D 27176

SSEC

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2006

EC 2K 504—LINEAR INTEGRATED CIRCUITS

Time : Three Hours

Maximum : 100 Marks

*Answer **all** questions.*

I. (a) Draw the circuit of current mirror used in differential amplifier.

   (b) Explain how bias current is compensated in d.c. inverting amplifier.

   (c) Write short notes on MOS differential Amplifier.

   (d) Write the typical CMOS op-amp parameters.

   (e) Draw the circuits of inverting and non-inverting amplifier configurations.

   (f) Write short notes on linear sweep circuits.

   (g) Determine the order of a low-pass Butterworth filter that is to provide 40 dB attenuation at (w/wh) = 2.

   (h) Design wide-band pass filter having $f_1 = 400$ Hz, $f_n = 2k$ Hz and pass band gain of 4. Find the value of the filter.

   (8 × 5 = 40 marks)

II. (a) Discuss the following :—

    (i) Slew rate.

(7 marks)

    (ii) Methods to improve CMRR.

(8 marks)

Or

   (b) Explain the various internal stages of op-amp.

(15 marks)

III. (a) Explain the concept of wide swing constant trans conductance differential amplifier.

Or

   (b) Explain the concept of CMOS op-amp with and without compensation.

(15 marks)

IV. (a) Draw the circuit of instrumentation amplifier and explain.

Or

   (b) Construct an antilog amplifier using two op-amps.

(15 marks)

V. (a) Discuss the frequency transformations to obtain HPF, BPF and BEF from normalized prototype LPF.

Or

   (b) Explain the first and second orders of all pass filter realizations.

(15 marks)

[4 × 15 = 60 marks]