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Question Paper Code : 20449

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electrical and Electronics Engineering

EE 6303 – 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. What is meant by parasitic capacitance?

2. What are the advantages of NPN transistor over PNP transistor in IC technology?

3. Write the concept of virtual ground.

4. Define slew rate.

5. How does Schmitt trigger act as a regenerative comparator?

6. Mention the drawback of Binary weighted resistor DAC.

7. List the applications of PLL.

8. What are the features of VCO?

9. What is a series voltage regulator?

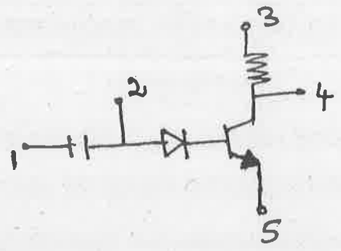
10. How current boosting is achieved in a 723 regulator?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the basic processes used in silicon planar technology with neat diagram. (13)

Or

(b) Write down the various steps involved in the fabrication of a typical circuit. (13)



12. (a) Draw the circuits for inverting, non-inverting and difference amplifier using op-amp. Also derive the expressions for their gains. (13)

Or

(b) Explain the ideal and non ideal DC characteristics of an op-amp. (13)

13. (a) With circuit diagram, discuss the following applications of operational amplifier

(i) R-2R ladder type D/A converter. (8)

(ii) Peak detector. (5)

Or

(b) Explain the operation of astable multivibrator using op-amp. (13)

14. (a) With a neat block diagram explain the Operation of Voltage Controlled Oscillator. (13)

Or

(b) List the important features of the 555 timer. Also write about the two basic modes in which the 555 timer operation. (13)

15. (a) Explain the working principle of switched mode power supply. Discuss its advantages and disadvantages. (13)

Or

(b) Explain the working of series voltage regulator. (13)

PART C — (1 × 15 = 15 marks)

16. (a) (i) Draw and explain the integrater circuit using Op-amp. (6)

(ii) An inverting amplifier using the 741 IC must have a flat response upto 40 KHz. The gain of the amplifier is 10. What maximum peak-to-peak input signal can be applied without distorting the output. (9)

Or

(b) Explain with a neat block diagram and switching power supply waveforms for the following types of SMPS.

(i) Forward converter

(ii) Fly back converter. (15)