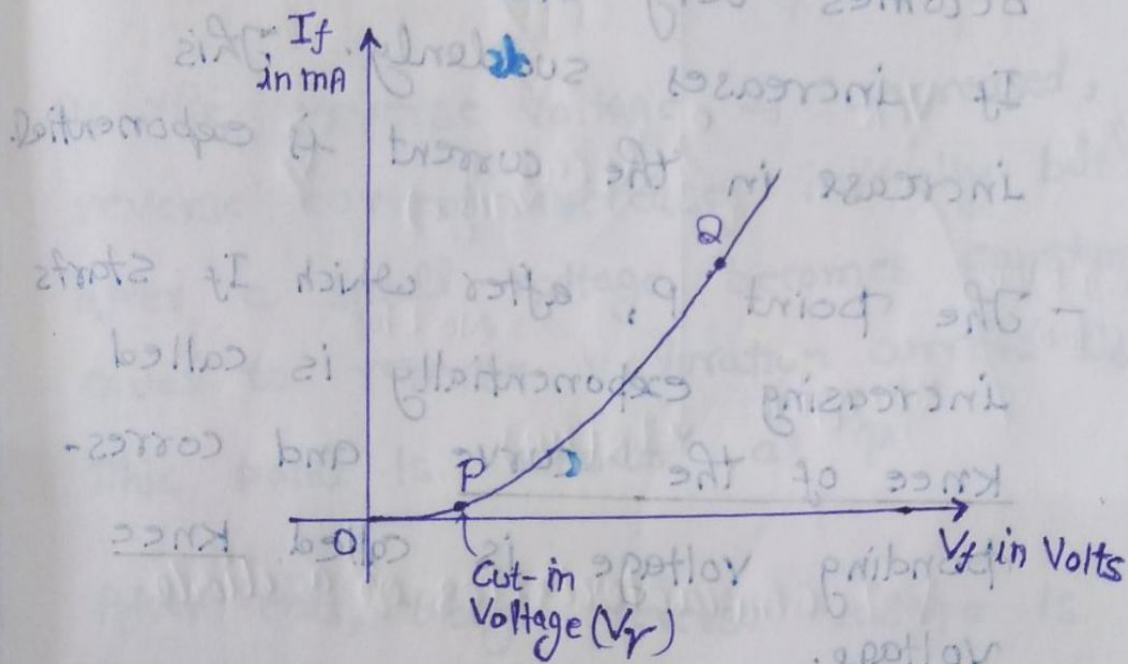


## V-I Characteristics of Diode:-

Let In forward biasing  $V_f$  is the voltage across the p-n Junction and  $I_f$  is the forward current then graph of  $I_f$  against  $V_f$  is called forward characteristics of p-n Junction.

The forward characteristics of diode is shown below -

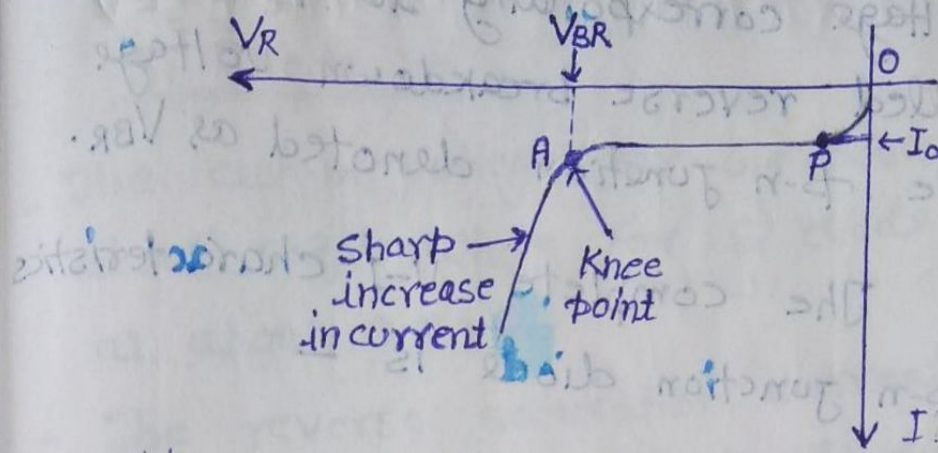


Forward characteristics of a diode

Basically forward characteristics can be divided into two regions:

(i) Region 0 to P -

As long as  $V_f$  is less than cut-in voltage ( $V_r$ ), the current flowing is



$V_{BR}$  - Reverse Breakdown Voltage

### Reverse Characteristics of diode

As the reverse voltage is increased, reverse current increases initially but after a small voltage becomes constant equal to reverse saturation current  $I_0$ . This point is shown as P.

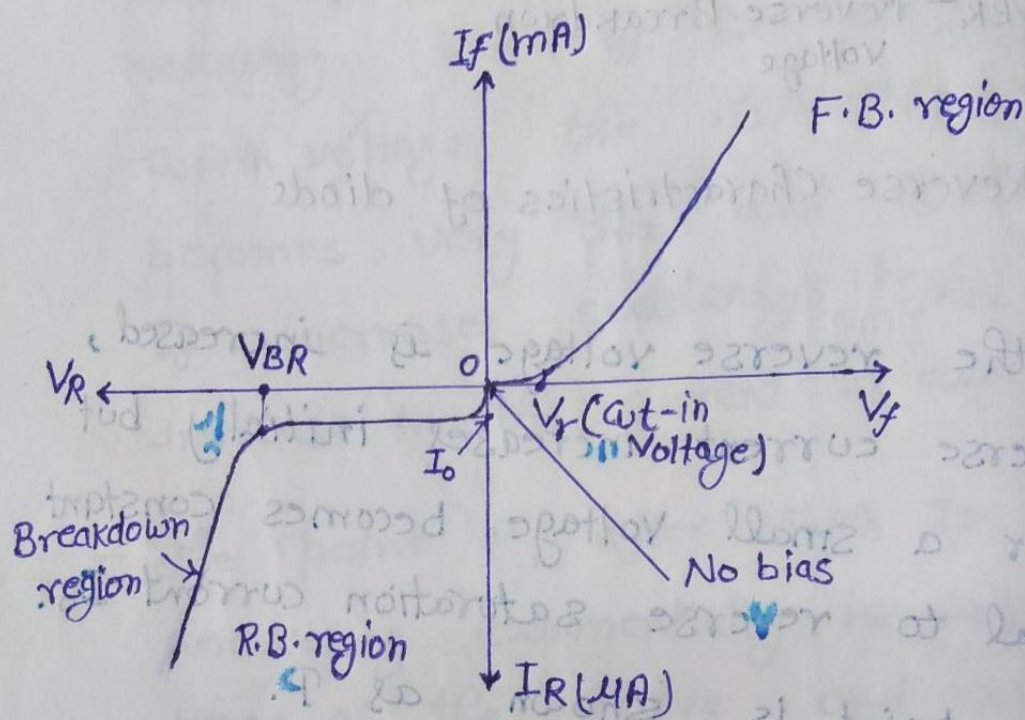
After this, though reverse voltage is increased, the reverse current remains constant till point A.

At point A reverse breakdown of the diode occurs and current increases sharply that damaging the diode. This point is called knee of the reverse characteristics.



The voltage corresponding to point A is called reverse breakdown voltage of the p-n junction denoted as  $V_{BR}$ .

The complete V-I characteristics of p-n junction diode is —



### V-I Characteristics of a diode

When a diode is connected in a circuit, the reverse current remains constant till point A. At point A reverse breakdown of the diode occurs and current increases sharply that damaging the diode. This point is called knee of the reverse characteristics.

## V-I Characteristics of Typical Ge and Si Diode :-

- The cut-in voltage for Ge diode is about  $0.3V$  while for Si diode is as about  $0.7V$ .
- The reverse saturation current  $I_o$  is of the order of  $nA$  for Si diode while it is of the order of  $\mu A$  for Ge diode.
- Reverse breakdown voltage for Si diode is higher than that of the Ge diode for a given rating.

So V-I characteristics of typical Ge and Si diodes are -

