

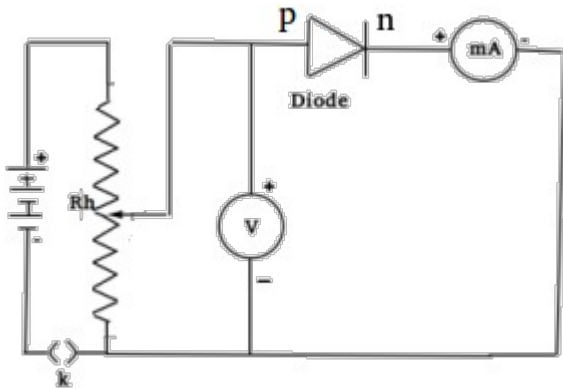
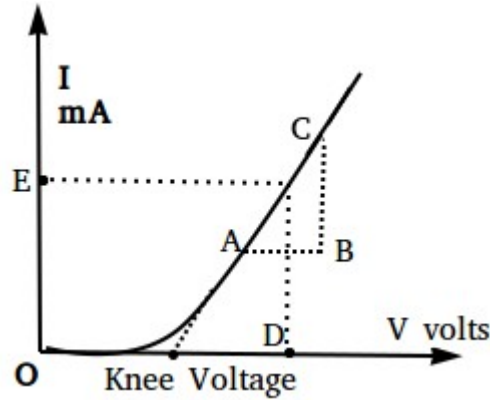
## Forward Characteristics of a Diode

**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 p-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

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

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

**Results:**

1. The V - I characteristics of the diode is drawn
2. The Knee Voltage = volts
3. The Static Resistance =  $\Omega$
4. The Dynamic Resistance =  $\Omega$