.

5. What is meant by frequency shift keying?

6. What is a frequency synthesizer?

7. Draw a sample and hold circuit.

8. Define quantisation.

9. What is an opto coupler?

10. State any four sources of noise.

11. (a) (i) Explain the working of a difference amplifier with active load. (10)

    (ii) The CMRR of an op-amp is 10^4. Two sets of signals are applied to it First set is $V_1 = 20$ μV and $V_2 = -20$ μV and second set is $V_1 = 540$ μV and $V_2 = 500$ μV. Calculate the percent difference in output voltage for the two sets of signals. (6)

Or

    (b) Explain the methods of frequency compensation used in operational amplifiers.

12. (a) Explain the working of :

    (i) Instrumentation amplifier. (8)

    (ii) Full wave precision rectifier. (8)

Or

    (b) Explain the working of (i) Schmitt trigger (ii) Monostable multivibrator using op-amp.

13. (a) (i) Explain the working of a voltage controlled oscillator. (10)

    (ii) Write notes on compander IC. (6)

Or

    (b) (i) With block schematic explain the working principle of PLL. (8)

    (ii) How is PLL used as frequency multiplier? (8)

14. (a) (i) Discuss the working of a 8 bit weighted D/A converter. (8)

    (ii) Discuss on delta modulation. (8)

Or

    (b) (i) Explain the working of a successive approximation A/D converter. (8)

    (ii) Write notes on ADM. (8)

15. (a) (i) Explain the working of a video amplifier. (10)

    (ii) In an astable multivibrator using 555 timer, $R_A = 2.2$ KΩ, $R_B = 6.8$ KΩ and $C = 0.01$ μF. Calculate (1) t_{HIGH} (2) t_{LOW} (3) free running frequency (4) Duty cycle. (6)

Or

    (b) (i) Explain the working of switched mode regulators. (10)

    (ii) Explain how current boosting is achieved in 723 IC. (6)

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