Reg. No. : ....

Name : ....

V Semester B.Tech. (Including Part Time) Degree (Reg./Sup./Imp.) Examination, November 2012
(2007 Admn. Onwards)
PT2K6/2K6 EC/AEI 505 : LINEAR INTEGRATED CIRCUITS

Time : 3 Hours   Max. Marks : 100

I. a) Define constant current source. Also draw the circuit diagram of constant current source.   **5**

   b) Define :

     1) Input bias current

     2) Input offset voltage

     3) Slew rate.   **5**

   c) What are the advantages of differential amplifier over single input amplifiers ?   **5**

   d) Draw and explain the circuit of differential amplifier with a current mirror load.   **5**

   e) Explain the working of comparator circuit with neat circuit diagram.   **5**

   f) Explain the working of non-inverting amplifier with neat circuit diagram.   **5**

   g) Draw the circuit diagram of all pass filter and explain why we need all pass filter.   **5**

   h) Define the following :

     1) Q factor of a filter

     2) B.W. of a filter.   **5**

II. a) Draw and explain a simplified schematic circuit of opamp 741.   **15**

OR

   b) i) Explain the following with neat circuit diagram :   **8**

1) Current mirror

2) Darlington pair.

   ii) The output of opamp voltage follower is a triangular wave with 6 V peak to peak voltage amplitude and frequency 2 MHz for a square wave input of frequency 2 MHz and 8 V peak to peak amplitude. What is the slew rate of the opamp ?   **7**

III. a) Explain the DC operation of source coupled pair differential amplifier. Also derive the equation for maximum and minimum differential input voltage. Also derive the equation for maximum and minimum common mode input voltage.   **15**

OR

   b) i) Explain how the output level shifting is achieved in the differential amplifier ?   **7**

   ii) Explain the working of non-inverting summer with neat circuit diagram.   **8**

IV. a) Explain the working of instrumentation amplifier with neat circuit diagram. Derive the equation for gain. Also list out the advantages of instrumentation amplifier.   **15**

OR

   b) Explain the working of antilog amplifier with a neat circuit diagram and derive the equation for output voltage.   **15**

V. a) Draw the circuit diagram of a second order Butterworth Sallenkey configuration low pass filter and derive the equation for transfer function, H(s).   **15**

OR

   b) Explain de Lyannis configuration band pass filter with neat circuit diagram and proper derivation.   **15**