

C 15656

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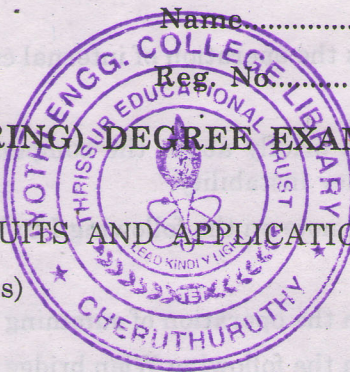
Name.....

Reg. No.....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION  
JUNE 2011

AI 09 403—LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

(2009 Admissions)



Time : Three Hours

Maximum : 70 Marks

Part A

1. What is the purpose of oxidation ?
2. Why offset voltage is observed in an Op-amp ?
3. Design an non-inverting amplifier with a gain of 3.
4. Design a Wien-bridge oscillation for a frequency of operation of 2 kHz.
5. What are features of GaAs amplifier.

(5 × 2 = 10 marks)

Part B

Answer any four questions.

6. Explain the common mode operation of differential amplifier.
7. In an inverting amplifier  $R_1 = 1k\Omega$  and  $R_f = 100k\Omega$ . The Op-amp has the following specifications  
$$\frac{\Delta V_{os}}{\Delta T} = 30\mu V/^{\circ}C \text{ max and } \frac{\Delta I_{os}}{\Delta T} = 0.3nA/^{\circ}C \text{ max. Assume that the amplifier is nulled at } 25^{\circ}C.$$

Calculate the value of error voltage and output voltage  $V_o$  at  $35^{\circ}C$  if  $V_i = 1mV$  and  $V_i = 5mV$  dc.
8. Find  $R_1$  and  $R_f$  of a lossy integrator so that the peak gain is 40 dB and the gain is 6 dB down from its peak value when  $W = 10,000$  rad/s.
9. Design an instrumentation amplifier to provide an output gain of 5. State the features of this amplifier.
10. Design a saw tooth generator to generate a frequency of 2 kHz.
11. Design a band pass filter with a  $f_L = 500$  Hz,  $f_H \approx 200$  Hz.

(4 × 5 = 20 marks)

Part C

12. Discuss the steps involved with fabrication of an IC using CMOS technology.

Or

13. Discuss the operation of GaAs amplifier and MOS differential amplifier.

Turn over



14. Discuss the operation of internal circuit of an Op-amp.

Or

15. Explain briefly about the compensating networks used for offset voltages, bias currents and frequency instability.

16. Write a note on the following I to V converter, Integrator and peak detector.

Or

17. Explain the operation of summing amplifier, logarithmic amplifier and differentiator.

18. Explain the following Wien bridge oscillator, universal active filter and Notch filter.

Or

19. Write briefly about switched capacitor filter, Astable multi-vibrator and low pass filter.

(4 × 10 = 40 marks)