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Subject : Physics

Subject Code : 1020012 13

Class : 2-CE-1

Enrollment No : 1 2 0 0 2 0 4 0 7 0 1 0 6 7

13/5/21

Experiment - 2 [Forward Bias]

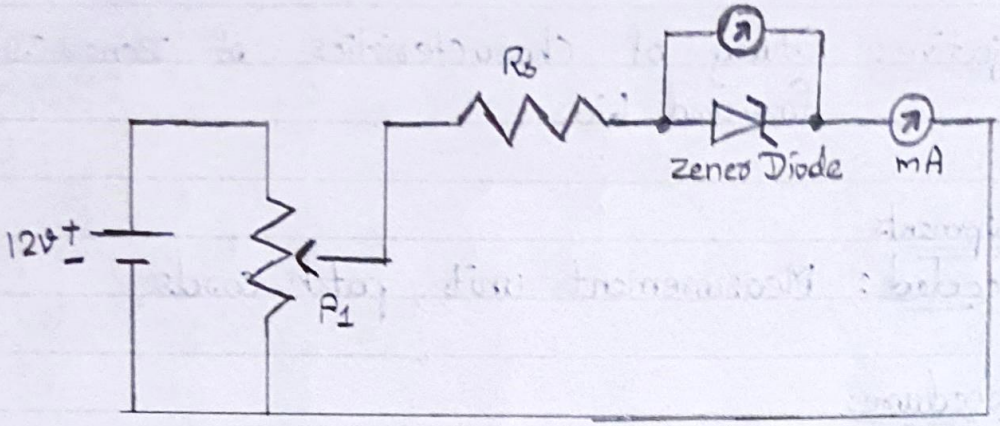
Objective: Study of characteristics of Zener Diode in forward bias.

Equipments needed: Measurement unit, patch cords

Procedure:

1. Before switch 'ON' measurement unit, connect the circuit as shown in figure.
2. Switch 'ON' the power supply.
3. Rotate Potentiometer P_1 fully in counter clockwise direction.
4. Vary the potentiometer P_1 so as to increase the value of diode V_D from 0 to 1V in step & measure the corresponding values of diode current I_D in an Observation Table.
5. Plot a curve between diode voltage V_D & current I_D as shown in nature of graph.

Circuit Diagram:- Forward Bias (zener)



Observation Table:-

Sr. No	Diode Voltage V_D (Volts)	Diode Current I_D (mA)
1.	0.10	0.0
2.	0.21	0.0
3.	0.33	0.0
4.	0.41	0.0
5.	0.48	0.94
6.	0.66	5.94
7.	0.77	11.21

* [Reverse Bias]

Objective:- Study of characteristics of zener diode in reverse bias.

Equipments needed:- Measurement unit, patch cords.

Procedure:-

1. Before switch 'ON' measurement unit, connect the circuit as shown in figure.
2. Switch 'ON' the powers supply.
3. Rotate potentiometer P_1 fully in counter clockwise direction.
4. Vary the potentiometer P_1 so as to increase the value of diode V_D from 1V to 12V in step & measure the corresponding values of diode current I_D in an Observation Table.
5. Plot a curve between diode voltage V_D & current I_D as shown in nature of graph.

Conclusion:-

We can conclude how zener diode works in forward & in Reverse bias. Also we can able to Known about the breakdown voltage.

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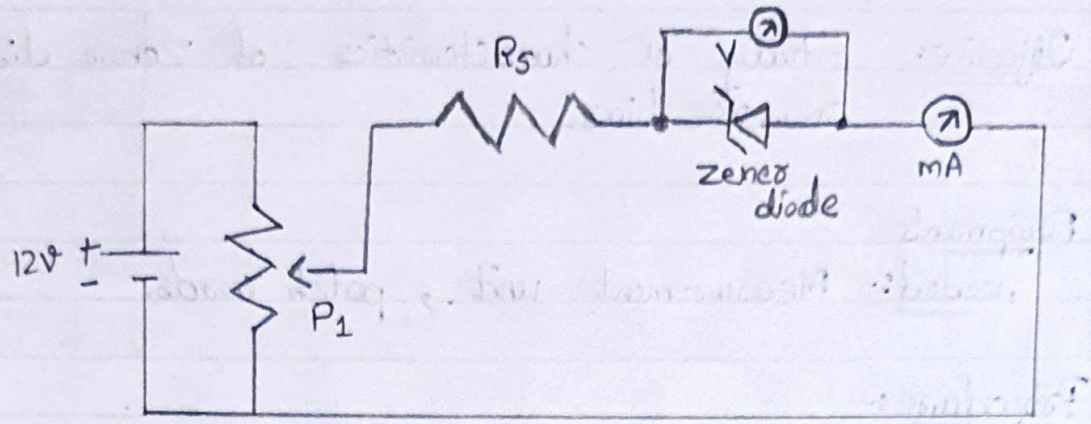
Circuit Diagram :- Reverse Bias (zener)



Observation Table :-

Sr. No.	Diode Voltage V_D (Volts)	Diode Current I_D (mA)
1.	1.0	0.0
2.	2.1	0.0
3.	3.05	0.0
4.	4.0	0.0
5.	5.0	0.0
6.	6.1	0.0
7	7.0	0.0
8.	8.0	0.0
9.	8.5	0.53 (Breakdown current)
10.	9.0	07.6

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