

Experiment No : 14

Aim : To draw the characteristic curve of a Zener diode and to determine its reverse breakdown voltage.

Apparatus : A Zener diode, 10V battery , rheostat, voltmeter (0 – 10 V), 100 Ω resistance, milli-ammeter (0-500mA) connecting wires.

Theory : A Zener diode is a semiconductor diode having high level of doping. This heavy doping results in a low reverse breakdown voltage, called as the Zener voltage (V_z). Beyond the breakdown, the current through the Zener increases rapidly.

Procedure :

1. Make the circuit diagram as shown in the figure. Make all connections clean and tight.
2. Note the least count of the voltmeter and milli-ammeter.
3. By moving the rheostat make the voltmeter reading zero and note the current measured by the milli-ammeter.
4. Slowly move the rheostat till the voltmeter shows 1 V and then note the corresponding current in the milli-ammeter.
5. Increase the voltage in steps of 1V till the milli-ammeter starts showing some current. Note the current and then increase the voltmeter readings in steps of 0.1V till the milli-ammeter reads a significant amount of current, say 50 mA.
6. Plot a graph between the voltage and current, taking the voltage along the x-axis and current along the y-axis.

Result :

The reverse breakdown voltage of the given Zener diode is _____ V

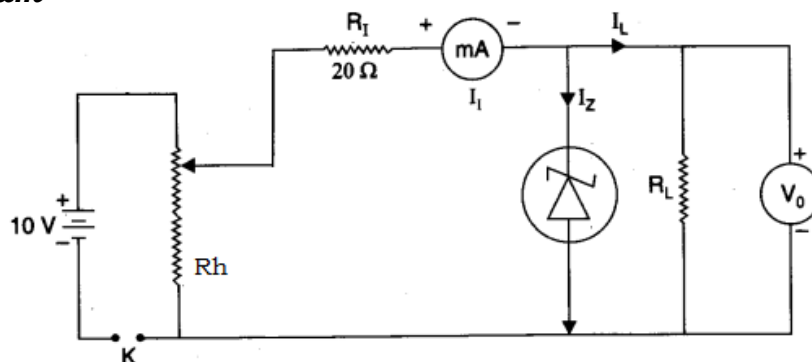
Precautions :

1. All connections should be clean and tight.
2. Reverse bias voltage beyond the specified value should not be supplied.

Sources of error :

1. The junction diode may be faulty.
2. The connections are not clean or tight.

Circuit Diagram



Observations

- i. L.C. of voltmeter _____ V
- ii. L.C. of milli-ammeter _____ mA
- iii. Zero error of voltmeter _____ V
- iv. Zero error of milli-ammeter _____ mA

Observation Table

Sr. No	Input Current I_1 (mA)	Output Voltage, V_o (V)
1		
2		
3		
4		
5		
6		
7		

