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Question Paper Code : 52947

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Electrical and Electronics Engineering

EE 6303 — LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

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

(Regulation 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Write the advantages of ICs over discrete circuits.

2.   How are diodes realised in IC wafer fabrication?

3.   How is peak detector circuit obtained with Op–Amp?

4.   Draw the circuit diagram of an integrator and give its output equation.

5.   Draw the circuit diagram of a zero cross detector with input and output waveforms.

6.   Which is the fastest ADC? State reason.

7.   Define duty cycle in astable multivibrator using IC 555.

8.   List the applications of PLL.

9.   Define Line regulation and Load regulation.

10. How is +5V and –5V obtained used IC voltage regulates?

PART B — (5 × 13 = 65 marks)

11. (a) With neat illustrations explain the various steps involved in the IC fabrication process. (13)

Or

(b) With circuit diagram explain the steps involved in the fabrication of the circuit shown below using IC technology. (13)
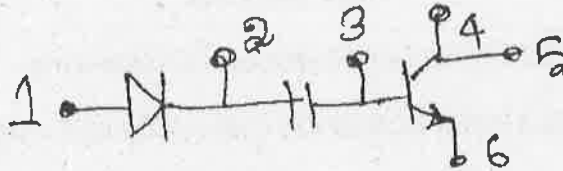
12. (a) (i) What is Slew rate? List the causes of the Slew rate and explain its significance in applications.

(ii) Briefly explain the methods used for frequency compensation.

Or

(b) (i) Draw and explain the operation of a current to voltage converter.

(ii) What are the limitations of an ordinary op-amp differentiator? Draw the circuit of a practical differentiator that will eliminate these limitations.

13. (a) (i) Design a Schmitt trigger using Op-Amp.

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

Or

(b) (i) Draw the instrumentation amplifier using 3 Op-Amp and derive its output voltage equation.

(ii) Explain the first order low pass butterworth filter with a neat diagram. Derive its frequency response and plot the same.

14. (a) With the help of schematic diagram, explain the operation of IC 566 VCO and derive its output frequency.

Or

(b) What is PLL? How frequency multiplication is done in PLL?

15. (a) (i) Explain the working of series voltage regulator.

(ii) Explain the working principle of IC 8038 function generator.

Or

(b) (i) What is the principle of switch-mode power supplies? Discuss its advantages and disadvantages.

(ii) With a neat diagram explain the operation of LM 380 power amplifier.

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) Develop an Op–Amp based signal generates to give sine wave, square wave and triangular wave output.

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