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Question Paper Code : 90519

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

Fourth Semester

Electrical and Electronics Engineering

EE8451 — LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

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

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the advantages of IC over discrete component circuits?
2. Why the epitaxial layer is called so?
3. What is a scale changer?
4. Define Input Offset voltage.
5. Draw the transfer characteristics of practical comparator.
6. Mention the conditions to be satisfied for sustained oscillations in sine wave generators.
7. What is the function of VCO in PLL?
8. Why the 555 timer is called so?
9. Mention the standard positive voltage regulator ICs.
10. List the applications of SMPS.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the silicon wafer preparation process with neat sketch.

Or

(b) Explain the different types of IC resistor fabrication technique.

12. (a) With neat sketch explain the 3 input inverting summing amplifier.

Or

(b) Describe the working of differentiator and Integrator and also draw the output when the input is square wave.

13. (a) Explain the working of a negative clipper and draw the output voltage waveform for positive and negative V_{ref} Values.

Or

(b) Explain the flash type and Successive Approximation type ADC with neat sketch.

14. (a) Briefly discuss the types of phase detectors a present in the Phase Locked Loops(PLL).

Or

(b) With neat sketch describe the working of a Monostable multivibrator using 55 timer.

15. (a) Discuss the operation of Instrumentation amplifier with neat sketch.

Or

(b) Explain the operation of SMPS.

PART C — (1 × 15 = 15 marks)

16. (a) Design a circuit Op-amp, which implements the following equations:

(i) Vo=sine wave when input is cosine wave.

(ii) $Vo=3(V_1+V_2)$

(iii) $Vo=(V_1 \times V_2)/V_3$

(iv) $Vo=5V_1-5V_2$

Or

(b) Briefly Explain the V–I and I–V converter circuit using operational Amplifire.