Reg. No. : | | | | | | | | | | | |

Question Paper Code : P 1266

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fifth Semester

(Regulation 2004)

Electrical and Electronics Engineering

EC 1313 — LINEAR INTEGRATED CIRCUITS

(Common to B.E. (Part–Time) Fourth Semester Regulation 2005)

Time : Three hours Maximum : 100 marks

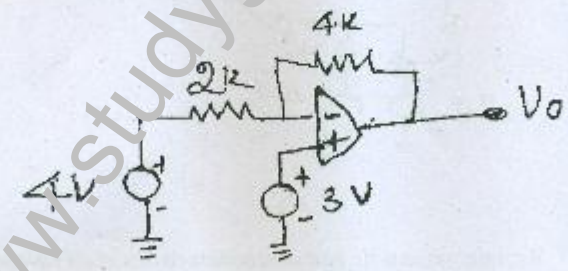
Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Compare the performance of n–p–n and p–n–p transistors with respect to IC fabrication.

2. What is meant by dielectric isolation? Mention its applications and limitations.

3. Find V_0 for the following circuit shown in figure :



4. What is a precision diode? Draw the circuit diagram of an half wave precision rectifier with wuveform.

5. What are the basic requirements of a good instrumentation amplifier?

6. Find the resolution of a 8 bit D/A converter.

7. Enlist the important features of 555 timer circuit.

8. Determine the output pulsewidth of the monostable amplifier using 555 timer if R = 10 KΩ and C = 0.01 μF.

9. What is an opto coupler? Draw the circuit diagram of an IC opto coupler.

10. What is the need for using switching regulators?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Briefly explain the process of ion implantation in IC fabrication. (8)

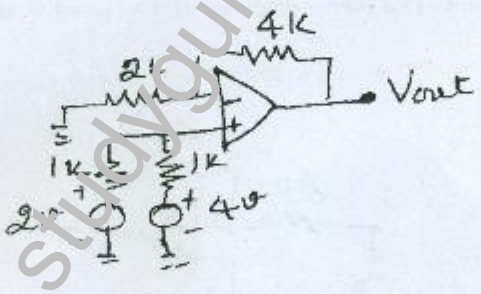
(ii) Explain the diffusion process as applied to IC technology. (8)

Or

(b) How are resistors and capacitors fabricated in monolithic technology? Discuss.

12. (a) (i) Write a technical note on frequency response characteristics of Differential amplifier. State the importance of frequency compensation. (10)

(ii) Determine the output voltage for the circuit shown in figure. (6)



Or

(b) (i) Explain various dc and ac characteristics of an op–amp. Distinguish between ideal and practical characteristics. (12)

(ii) Determine the output voltage of the differential amplifier having input voltages V_1 = 1 mV and V_2 = 2 mV. The amplifier has a differential gain of 5000 and CMRR 1000. (4)

13. (a) (i) Design a monostable multivibrator using op–amp. (8)

(ii) Explain the working of clamper and sample/hold circuit. (8)

Or

(b) (i) Briefly explain R–2R type D/A converter. Mention its advantages and disadvantages. (8)

(ii) Explain the working of successive approximation type A/D converter. (8)

14. (a) (i) With block diagram explain the principle of operation of NE565 phase locked loop. (8)

(ii) Describe the monostable operation of 555 timer. (8)

Or

(b) (i) With circuit schematic explain how the multiplier IC AD523 can be used as squarer and divider circuits. (8)

(ii) Describe the working of VCO. (8)

15. (a) (i) Discuss ICL 8038 function generator. (8)

(ii) Briefly explain protection circuits in voltage regulators. (8)

Or

(b) Write short notes on :

(i) LM 380 audio power amplifier. (10)

(ii) Opto electronic ICs (6)