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R 3292

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Fourth Semester

(Regulation 2004)

Electronics and Communication Engineering

EC 1254 — LINEAR INTEGRATED CIRCUITS

(Common to B.E. (Part-Time) Third Semester Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Find the maximum frequency for an opamp with sine wave output voltage of 10 V peak and slew rate is $2 \text{ V}/\mu\text{s}$.
2. What do you mean by input offset current and input offset voltage?
3. Find V_o for the following circuit shown in figure

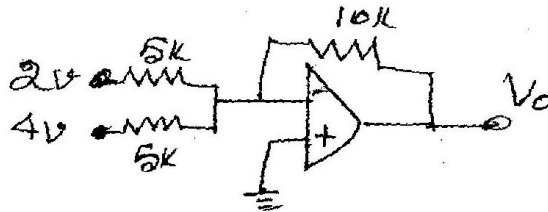


Fig. Qn. (3)

4. What is an antilog amplifier? Draw the circuit diagram of an antilog amplifier.
5. Draw the block diagram of NE566 voltage controlled oscillator.
6. What is an operational transconductance amplifier? Draw the schematic.

7. Calculate the quantizing error for an 8 bit A/D convertor with full scale input voltage of 2.55 V.
8. What is a sample and hold circuit? Mention any two applications.
9. What is a stagger tuned amplifier?
10. What is the need for using switched capacitor filters in MOS technology?

PART B — ($5 \times 16 = 80$ marks)

11. (a) (i) Discuss the ideal characteristics of an opamp. Compare with practical opamp. (6)
- (ii) Briefly explain different types of frequency compensation techniques applied to opamp circuits. (10)

Or

- (b) (i) Explain the concept of Wildhar current source used in opamp circuits. (10)
- (ii) For the noninverting opamp shown in figure, find the output voltage V_0 . (6)

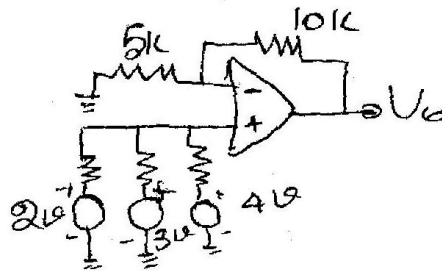


Fig Qn. 11 (b) (ii)

12. (a) (i) Design a second order Butterworth active high pass filter for a cut off frequency of 5 kHz. (10)
- (ii) What is a precision diode? With circuit schematic explain the working principle of full wave precision rectifier. (6)

Or

- (b) (i) With diagram explain the working principle of ICL 8038 function generator. (10)
- (ii) Explain how a compander can be used as a zero crossing detector. (6)
13. (a) (i) Briefly explain variable transconductance amplifier. (10)
- (ii) How a PLL used as voltage multipliers? (6)

Or

- (b) (i) Write a note on compander ICs. (8)
- (ii) How a PLL used as frequency synthesizer? (8)
14. (a) (i) With circuit schematic explain analog switches using FET. (8)
- (ii) Explain the working principle of dual slope A/D converter. (8)

Or

- (b) (i) Write short notes on voltage to time converters. (10)
- (ii) What are the different sources of error in D/A converter? (6)
15. (a) (i) Briefly explain LM 380 audio amplifier. (10)
- (ii) Discuss about protection circuits used in IC regulators. (6)

Or

- (b) (i) What are the design consideration of video amplifier? (6)
- (ii) Briefly explain the working principle and the frequency response characteristics of video amplifier IC. (10)