

Report Part 1

CSE251

Electronic Devices and Circuits

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Report Part 2





Report Part 3:

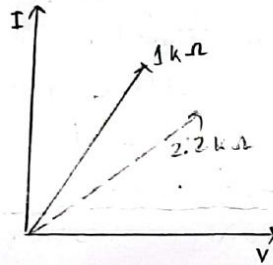
Test Your Understanding

Answer the following questions:

1. $R = 1\text{k}\Omega$ was used in the experiment. If we use $R = 2.2\text{k}\Omega$, will there be any problem in observing the I-V characteristics plot? Explain briefly

Answer:

If we used $R = 2.2\text{k}\Omega$ instead of $1\text{k}\Omega$, there will be no sort of problem observing the I-V characteristics plot. There will be a slight change in the graph; as the relationship between current and resistance is inverse. ($I \propto 1/R$) This means in the I-V graph the gradient for $R = 2.2\text{k}\Omega$ will be less steep than it was for $R = 1\text{k}\Omega$.



2. Why do we need to invert the CH2 in the oscilloscope? What will happen if we don't invert the CH2 in the oscilloscope?

Answer: Since current flows from anode to cathode through a diode, we need to invert CH2 for a positive waveform to be observed for forward-bias operation and a negative waveform for reverse biased operation. Inversion of CH2 is a necessity to distinguish between the two operating sides, nonetheless the oscilloscope will display positive waveform from both sides which is not our aim.

Signature 14/12/24
Signature of the lab faculty

Task-4:

Discussion:

The aim of experiment 3 was to study the I-V characteristics of diode and zener diode.

In task-1, I-V characteristics of an ideal diode was observed. When an ideal diode is connected to forward biased operation, current is allowed to flow easily, but in reversed biased operation current will not flow.

To implement task-1's circuit, we took 0.98 resistor which was measured by a multimeter. Then we connected CH2 negative probe and positive probe to sides of a ground. We then set an ideal diode between CH1. We ensured to keep the (-ve) probes of the channels on the same side to avoid a short circuit. After that inversion of CH-2 was done in the oscilloscope due to its inversion connection in the circuit. Then to observe I-V characteristics we ~~did~~ followed instructions from pg-6. Thus, I-V characteristics were observed.

In task-2, we observe I-V characteristics of a zener diode. The implementation remains the same as before; just replacing the diode with a zener diode. We also set the (p-p) voltage at 14V, meaning 7V is the supply voltage as per our lab instructor's ~~conditions~~ instructions.