(vi) Draw Op Amp as (a) Summer (b) Differentiator.

(vii) Mention any *three* appliations of Clampers.

(viii) Draw the basic block diagram of PLL.

(ix) List any *two* applications of voltage to current converters.

(x) State the need for A/D conversion.

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Sep-21-00060

B. Tech. EXAMINATION, 2021

Semester IV (CBCS)

LINEAR INTEGRATED CIRCUITS

EC-403

Time : 2 Hours   *Maximum Marks :* 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. Draw the block diagram of Op Amp. Explain the function of each block and draw the pin out diagram of 741 IC.   **15**

2. (a) Define slew rate and describe methods to improve slew rate. Explain with the help of supportive equations. **7.5**

(b) Explain the importance of CMRR in terms of operational amplifiers and derive its equation. **7.5**

Section B

3. Sketch the circuit of integrator amplifier and derive its required equation. Explain and draw the log amplifier. **15**

4. (a) Explain the characteristics of active filters and classify various filter types. **7.5**

(b) With the help of circuit diagram explain the Chebyshev filer characteristics. **7.5**

Section C

5. Explain the working of phase shift oscillator method and write down its various application areas. What is Phase and Phase Shift ? Why to use Op-amp for RC Phase Shift Oscillator instead of Transistor ? **15**

6. Differentiate Monostable and Astable multivibrator. With the help of circuit diagram and waveforms explain these in detail. **15**

Section D

7. Draw and explain the block diagram of linear voltage regulator. Explain the working of its various components with the help of diagrams and write down its applications. **15**

8. With the help of a neat and clean diagram, explain the working of PLL. Derive and explain the capture range and lock range of PLL. **15**

(Compulsory Question)

9. Answer the following : **1.5×10=15**

(i) List any *three* advantages of linear ICs.

(ii) List different IC packages.

(iii) Draw the circuit of inverting OPAMP.

(iv) Draw the pin diagram of IC 741.

(v) Give the classification of multivibrators and draw and Astable multivibrator using OPAMP.