

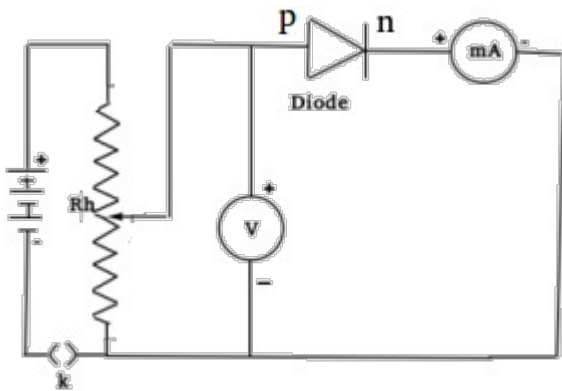
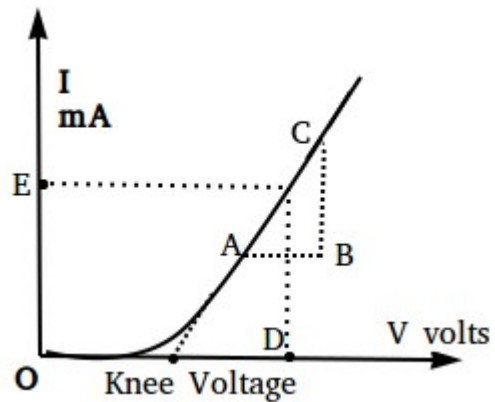
Forward Characteristics of a Diode

Aim: To draw the I-V characteristics curve of a pn junction diode in forward bias.

Theory:

Semiconductor diode is a combination of a p-type and an n-type material. It is formed by doping intrinsic semiconductor with trivalent impurity atoms to make n-region and pentavalent impurity atom for p-region.

A depletion region is established with the diffusion of electrons. This depletion region opposes the further flow of electrons and holes. Forward biasing occurs when the n-region of the diode is connected to the positive terminal of the battery, and its n-region to the negative terminal of the battery. This results the decrease of the depletion region. Then more majority carriers from both sides can cross the junction making a current called forward current. After cut-in or knee voltage the forward current increases linearly with voltage.



$$\text{Dynamic Resistance} = \frac{AB}{BC}$$

$$\text{Static Resistance} = \frac{OD}{OE}$$

Observations:

Diode Used =

Value of One division of Voltmeter =

Value of One division of Ammeter =

Sl No															
Voltmeter Reading (V)															
Ammeter Reading (A)															

From the Graph, Knee Voltage = Volts

$$\text{Dynamic Resistance} = \frac{AB}{BC} = \quad = \quad \Omega$$

$$\text{Static Resistance} = \frac{OD}{OE} = \quad = \quad \Omega$$

Results:

- The V - I characteristics of the diode is drawn
- The Knee Voltage = volts
- The Static Resistance = Ω
- The Dynamic Resistance = Ω