



*Institute of Technology of Cambodia*



*Department Telecommunication and Networking*

## Report: Analog Electronic

### **Lab1:** Diode characteristic and Diode applications

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## I. Objective

The half-wave rectifier is intended for the conversion of an AC signal into the unidirectional flow of current, DC. It does so by allowing only half of the AC waveform-those either in the positive or ii

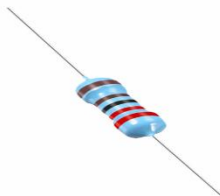
## II. Materials

This experiment requires the following components:



*Figure 1: Diode*

- **Diode** is use to conducts current in one direction, making it essential for turning AC into pulsating DC.



*Figure 2: Resistor*

- **Resistors** is important in electrical circuits for current limiting, voltage division, signal conditioning, power dissipation, biasing components, impedance matching, pull-up/down, timing circuits, and temperature sensing.



*Figure 3: Multimeter*

- **Multimeter** is a versatile electronic measuring instrument used for diagnosing electrical circuits and components.



*Figure 4: Oscilloscope*

- **Oscilloscope** is a key electronic tool for observing and measuring changing voltage signals over time.

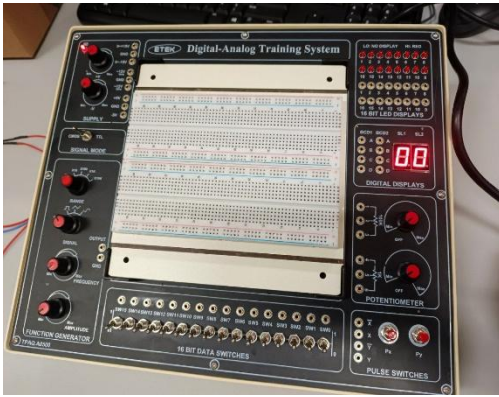


Figure 5: Breadboard

- **Breadboard** is used for prototyping electronic circuits. It allows for quick construction of temporary circuits with components and jumper wires. Breadboards enable testing and modifying designs before creating a permanent PCB version.



Figure 6: Jumper wire

- **Jumper wire** is a short wire used for temporary connections in a circuit. It usually has connectors at both ends and is often used in prototyping and troubleshooting.

### III. Procedure

#### B. Half-wave rectifier

In this experiment we were guided carefully by the teacher until we can complete this lab and get to know the value from the actual experiment to comparing with theory.

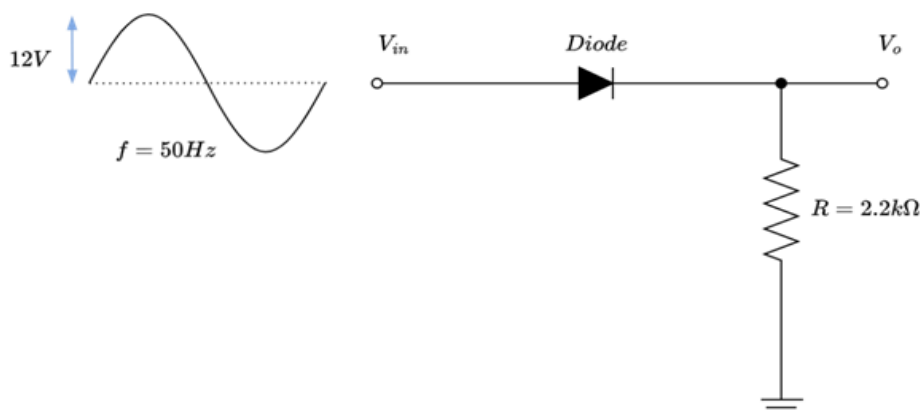
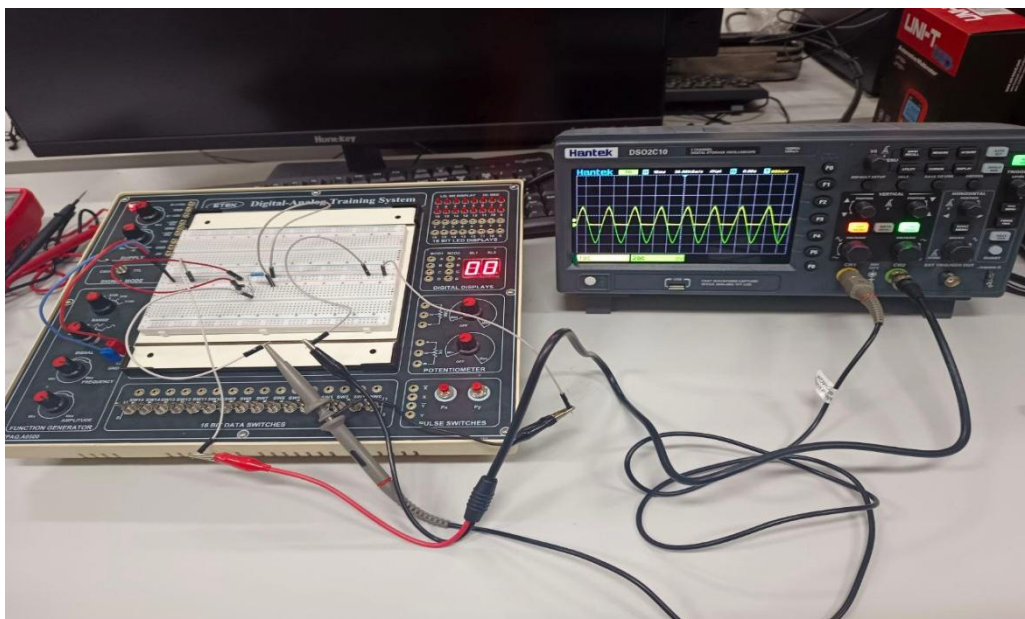


Figure 7: Half-wave rectifier

These are some steps in other to make this experiment:

First, we bring all the materials to keep it on the table and we should read all the instruction in Lab before. After that, teacher will explain how to construct the circuit in the Breadboard and how to connect from Breadboard to Oscilloscope. One more thing, teacher will tell us about the caution points when we construct circuit because it can affect us. Second one, we all should check all materials that we take from teacher to make sure that it works or not by using Multimeter. We use multimeter to measure the diode to find which part is the cathode and anode another one we can measure the resistor too. We start construct the circuit according to the Figure7 in the Breadboard after that we have to set the signal on the function generator to sinusoidal than set the frequency to maximum. For Oscilloscope we have two Oscilloscope Probe and we use one for signal input and one more use for signal output and we connect to Oscilloscope in CH1 and CH2. And than we open the both Chanel and we put it in the same voltage for CH1 and CH2. Finally, we observe to the signal in screen of Oscilloscope.



*Figure 8: Diode circuit and Oscilloscope*

## IV. Result and Conclusion

After we had finished this experiment, we can build the circuit of Diode and know how does Oscilloscope works to measure the voltage and wave form from Diode.

The Half-Wave Rectifier converts AC to pulsating DC. The output shows positive half-cycles blocked by a diode. This demonstrates the diode's unidirectional conductivity, confirming its efficiency. However, it has limitations like high ripple content, which can be reduced with filters.