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D 4159

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

Fourth Semester

Electronics and Instrumentation Engineering

EC 1313 — LINEAR INTEGRATED CIRCUITS

(Common to Instrumentation and Control Engineering)

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What is ion Implantation? Give its advantages.

2. Differentiate between thick films and thin films.

3. For Op-Amp, CMRR=10^5 and differential gain Adm = 10^5. Calculate the common mode gain Acm of the op-Amp.

4. Design an adder circuit using Op-Amp to get the output expression as $V_0 = -[0.1\,V_1 + V_2 + 10\,V_3]$ where V_1, V_2 and V_3 are inputs.

5. What is an instrumentation Amplifier?

6. Which is the fastest ADC and why?

7. What are the modes of operation of timer?

8. List the applications of PLL.

9. Draw the functional diagram of IC 723 Regulator.

10. What is Optocoupler?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the advantages of IC over discrete component circuit and Explain basic Process Used in the Silicon Planar Technology.

Or

(b) Discuss the various methods of fabricating Transistor and Compare the performance. Explain the different types of IC packages.

12. (a) Explain the parameters of op-Amp that are important for ac applications and discuss about frequency response of Op-Amp.

Or

(b) Design an Op-Amp differentiator that will differentiate an input signal with f_{max} =100 Hz . Draw the output waveform for a sine wave of 2v peak at 100Hz applied to the differentiator.

13. (a) What is comparator? Draw and explain the operation of a triangular wave generator.

Or

(b) Design a 3bit flash type A/D converter and discuss its important specification.

14. (a) Derive the expression of time delay of a monostable multivibrator and explain the functional diagram of a 555 Timer.

Or

(b) Derive Lock in Range of a PLL and list the applications of PLL (Phase Locked Loop).

15. (a) (i) Describe the 723 voltage Regulator operation in detail. (10)

(ii) Explain the significance of Isolation amplifiers. (6)

Or

(b) (i) Discuss the operation of ICL 8038 function generator IC. (10)

(ii) Write note on Opto couplers. (6)

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