D 70283 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, NOVEMBER 2014

EC/PTEC 09 506—LINEAR INTEGRATED CIRCUITS

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Draw the voltage follower circuit and explain it.
2. Write any four linear applications of op-amp.
3. Define sample and hold period.
4. Sketch the ideal characteristics of low-pass and band-pass filters.
5. What is current foldback in regulators ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

1. Explain the measurement of output resistance in an op-amp.
2. Explain the working of weighted resistor DAC.
3. Explain the operation of precision half-wave rectifier.
4. Derive the transfer function of high-pass filter.
5. Explain the working of Schmitt trigger.
6. Explain the current limit protection in IC regulators.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

1. Explain the following applications of op-amp with neat sketches :
   (i) I/V converter.
   (ii) V/I converter.
   (iii) Summer.

Or

Turn over

2. Explain the operation of emitter coupled differential amplifier supplied with a constant current.

3. (a) Explain the operation of dual slope ADC with neat sketches. (8 marks)

   (b) State the merits and demerits of successive approximation type ADC compared to dual slope ADC. (2 marks)

Or

4. (a) Explain the operation of sample and hold circuit with neat sketches. (8 marks)

   (b) Draw the input-output waveforms for zero crossing detector and window detector. (2 marks)

5. Design a second order band-pass filter with a midband voltage gain of 34 dB, corner frequency 150 Hz and a 3 dB bandwidth B = 16 Hz.

Or

6. (a) Derive the transfer function of active RC band-pass filter. (6 marks)

   (b) Obtain the frequency response characteristics of Active RC band-pass filter. (4 marks)

7. Explain the working of VCO with neat sketches.

Or

8. (a) Explain the operation of Schmitt trigger with neat sketches. (6 marks)

   (b) Obtain the expression for time period of a Schmitt trigger. (4 marks)

[4 × 10 = 40 marks]