

Exam.Code:0927
Sub. Code: 6900

1078

B.E. (Electronics and Communication Engineering)
Third Semester

EC-304: Analog Electronic Circuits – II

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) Discuss the use of swamping resistors to stabilize biasing.
- b) How the input impedance of an AC voltage follower can be increased drastically.
- c) Define rise time, delay time, storage time and fall time.
- d) What is slew rate? Give the significance of high slew rate.
- e) What is the difference between a basic comparator and the Schmitt trigger?
- f) What is Miller effect?
- g) List at least three applications of Instrumentation amplifier.
- h) Why open- loop op amp configuration is not used in linear applications?
- i) Draw the circuit, input and output waveforms of negative biased clipper. (10)

UNIT – I

- II.
 - a) Discuss which configuration of an op amp can be used as a current to voltage converter and how? Also discuss its application for detecting current through photosensitive devices.
 - b) Draw the high frequency equivalent circuit of an op amp. Explain in detail the major sources responsible for capacitive effect. Also evaluate the expression for output voltage gain as a function of frequency. (5,5)
- III.
 - a) Draw the frequency response of a typical RC-coupled amplifier. While defining the cutoff frequencies of an amplifier, why do we take 70.7% of the mid-band gain? Why does the gain of an RC-coupled amplifier fall in (i) low frequency range (ii) high frequency range?
 - b) Differentiate between Transconductance and Transresistance amplifiers. (5,5)

P.T.O.

(2)

- IV. a) Draw and discuss the hybrid TT model for a transistor in CE configuration.
b) Discuss the need of cascaded amplifiers? Explain the high frequency response of two cascaded CE transistor stages. (5,5)

UNIT - II

- V. a) Analyze the operation of a true differentiator circuit and discuss the difficulties with high frequency noise. Draw the Frequency response of basic and practical differentiator circuit.
b) What is the difference between clippers and clampers? Design two positive clipper circuits for reference voltages +1V and -1V respectively and show its input and output voltage waveforms. (5,5)

- VI. a) Design a first order high pass filter at a cut-off frequency of 400Mz and a pass band gain of one.
b) Explain the difference between (i) inverting and differential summing amplifiers and (ii) inverting and Non-inverting averaging amplifiers. (5,5)

- VII. a) What are the advantages of active filters over passive ones? What is the Butterworth response?
b) What is a comparator? List the important characteristics of the comparator. What is the difference between a basic comparator and Schmitt trigger?
c) What are the two requirements for oscillation? Derive the expression for frequency of oscillation for Wein bridge oscillator. Design the Wein bridge oscillator circuit so that $f_o = 965\text{Hz}$. (2,3,5)

x-x-x