

Code: EC5T1

**III B.Tech - I Semester – Regular/Supplementary Examinations  
October 2019**

**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 a differential amplifier and draw its block diagram?
- b) List out AC and DC characteristics of operational amplifier.
- c) What are the effects of voltage shunt feedback in operational amplifier?
- d) List the important features of an instrumentation amplifier.
- e) What are the characteristics of all pass filters?
- f) Draw the schematic of a second order High-pass filter.
- g) List the applications of 555 timer used as Monostable and Astable operations.
- h) Define capture range and lock range of a phase locked loop.
- i) What are the specifications of digital to Analog converters?

- j) List out different analog to digital and digital to analog converters.
- k) What is a level translator?

## PART – B

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

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

2. a) Perform AC analysis of a single input balanced output differential amplifier? 10 M
- b) Explain in detail about the operational amplifier block diagram? 6 M
3. a) Explain the operation of the instrumentation amplifier? 8 M
- b) Explain the operation of monostable multivibrator using operational amplifier? 8 M
4. a) Design a first order band pass filter with lower cut off frequency of 100 Hz and a higher cut off frequency of 1 KHz. The pass band gain should be 4. Calculate the 'Q' of the filter? 10 M
- b) Distinguish between active and passive filters? 6 M

5. a) Explain the operation of Schmitt trigger circuit with input and output waveforms? 8 M
- b) Explain the operation of frequency multiplication using phase locked loop? 8 M
6. a) Explain the operation of successive approximation type analog to digital converter? 8 M
- b) Explain in detail about R-2R ladder type digital to analog converter? 8 M