Code: EC5T1

III B.Tech - I Semester–Regular Examinations December 2016

LINEAR INTEGRATED CIRCUITS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer *all* the questions.   All questions carry equal marks

11x 2 = 22 M

1.
   a) What is the need of level translator in Op-Amp?
   b) Draw the equivalent circuit of OP-Amp indicating the parameters.
   c) Define the output offset voltage and input bias current.
   d) Draw the circuit diagram of Op-Amp buffer.
   e) List out the differences between Wien bridge and RC phase shift oscillator.
   f) What are the applications of All pass filters?
   g) Draw the circuit diagram of Butterworth Low pass filter of first order.
   h) What voltage should be applied and to which pin to reset the 555 Timer?
   i) Define the Capture range and Lock range of PLL.
   j) Define Resolution and Accuracy of D to A converter.
   k) Which is the fastest A to D converter and why?

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2. a) Analyse the Dual input balanced output differential amplifier and derive the equation for differential mode gain using h-parameter model.   10 M

   b) Discuss about the measurement of Slew rate.   6 M

3. a) Explain the operation of Instrumentation amplifier with the help of block diagram and derive equation for gain .   8 M

   b) Design a Wien bridge oscillator with gain of 5 and 1 KHz frequency.   8 M

4. a) Construct a first order butter worth wide band pass filter with pass band gain of 4 to pass a band of 3KHz-5KHz.

                                    8 M

   b) Explain the principle of switched capacitor filters and their advantages.   8 M

5. a) Explain the Frequency divider using 555 Timer.   8 M

   b) Explain the Frequency demodulation using 565 PLL.   8 M

6. a) Discuss about the working of R-2R Ladder D-to-A Converter.   8 M

b) Explain the operation of Successive approximation A-to-D Converter.   8 M