Code: EE5T5

III B.Tech - I Semester – Regular Examinations - November 2014

LINEAR & DIGITAL INTEGRATED CIRCUIT APPLICATIONS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours   Marks: 5x14=70

Answer any FIVE questions.   All questions carry equal marks

1. a) List out AC characteristics of an op-amp and discuss about them?   7 M

   b) An op-amp has a slew rate of $2V/\mu s$. What is the maximum frequency of an output sinusoid of peak value 5V at which the distortion sets in due to the slew rate limitation? Derive the formula used?   7 M

2. a) Explain and draw the output waveforms of an ideal integrator circuit when the input is square wave?   7 M

   b) Design a circuit using op-amp to generate a output $V_0 = 0.1V_1 - V_2 + 10V_3$ where V_1, V_2, V_3 are input voltages.
                                                            7 M

3. a) Describe the operation of logarithmic amplifier using OP-AMP?   7 M

   b) List the conditions for oscillations in all the three types of oscillators namely RC Phase, shift, Wien bridge and Quadrature Oscillators?   7 M

4. a) Configure a 555 timer as a Schmitt trigger and explain?

7 M

b) Explain about the free running range, capture range and lock range in PLL with necessary equations?   7 M

5. a) Design a narrow band pass filter using Op-Amp. The resonant frequency is 100Hz and Q=2. Assume C=0.1μF.

7 M

b) Draw the schematic diagram of successive approximation type analog to digital converter and explain the operation?

7 M

6. a) Describe the terms decoder and demultiplexer. How can you convert a decoder to demultiplexer?   7 M

b) Draw and explain the working of ripple adder?   7 M

7. a) Explain the operation of 4 bit Johnson counter?   7 M

b) Specify the modes of operation of shift registers?   7 M

8. a) Differentiate between static RAM and dynamic RAM?7 M

b) Write about any two programmable logic devices?   7 M