

III B. Tech I Semester Supplementary Examinations, Dec/Jan-2022-23
LINEAR INTEGRATED CIRCUITS & APPLICATIONS

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

(22 Marks)

1. a) List the advantages of integrator circuit. [3M]
- b) Draw the Op-amp block diagram and its equivalent circuit. [4M]
- c) Draw the circuit diagram of a differentiator using op-amp. [4M]
- d) What is Sample-and-Hold amplifier? [4M]
- e) Write the applications of PLL. [4M]
- f) Which is the fastest ADC and why? [3M]

PART -B

(48 Marks)

2. a) Differentiate between SSI, MSI, LSI and VLSI. [8M]
- b) Explain planar technology for device fabrication. [8M]
3. a) With a neat sketch explain the frequency response of a 741 op-amp. [8M]
- b) Derive the slew rate equation for an op-amp. [8M]
4. a) With a neat diagram explain about the voltage to current converter in details. [8M]
- b) Describe the working of practical differentiator circuit. Derive the expression for output voltage. [8M]
5. a) With a neat diagram, explain the band reject filter. Derive the expression for output voltage. [8M]
- b) Design a first order high pass filter with a cutoff frequency of 1.5 kHz, and a pass band gain of 3. [8M]
6. a) Explain the working of PLL. Explain in detail FSK demodulator using PLL. [8M]
- b) How 555 timer acts as mono stable multi vibrator? Explain with a neat circuit diagram. [8M]
7. a) With a neat diagram explain about the counter type D/A converter in detail. [8M]
- b) Consider a 10 bit D/A converter having a reference voltage of 10 V. What is the binary digital input needed to get 4.5 V output? What outputs are obtained from the converter for the inputs of (i) binary 0010110101 and (ii) decimal 520? [8M]