EXPERIMENT 3: DIODE CHARACTERISTICS

Objectives

The objective of Experiment 3 is to learn current-voltage (I–V) characteristics of diodes.

Components Required:

- **Diodes:** 2x1N4001, 2x1N4148, 2xAA119, 2xLED and 2x5.6V zener diode
- **Resistors:** 2x1kΩ

Preliminary Work:

1. Study the characteristics of the diodes (frequency ranges, maximum conduction currents, breakdown voltages).
2. Perform simulations of the part of experimental work in OrCAD and add them to your report.

Experimental Work:

1. Setup the circuit given in Figure 1 for the component of 1N4001. Apply eight different input voltages and write down the measured voltage values (V1 & V2) to Table 1.
2. Repeat part 1 for the other components named as AA119, LED and 5.6V Zener.
3. Setup the circuit given in Figure 2. Connect oscilloscope as shown in this figure and observe the characteristics of 1N4001 and Zener circuit components in oscilloscope's X-Y mode. Draw the outputs on Figure 3 and Figure 4.

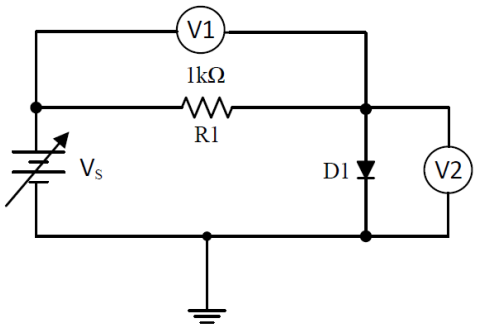

Figure 1

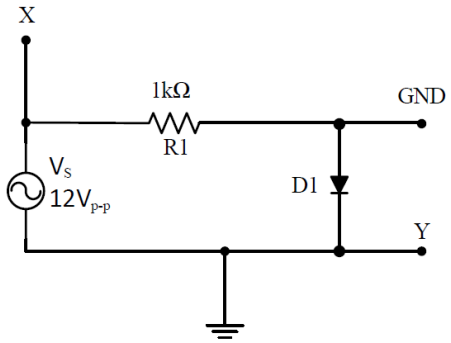

Figure 2

Table 1

Vs	1N4001		Vs	AA119 (Ge)		Vs	LED		Vs	Zener	
	V1	V2		V1	V2		V1	V2		V1	V2
0.2V			0V			0.2			-7V		
0.4V			0.1V			0.5V			-6V		
0.6V			0.2V			0.8V			-4V		
0.7V			0.3V			1V			-1V		
0.9V			0.4V			1.5V			0V		
1.5V			0.6V			2V			0.4V		
2V			1.5V			2.5V			0.7V		
3V			2V			3V			1V		

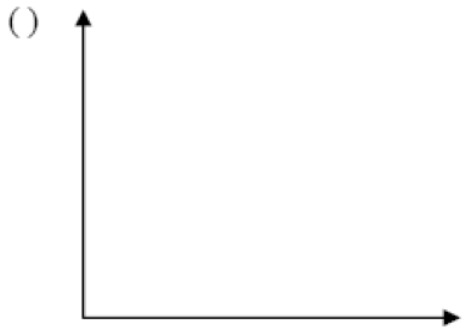

Figure 3

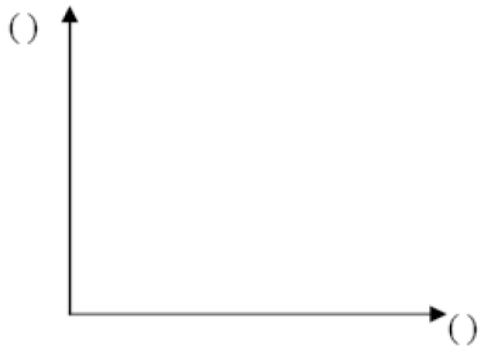

Figure 4