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Question Paper Code : 90202

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
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. Classify ICs based on the Manufacturing techniques. Name any two merits.
2. List the steps used for preparation of Silicon Wafer.
3. Recall the Ideal OP-AMP characteristics.
4. Distinguish between Input Offset voltage and Input Offset current.
5. Draw the circuit of antilog OP-AMP amplifier.
6. What is Astable Multivibrator ?
7. In a Monostable multivibrator using 555 timer, the components values are
 $R_A = 5.6 \Omega$ and $C = 0.068 \mu F$. Find the Pulse width period T.
8. List the applications of PLL.
9. Name the important performance parameters of 3 terminal IC regulators.
10. Draw the PIN diagram of IC 723 regulator.



PART - B

(5×13=65 Marks)

11. a) Discuss with necessary diagram, the basic process for fabrication of ICs using Silicon IC Planar technology.

(OR)

- b) Explain with neat diagram, the different methods of fabricating the integrated resistor.

12. a) Discuss with neat diagram, the DC characteristics of OP-AMP with necessary expressions.

(OR)

- b) Illustrate with neat diagram, the working of inverting and Non-inverting amplifiers by using OP-AMPs. Develop the expressions for output voltages.

13. a) Elaborate with neat circuit diagrams and input/output waveforms, the operation of positive clipper and peak clamper.

(OR)

- b) Explain with a neat sketch, the working of successive approximation type analog to digital OP-AMP converter.

14. a) Demonstrate with neat functional diagram, the working of 555 IC timer. Develop the expression for pulse width of rectangular output pulse.

(OR)

- b) Explain with neat diagram, the working of a phase locked loop.

15. a) Discuss with neat diagram, the working of IC 7805 regulator as

- i) Current source (3)
- ii) Boosting regulator output current (5)
- iii) IC 7805 regulator as current source (5)

(OR)

- b) Elaborate with neat diagram, the working of IC 723 as low voltage and high voltage regulators.



PART - C

(1×15=15 Marks)

16. a) Design an astable multivibrator that can produce an output with $T_{on} = T_{off} = 1\text{msec}$. The OP-AMP is driven with a +15 and -15V supply. Draw the waveforms across capacitors, feedback and output. The hysteresis should not exceed 0.1V.

(OR)

- b) For a non-inverting amplifier shown in Figure 16. b, $R_1 = 1\text{k}\Omega$, $R_f = 10\text{k}\Omega$. Calculate i) the maximum output offset voltage due to input offset voltage ($V_{os} = 10\text{mV}$) and Bias current ($I_B = 300\text{nA}$) and offset current $I_{os} = 50\text{nA}$. ii) Calculate the value of R_{comp} need to reduce the effect of I_B . iii) Calculate the maximum output offset voltage if R_{comp} is connected in the circuit. (5+5+5)

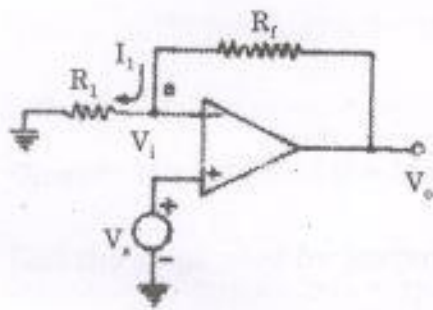


Fig. 16.b