



UNITED INTERNATIONAL UNIVERSITY

Course Name: Electronics Laboratory

Trimester: Summer 2025

Course Code : EEE 2124

Experiment no : 03

Experiment Name:

Study of Diode Clipping and Clamping Circuits

:Submitted by:

Group No : 03

Name : Sadman Sakib

Id : 0112330403

Sec : C

Date of Performance: 21/11/2024

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Objective:

To understand:

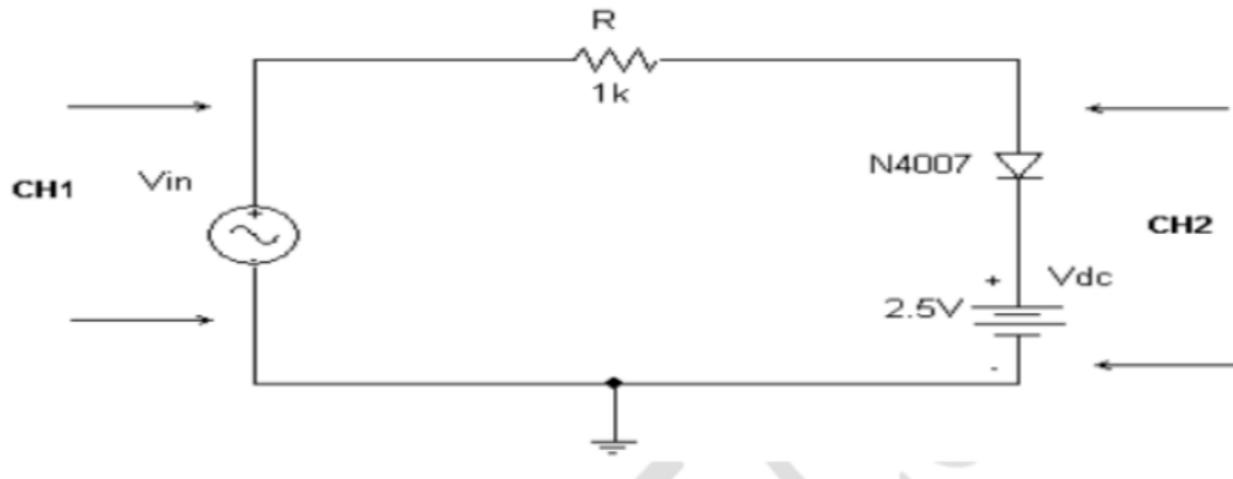
1. Distinguish between different types of clipper and clamper circuits
2. Construct circuits to shape the output in specific levels
3. Propose a voltage doubler circuit

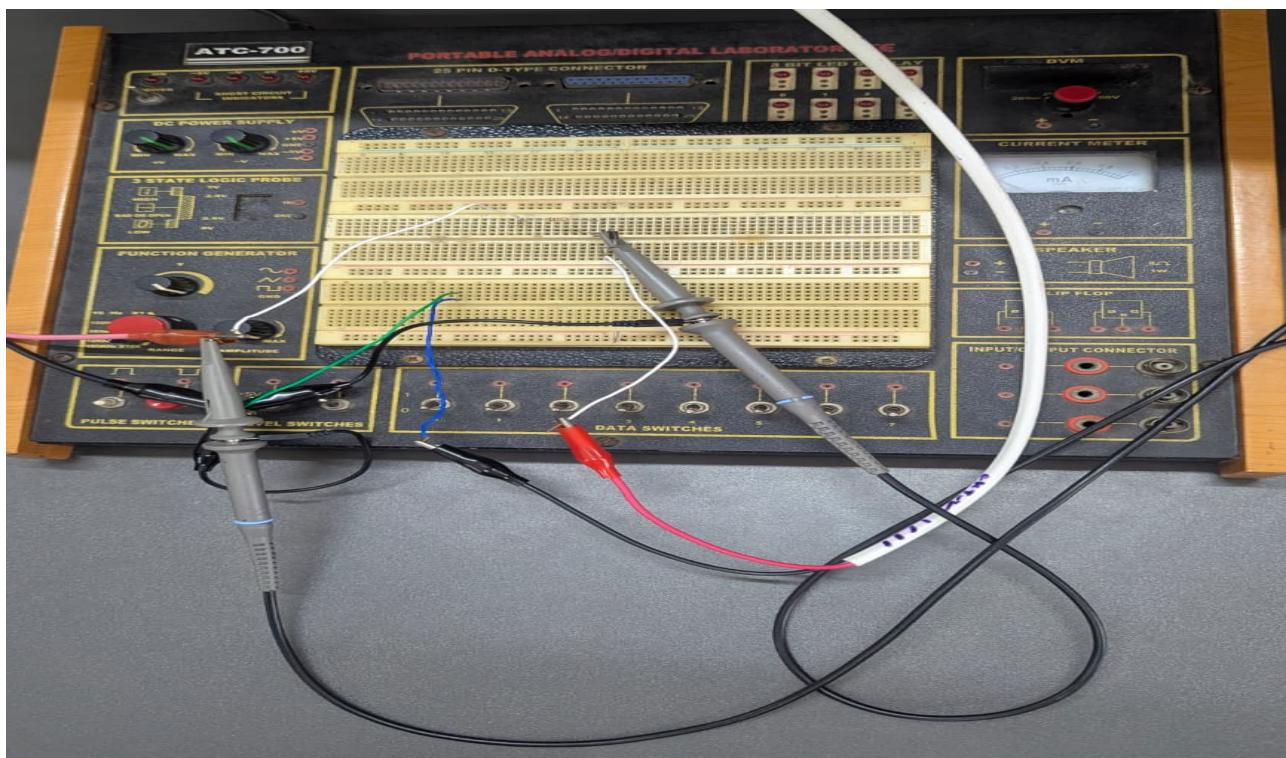
Components used:

- o p-n junction Diode(1N4007)
- o Resistor (1K)
- o Capacitor ($10\mu F$)
- o Digital Oscilloscope
- o Chords and wire

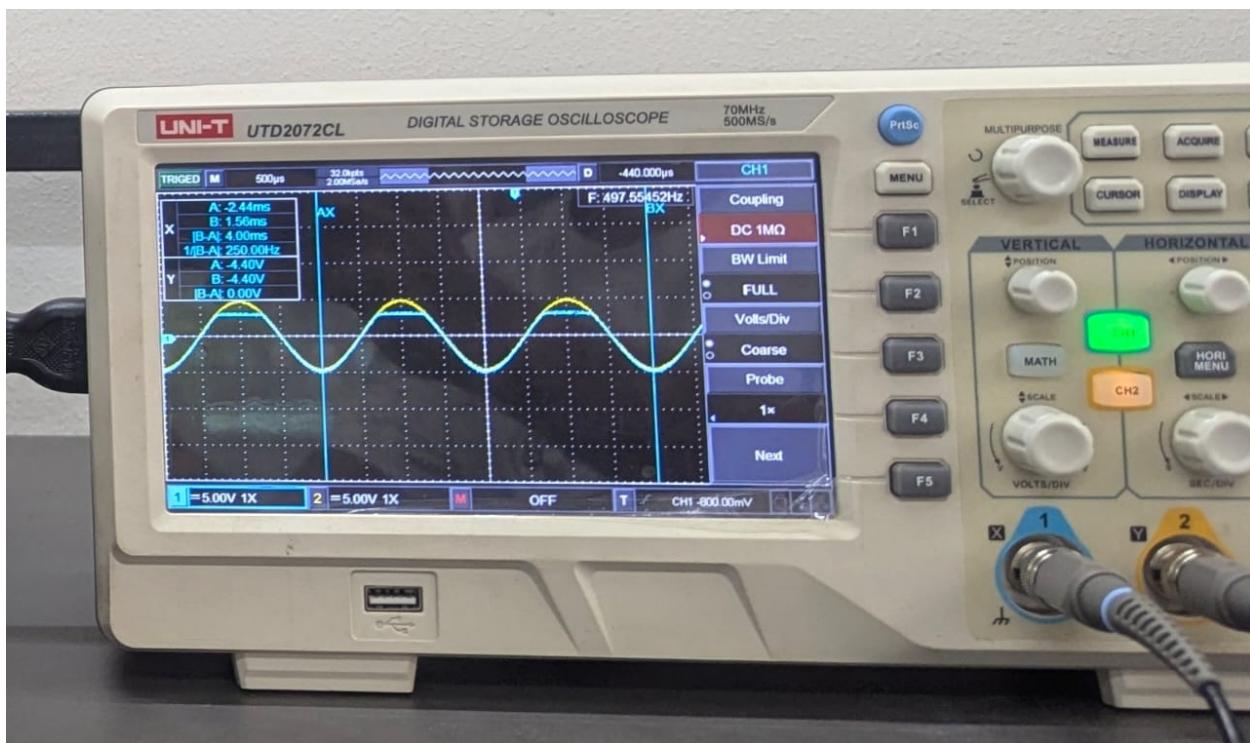
1. Clipping Circuit:

With Diode in Forward Bias And Facing Positive Terminal Of DC Supply

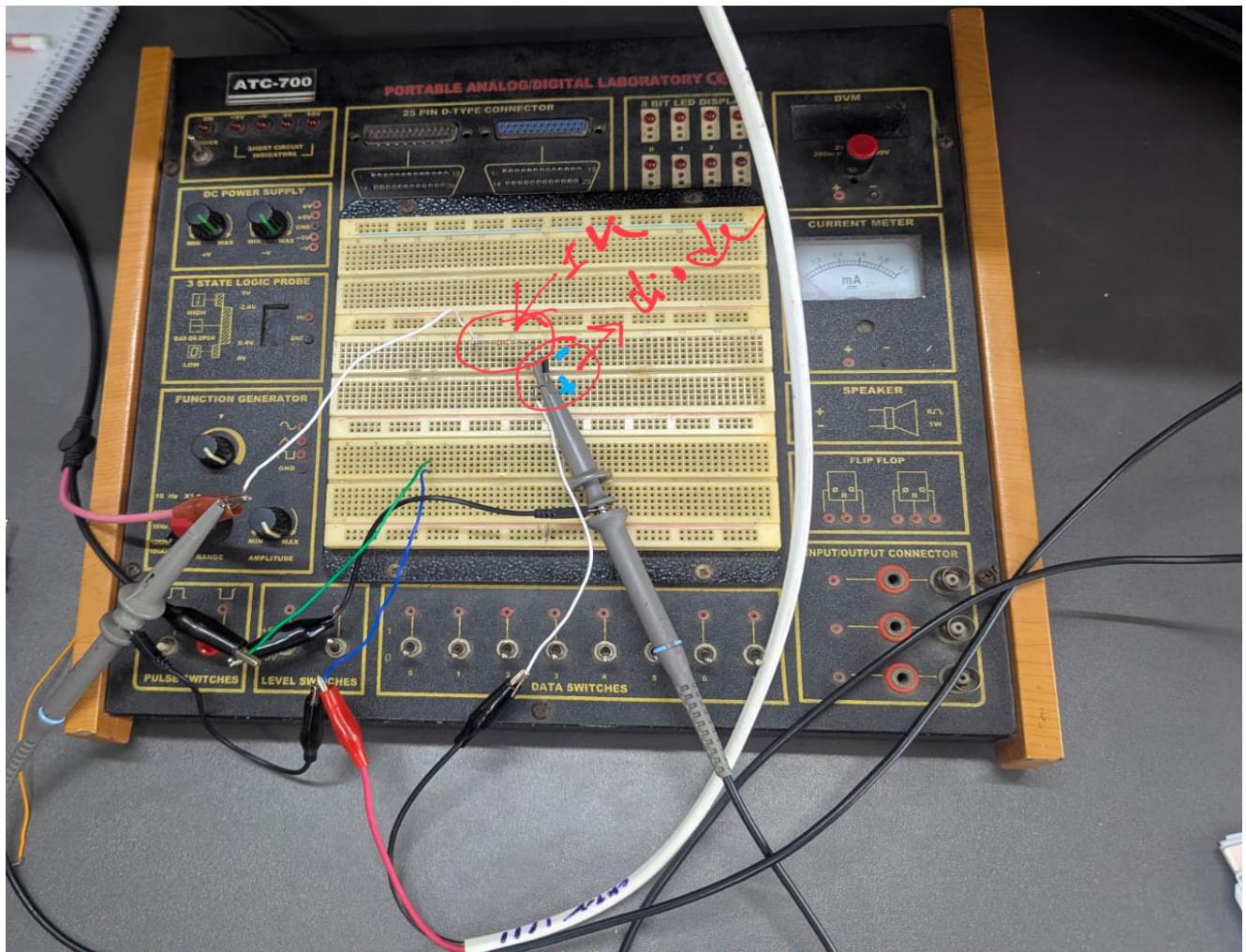
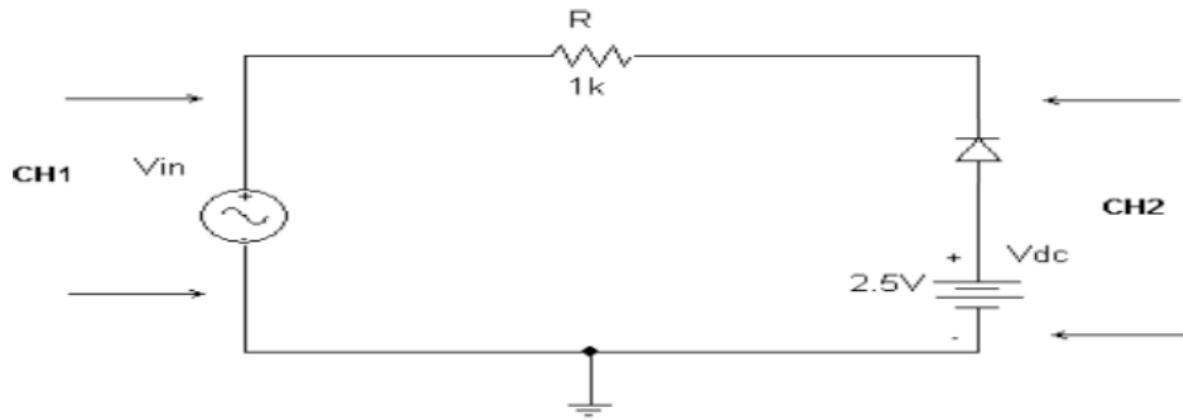




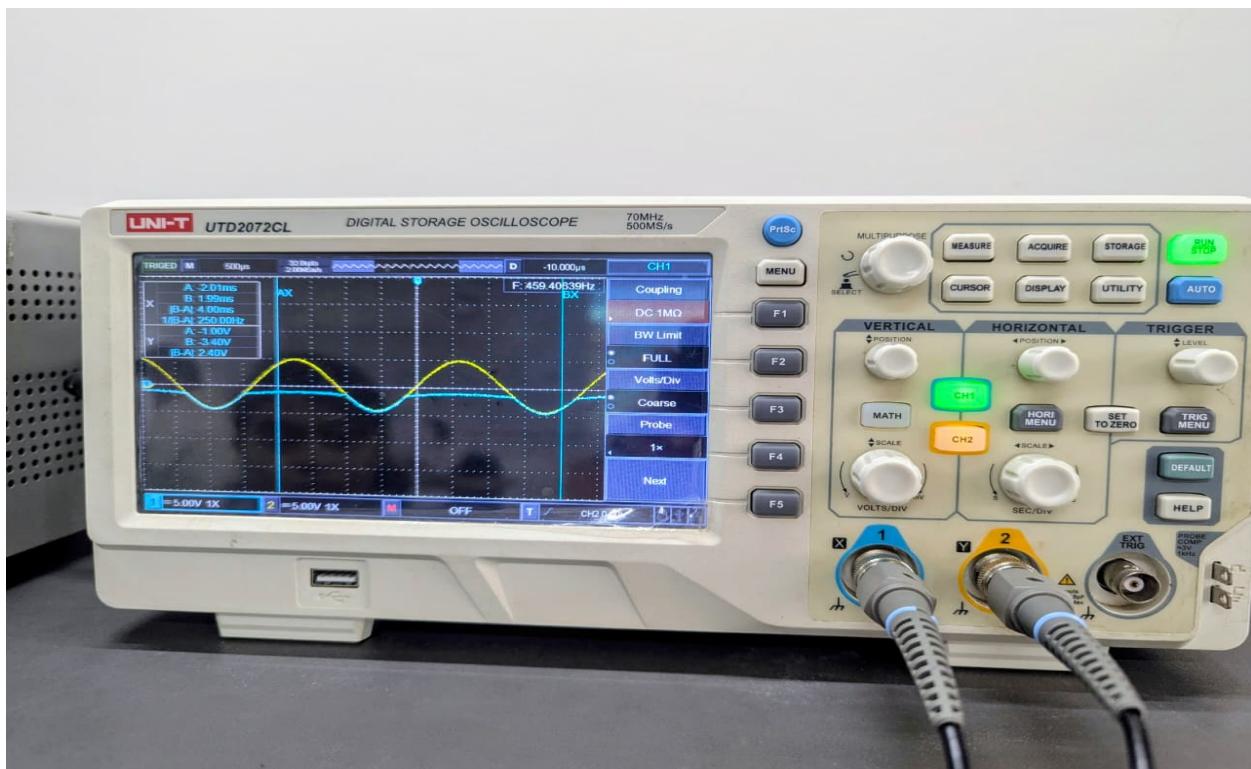
Vin~t & Vout~t curve :



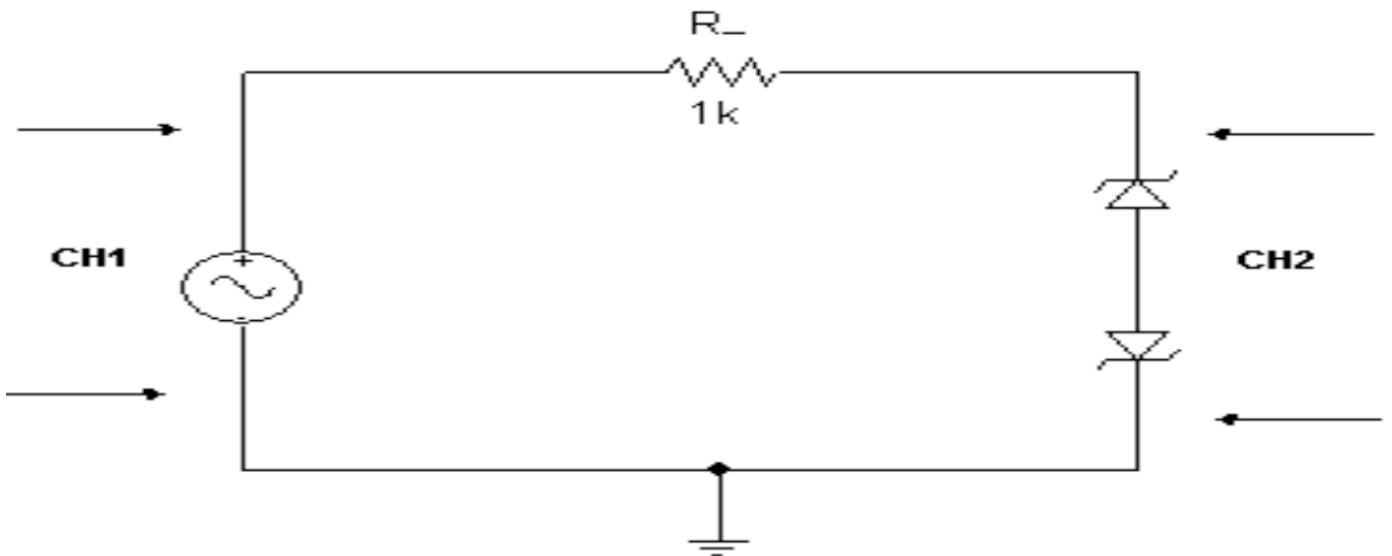
With Diode In Reverse Bias And Facing Positive Terminal Of DC Supply :

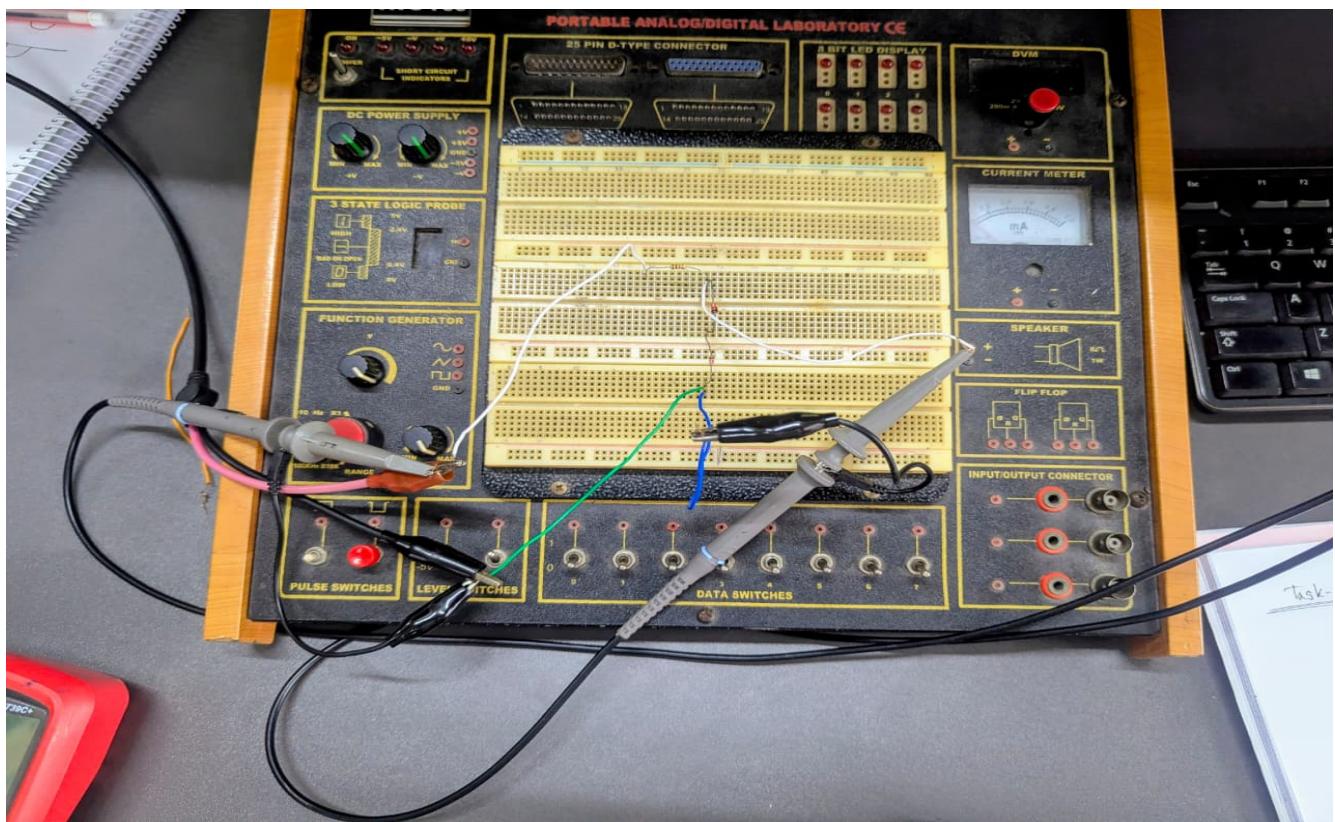


V_{in}~t & V_{out}~t curve :

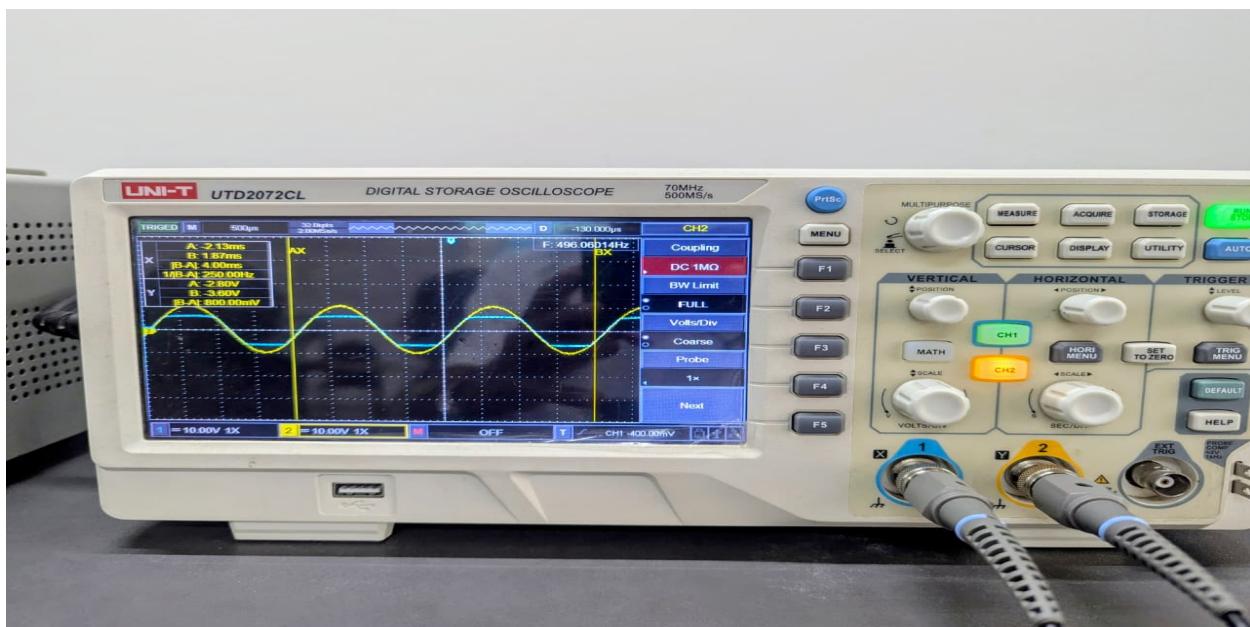


Part 2: Clipping circuit with Zener diode :

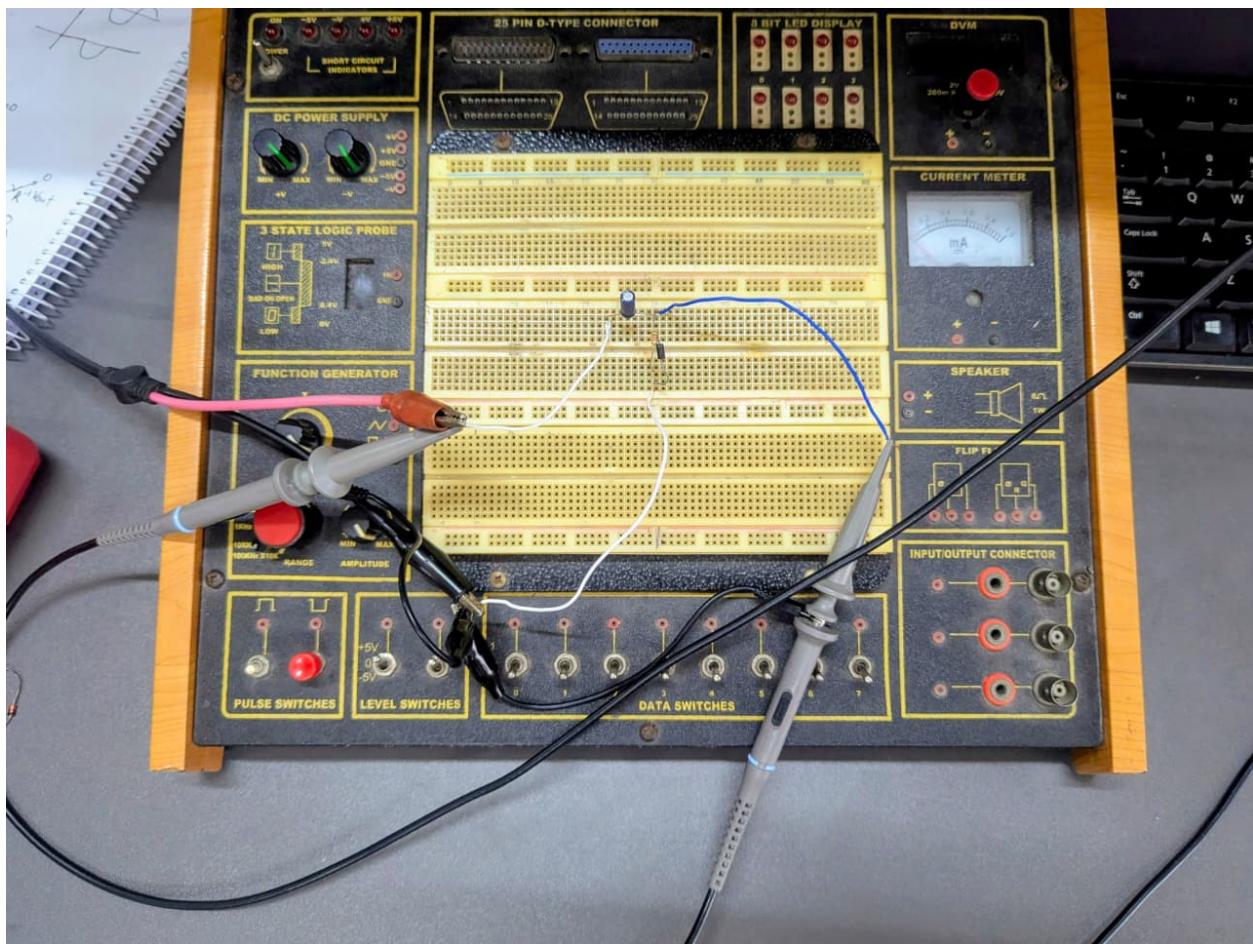
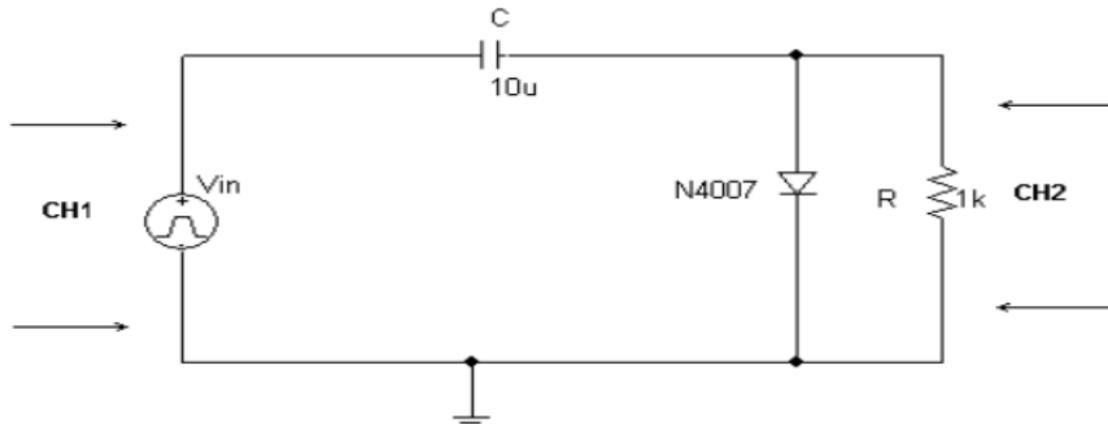




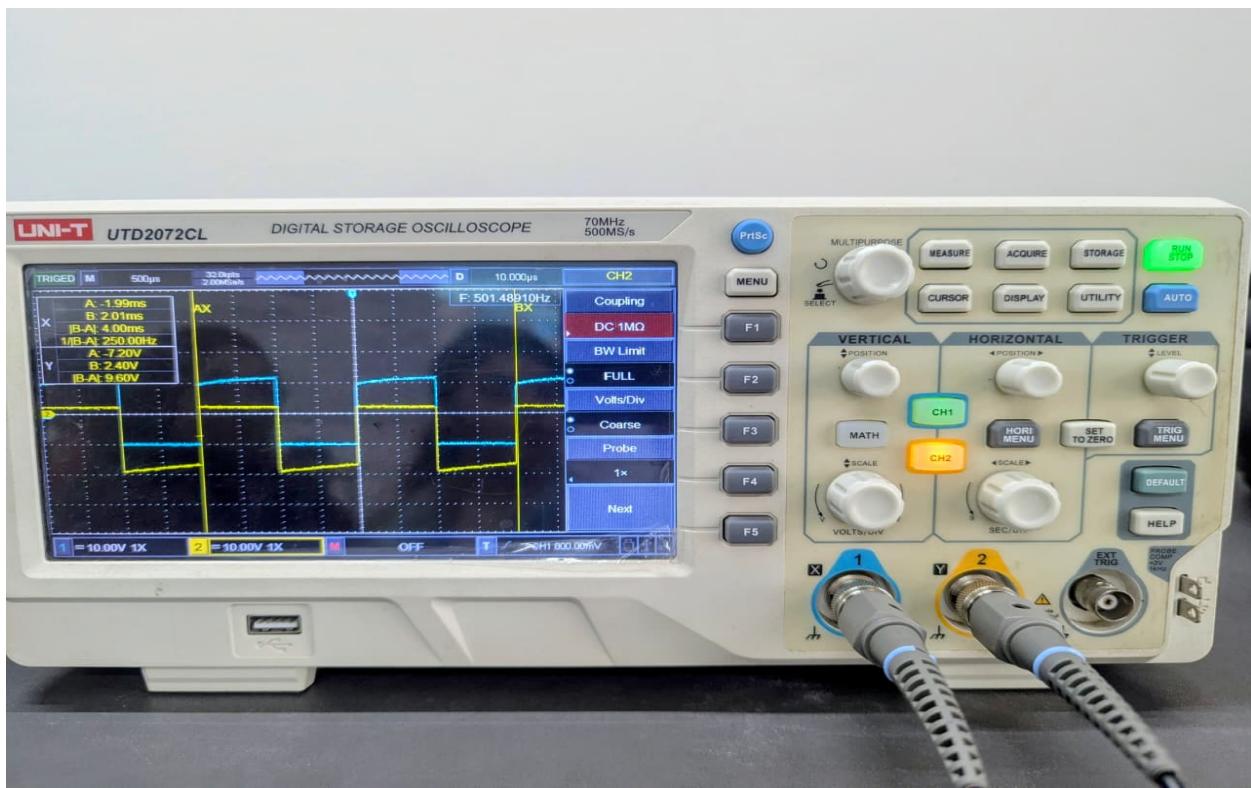
Vin~t & Vout~t curve :



Part 3: Clamping circuit:



V_{in}~t & V_{out}~t curve :



Write a short note on clipping circuit and its use in electronics?

-Answer: A clipping circuit is an electronic circuit made with a diode and a resistor. It is also called a diode limiter circuit. The main work of a clipping circuit is to stop the signal from going higher than a fixed level by clipping it at that value. Clipping circuits can be used: To remove extra ripples in FM transmitter. In power supply units. To make and shape waveforms by cutting the unwanted part.

Write a short note on clamping circuit and its use in electronics?

Answer: A clamping circuit changes the voltage level of a signal without changing its shape. It adds a DC value to an AC signal, moving it up or down as needed. The circuit has a diode, a capacitor, and sometimes a resistor. In one half cycle, the diode conducts and charges the capacitor, and in the other half cycle, the capacitor keeps the voltage shift. Clamping circuits are used in electronics for signal conditioning, waveform shaping, and keeping reference levels in devices like televisions, oscilloscopes, and communication systems. They help to keep voltage stable and signals correct.

How is energy stored in a capacitor? Explain in detail.

Answer: A capacitor works like a small battery. It stores electrical energy by keeping positive charge on one plate and negative charge on the other plate. This makes an electric field between them, like a stretched spring storing energy. The more voltage we apply (like pressing the spring harder), the stronger the field becomes and more energy is stored. The stored energy depends on both the voltage and the capacitance, and it can be given back to the circuit when needed.

Prove that half-wave rectifier is a clipping circuit

Answer: A half-wave rectifier is a rectifier that only allows one half of an AC signal to pass and blocks the other half. It is made with a single diode. When an AC signal goes through a half-wave rectifier, only one half (positive or negative) of the AC waveform comes out, while the other half is blocked. So, a half-wave rectifier works like a clipping circuit because it allows only one half cycle of the AC signal and removes (clips) the other half.