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Question Paper Code : 21504

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Fourth Semester

Electrical and Electronics Engineering

EE 2254/EE 45/EC 1260/080280028/10133 EE 405 – LINEAR INTEGRATED
CIRCUITS AND APPLICATIONS

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

(Regulations 2008/2010)

(Also common to PTEE 2254 – Linear Integrated Circuits and Applications for B.E.
(Part-Time) – Third Semester – Electronics and Instrumentation Engineering –
Regulations 2009/10133 EE 405 – Linear Integrated Circuits and Applications for
B.E. (Part-Time) – Sixth Semester EEE – Regulations 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is photo etching in IC fabrication?
2. Write the advantages of ion implantation process over diffusion process.
3. Define Common Mode Rejection Ratio.
4. Design an amplifier whose output voltage $V_0 = 2V_1 - 2V_2 - 4V_3$.
5. List out the important features of sample and hold circuit.
6. Design a first order low pass filter at a cut-off frequency of 2kHz with a passband gain of 2.
7. Write any two applications of analog multiplier.
8. What is the function of low pass filter in PLL?
9. What is the principle of operation of switching regulator?
10. Draw the internal block diagram of ICL 8038 function generator.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the steps involved in photolithography process. (8)
(ii) Discuss various methods used for fabricating IC resistors. (8)

Or

- (b) (i) Realize the complementary MOSFET using monolithic IC technology. (8)
(ii) Explain the different types of IC packages. (8)
12. (a) (i) Describe four different configurations of feedback amplifiers. (8)
(ii) What is frequency compensation? Explain the various frequency compensation techniques. (8)

Or

- (b) (i) Explain the effect of non-ideal dc characteristics of Op-amp on the system response. How can these be minimized? (8)
(ii) Explain the frequency response of practical differentiator. (8)
13. (a) (i) Explain the operation of instrumentation amplifier with its advantages. (8)
(ii) Discuss the working of astable multivibrator using Op-amp. (8)

Or

- (b) (i) Compare R-2R ladder network DAC and binary weighted DAC. Discuss the working of R-2R ladder network DAC. (2 + 8)
(ii) Describe various specifications of ADC. (6)
14. (a) (i) Explain any two applications of monostable multivibrator using IC 555. (6)
(ii) Explain four quadrant analog multiplier with necessary diagrams. (10)

Or

- (b) (i) Explain the different types of phase comparators used in PLL. (6)
(ii) Draw the functional block diagram of voltage controlled oscillator. How does it act as voltage to frequency converter? (10)

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15. (a) (i) Draw the pin configuration of LM723. Explain the operation of low voltage regulator using LM 723. (10)
- (ii) Write the characteristics of Opto-coupler. (6)

Or

- (b) (i) Explain any two applications of IC LM380 power amplifier. (8)
- (ii) Explain the principle of operation of isolation amplifier. Write its important features. (8)
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