21AIE113- INTRODUCTION TO ELECTRONICS

Group Assignment 4

Submission Date: 22/05/2022, 11.59 PM

Submission link: Assignment 4

Answer all Questions
One submission per group
Submission format – doc,pdf
Mention the contribution from each member.

1. Design and study the following series clippers using diodes in the Falstad circuit simulator. Explain the working of the circuit diagram and plot the input and output waveforms. (Assume any values, if not given).
    a) Forward biased positive clipper
    b) Reverse biased positive clipper
    c) Forward biased negative clipper
    d) Reverse biased negative clipper
2. Design and study the following clippers using Zener diodes in the Falstad circuit simulator. Explain the working of the circuit diagram and plot the input and output waveforms. (Assume any values, if not given)
    a) Double clipper clipping at +V and -V
    b) Double clipper clipping at $+V_Z$ and $-V_D$
    c) Series clipper clipping a part of the negative half cycle
3. a) Design a clamper circuit which clamps an input sinusoidal wave negatively at, exactly +5 volts. Explain the working of the circuit diagram and plot the input and output waveforms.
    b) Design a clamper circuit using zener diode which clamps an input sinusoidal wave positively at $-V_Z$ volts. Explain the working of the circuit diagram and plot the input and output waveforms.
4. Perform the experiment for demonstrating Common-Base Characteristics of an NPN transistor in Falstad circuit simulator
    a) Explain the theory behind the experiment.
    b) Draw the circuit diagrams, Mention the components used, and state the procedure of the experiment.
    c) Plot the input and output characteristics
    d) Calculate the following parameters – dynamic input resistance – dynamic output resistance – Common-base current gain
    e) Comment on the values obtained in (d)