DEV BHOOMI UTTARAKHAND UNIVERSITY

ASSIGNMENT ON DIODE

SUBMITTED BY:-

KRITI TARWAY

BTECH(CSE),SEC B

22BTCSE0115

SUBMITTED TO:-

DR.SANDEEP SHARMA SIR

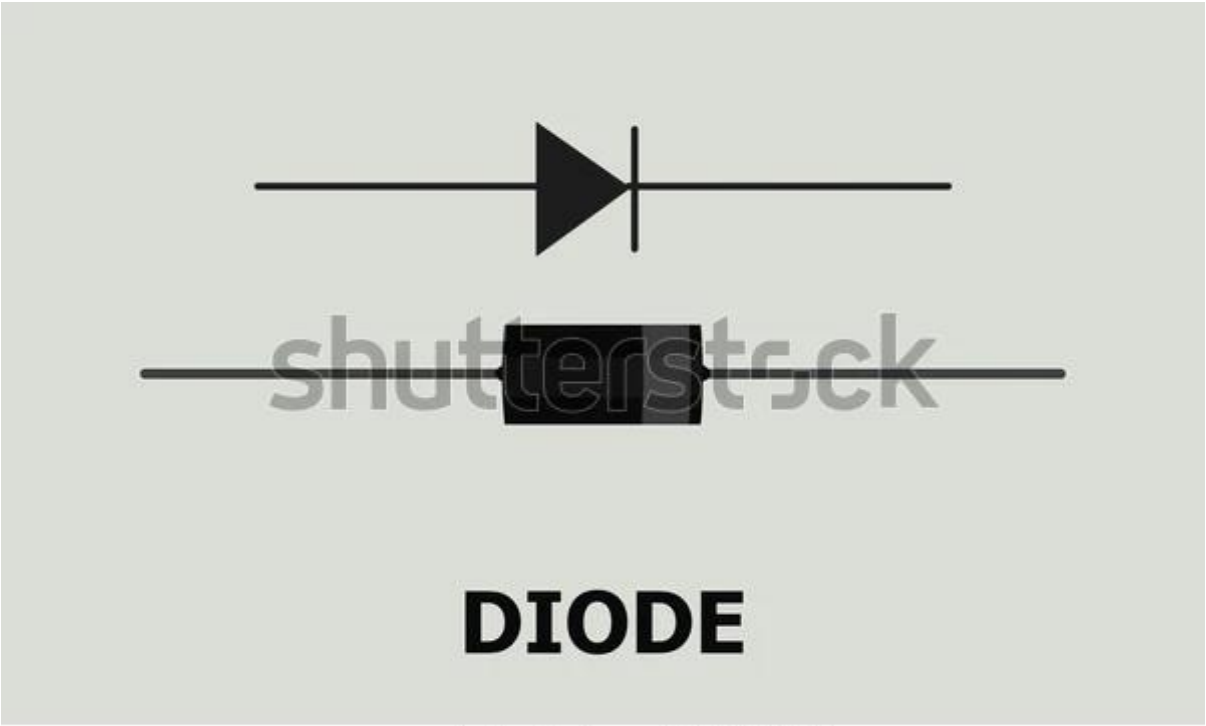
DIODE

TABLE OF CONTENT :

1. What is diode?

Diode is a semiconductor device which

is made by p-n junction .It has two terminals
p side of p-n junction is positive terminal
and n side of p-n junction is negative terminal.
Diode conducts current in one direction and high resistance in other direction. It is a unipolar device.



2.Construction of diode

When trivalent impurity is doped on the extrinsic semiconductor then p-typr semiconductor is formed and when pentavalent impurity is doped on the semiconductor than n-type semiconductor is formed .When we join this p-type and n-type semiconductor then p-n junction diode is formed . there is a junctiom formed between p layer and n layer is called p-n junction.there is a diffusion of electrons and holes due to this depletion layer is formed and barrier

potential is created. P side of p-n junction is work as anode and n side is work as cathode.

3.working of diode

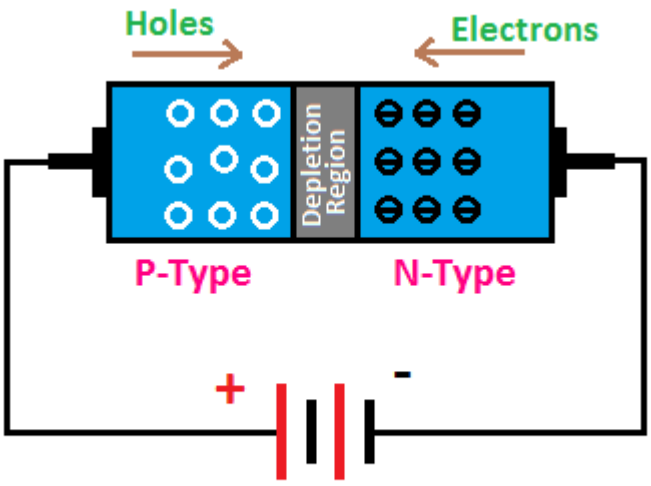
In diodes there is two regions p-type or n-type .In p-type holes are majority charge carriers And electrons are minority charge carriers and in n-type its vice versa. when we combine p and n-type then duffusion is happened between electrons and holes due to this depletion layer is formed and barrier potential is created .

When positive terminal of battery is connected with p-type and negative terminal is connected with n-type then the diode become forward biased.

When negative terminal of battery is connected with p-type and positive terminal is connected with n-type then the diode become reversed biased.

In forward bias:

When we apply the voltage then the positive charge repeal the holes present in p-type and negative charge repeal the electrons present in n-type due to this the width of depletion layer decrease.And electrons cross the depletion layer and started moving .There is a current flows to the opposite side of flow of electron.



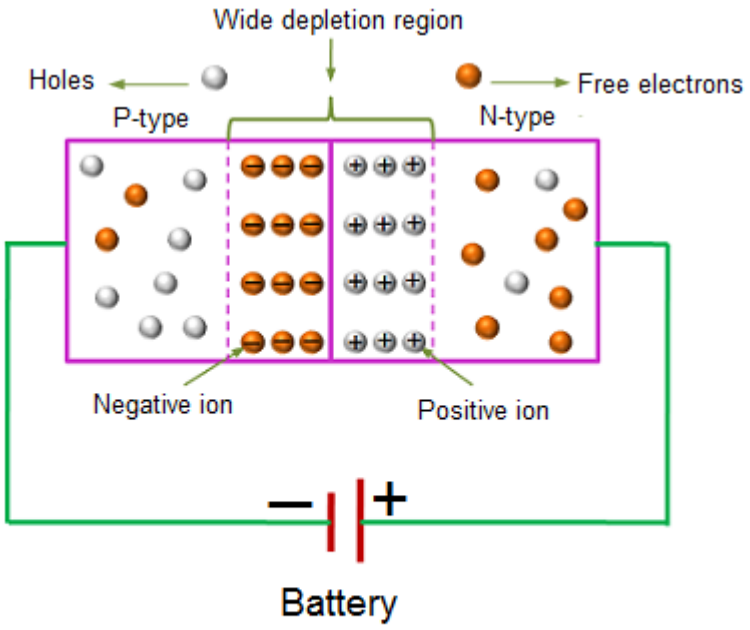
PN Junction Diode Forward Biasing

In reverse bias:

In reverse bias when potential is given than the positive terminal attracts the electron present in

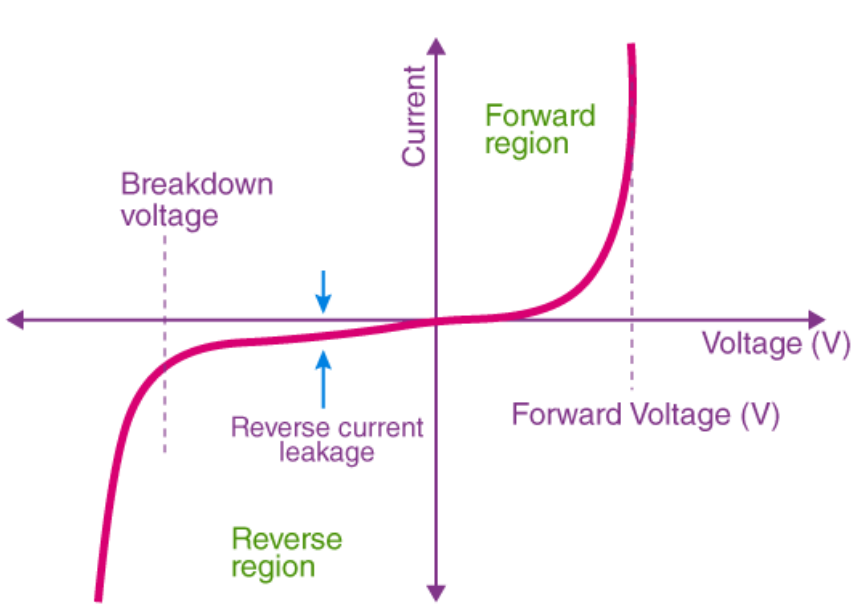
n-side and negative charge attracts the holes present in p-side due to this width of depletion layer increases.There is no current flows when the diode become reverse biased.

But when the voltage increase the value of reverse bias also increase then reverse current also increases suddenly.This is called breakdown.



Reverse bias

4.V-I characteristics :



5. Applications of diode:

i. Used as solar cell

ii. It can be used as LED when diode is forward bias.

iii. Used as rectifier in many circuits.

iv. Used as photodiode.

THANKYOU