Name of the Experiment: To Study of V-I Characteristics curve of a Zener diode.

Objective:

1. To Plot volt-Ampere characteristics of the zener diode.
2. To find zener break down the voltage in reverse biased condition.

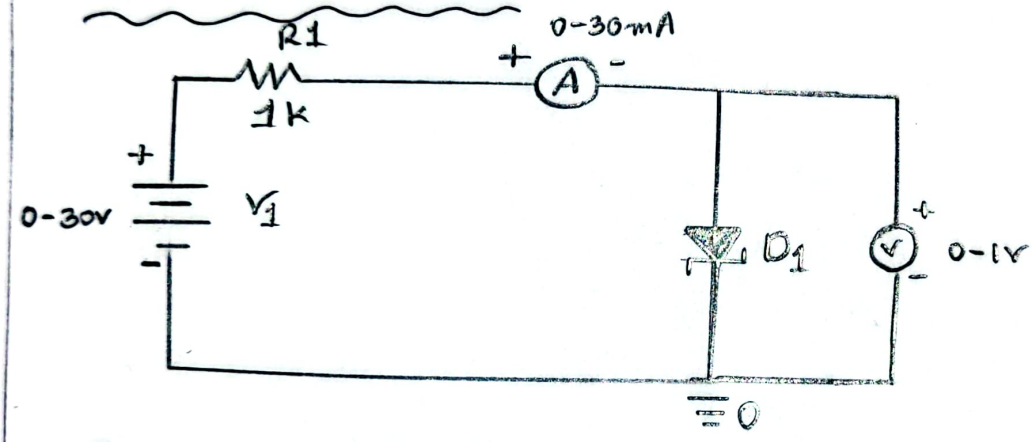
Hardware Required:

S.NO	Apparatus	Type	Range	Quantity
01	Zener Diode	IZ6.2		1
02	Resistance		1k ohm	1
03	Regulated power supply		(0-30V)	1
04	Ammeter	mc	(0-30)mA, (0-500)μA	1
05	voltmeter	mc	(0-1)V, (0-30)V	1
06	Breadboard and connecting wire			

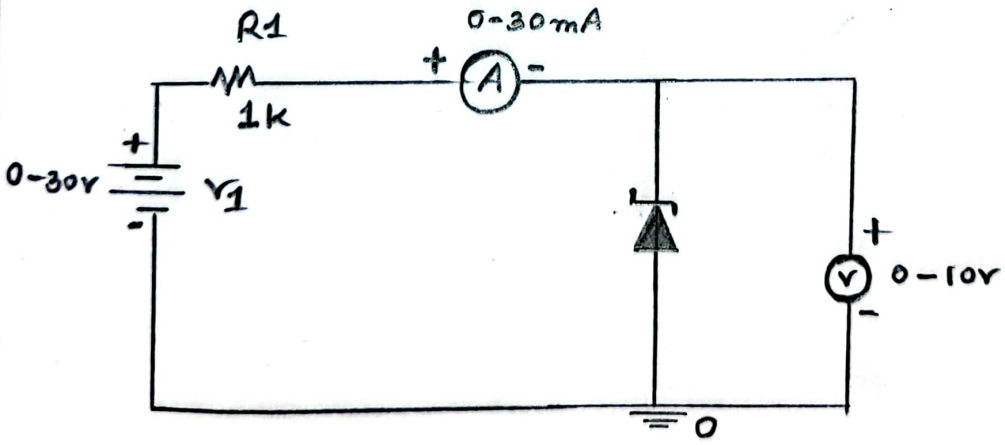
Introduction: An ideal P-N Junction diode does not conduct in reverse-biased conditions. A Zener diode conducts excellently even in reverse-biased conditions. These diodes operate at a precise value of voltage called the breakdown voltage. A Zener diode when forward biased behaves like an ordinary P-N Junction diode.

Circuit Diagram:

Forward Bias:



Reverse Bias:



Precautions:

1. While experimenting, do not exceed the ratings of the diode. This may lead to damage to the diode.
2. Connect the voltmeter and ammeter in the correct polarities as shown in the circuit diagram.
3. Do not switch ON the power supply unless you have checked the circuit connections as per the circuit diagram.

Experiment:

Forward Biased condition:

1. Connect the Zener diode in forward bias i.e; the anode is connected to the positive of the power supply and the cathode is connected to the negative of the power supply as in the circuit.
2. Use a Regulated power supply of range (0-30)v and a series resistance of 1KΩ.
3. For various values of forward voltage (V_f) note down the corresponding values of forward current (I_f)

Reverse Bias condition:

1. Connect the Zener diode in Reverse bias i.e; the anode is connected to the negative of the power supply and cathode is connected to the positive of the power supply as in the circuit.
2. For various values of reverse voltage (V_R) note down the corresponding values of reverse current (I_R).

Tabular Column:

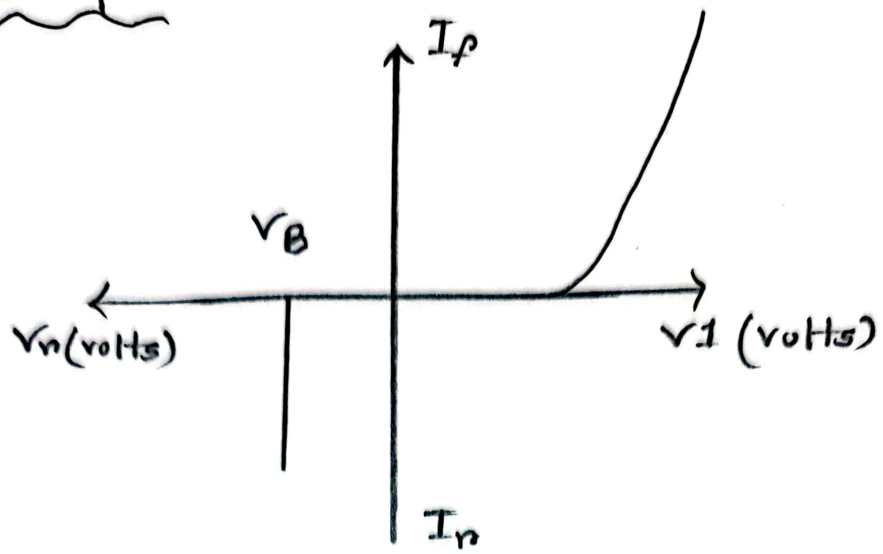
Forward Bias:

S.NO	V_f (volts)	I_f (μmA)
1	0.722V	0.5
2	0.792V	4.5
3	0.812V	8.5
4	0.825V	12.5

Reverse Bias:

S.NO	V_R (volts)	I_R (mA)
1	2.98V	0
2	4V	0
3	9.45V	3.5
4	9.66V	10

Model Graph:



Calculations from Graph:

Cut in voltage = ... (V)

Break down voltage = ... (V)

Result:

The Zener diode characteristics have been partly plotted.

1. Cut in voltage = ... V
2. Break down voltage = ... (V)

Conclusion: By this experiment we can study of V-I characteristics curve of a Zener diode.