D 50612 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, NOVEMBER 2013

EC 09 506 – LINEAR INTEGRATED CIRCUITS

(Regular/Supplementary)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. Design an inverting amplifier with a gain of 2.
2. State the classifications of filters.
3. Write the features of Instrumentation Amplifier.
4. Give any *four* non-linear applications of op-amp.
5. Write the expression for output triangle wave frequency of a waveform generator.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

1. Briefly explain the operation of V-I converter.
2. Obtain an expression for gain of the inverting and non-inverting amplifier.
3. Explain the operation of a peak detector circuit.
4. Explain the working of logarithmic amplifier with neat sketches.
5. Derive the expression for transfer function of a first order low-pass filter.
6. Briefly explain the working of RC phase shift oscillator.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

1. Design an op-amp circuit for the following applications :
   (a) Summing Amplifier.
   (b) V-I converter.
   (c) Voltage follower.

(3 + 4 + 3 = 10 marks)

Or

Turn over

2. Explain the op-amp circuit for measurement of following parameters :

   (a) Open loop gain.

   (b) Output resistance.

   (c) Input resistance.

(3 + 3 + 4 = 10 marks)

3. Explain the operation of Integrator circuit and obtain an expression for its output voltage.

(10 marks)

Or

4. (a) Discuss the merits and demerits of weighted resistor DAC compared to R-2R Ladder DAC.

   (b) Explain the R-2R ladder DAC with neat sketches.

(4 + 6 = 10 marks)

5. (a) Briefly explain the frequency response of a RC filter from its transfer function.

   (b) Derive an expression for Bandwidth.

(6 + 4 = 10 marks)

Or

6. design a second order band pass filter with a midband voltage gain of 40, corner frequency 160 Hz and a 3 db Bandwidth B = 14 Hz.

(10 marks)

7. (a) Explain the operation of pulse generator circuit using op-amp.

   (b) Derive the expression for the period of symmetrical waveform.

(5 + 5 = 10 marks)

Or

8. Explain the operation of switching regulator with neat sketches.

(10 marks)

[4 × 10 = 40 marks]