

Paper ID [EC305]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 5th)

LINEAR INTEGRATED CIRCUITS (EC - 305)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

(10 × 2 = 20)

Q1)

- a) What are the different configuration of differential amplifier?
- b) Define CMRR and PSRR.
- c) Define the concept of virtual ground.
- d) What are the different methods of offset compensation?
- e) Distinguish between active and passive filter.
- f) What is the maximum value of output voltage obtainable from an OP-AMP?
- g) What are the applications of OP-AMP in open loop configuration?
- h) Define filter parameters.
- i) Give pin configuration of IC 555.
- j) What is the working principle of switching regulator?

(4 × 5 = 20)

- Q2)** Discuss the current mirror circuit. How is it helpful in improving the CMRR?
- Q3)** Describe the application of OP-AMP as current voltage converter.
- Q4)** What is slew rate? What are its causes? Derive the expression of maximum frequency of operation for a desired output swing in terms of slew rate.
- Q5)** Derive the expression for voltage as a function of frequency. Define break frequency and bandwidth.
- Q6)** Describe the operating principle of PLL. Define capture range and locking range.

Section - C

(2 × 10 = 20)

- Q7)** Describe the working of practical differentiator circuit. Derive the expression for output voltage. Also discuss the frequency response of the differentiator.
- Q8)** Describe the applications of OP-AMP in open loop configuration.
- Q9)** Write short notes on the following:
- (a) Differential amplifier with swamping resistors.
 - (b) Triangular wave generator.