Question Paper Code : 40993

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Third Semester

Electrical and Electronics Engineering

EE6303 – LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

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

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define the term photolithography in IC fabrication.

2. The slew rate of an op-amp is 0.6 V/micro sec. What is the maximum undistorted sine-wave that can be obtained for a 10 V peak and 1V peak ?

3. Compare the ideal and practical op-amp characteristics.

4. How an op-amp can be used as a voltage follower ?

5. Draw the diagram of a sample and hold circuit.

6. Enlist the applications of comparators.

7. Define the terms lock range and capture range with respect to PLL.

8. Mention the applications of analog multipliers.

9. What is an isolation amplifier ?

10. List the features of opto-coupler ICs.
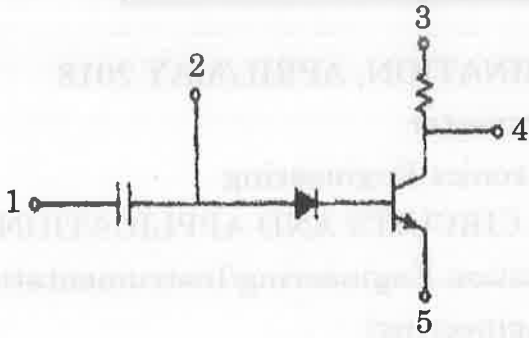
PART – B   (5×13=65 Marks)

11. a) Describe the steps involved in the fabrication of monolithic IC transistors.   (13)

(OR)

   b) Elaborate the fabrication of MOS ICs with suitable diagram.   (13)

12. a) i) Explain the working principle of emitter coupled differential amplifier.   (7)

   ii) How common mode rejection ratio can be increased using constant current source ?   (6)

(OR)

   b) i) Draw the inverting amplifier circuit of an op-amp in closed loop configuration. Obtain the expression for the closed loop gain.   (7)

   ii) For a non-inverting amplifier using an op-amp assume R_1 = 470 ohm and R_2 = 4.7 kohm. Calculate the closed loop voltage gain of the amplifier.   (6)

13. a) i) Design a weinbridge oscillator for a frequency of 5 kHz. Assume C = 0.01 micro farad.   (4)

   ii) Explain the operation of a triangular waveform generator using op-amp.   (9)

(OR)

   b) i) Discuss the operation of successive approximation type A/D converter.   (11)

   ii) What are the advantages of continuous type A/D converter over counter type A/D converter ?   (2)

14. a) i) Explain the functional block diagram of NE561 phase locked loop.   (7)

   ii) Narrate the process of FSK demodulation using PLL.   (6)

(OR)

   b) Describe the working principle of the variable trans-conductance analog multiplier.   (13)

15. a) i) Explain the working principle of basic linear voltage regulator using op-amp. **(7)**

    ii) Explain the operation of a monolithic IC Class-A audio power amplifier LM380. **(6)**

(OR)

  b) Write a detailed note on switching regulators. **(13)**

PART – C   **(1×15=15 Marks)**

16. a) What are the new trends in Integrated circuit technologies and explain about its scope for future generation ?

(OR)

  b) Write a note on recent fabrication methods of diode and capacitance for industrial applications.

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15. a) Explain the working principle of basic linear voltage regulator series op-amp. (11)

b) Explain the operation of a monolithic IC Class A audio power amplifier. L36380. (8)

(OR)

b) Write a detailed note on switching regulators. (15)

PART - D [1×15=15 Marks]

16. a) What are the new trends in integrated circuit technologies and explain given its scope for future generations?

(OR)

b) Write a note on recent fabrication methods of chips and equipments for industrial applications.