Code: EC5T1

III B.Tech - I Semester – Regular/Supplementary Examinations MARCH 2021

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 function of level translator?
b) Draw the block diagram of Op-Amp.
c) What are the limitations of ideal differentiator?
d) List the applications of comparators.
e) What is the function of all pass filter and draw the circuit diagram.
f) List the advantages and disadvantages of switched capacitor filters.
g) Draw the circuit diagram of Schmitt trigger using 555 timer.
h) What is the difference between capture range and lock range in PLL?
i) Draw the circuit diagram of 3-bit R-2R Ladder DAC.
j) Define the terms Linearity and Resolution.
k) What is the significance of Bode plots?

PART – B

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

3 x 16 = 48 M

2. a) What do you mean by slew rate and derive an expression for slew rate for a voltage follower circuit using Op-Amp.

8 M

   b) Explain about AC analysis of Dual input Balanced output Differential Amplifier.

8 M

3. a) Explain the Operation of Voltage to Current Converters using Op-Amp.

8 M

   b) With a neat diagram derive the expression for frequency of oscillation for RC-Phase shift oscillator.

8 M

4. a) Design a first order low pass filter for the following specifications
      i) Pass band voltage gain=2
      ii) Cut-off frequency f_c =10 KHz.
      Draw the frequency Response.

8 M

   b) Derive the transfer function of 2nd order High pass filter using Op-Amp.

8 M

5. a) Explain the operation of 555 Timer as an astable multivibrator and derive an expression for time period of the output waveform.   8 M

   b) Discuss the following applications of Monostable mode using 555 timer.
    i) Missing pulse detector
    ii) Linear ramp generator   8 M

6. a) Explain the operation of Successive Approximation ADC.   8 M

   b) Calculate the values of the LSB, MSB and full scale output for an 8-bit DAC for the 0 to 10V.   8 M