## Assignment 6 Experiment 6

### Characteristic of PN junction diode under forward bias

**Aim:** To plot the characteristics curve of PN junction diode in Forward bias

**Apparatus:** A diode, DC voltage supplier, Bread board, 100Ω resistor, 2 multimeter for measuring current and voltage and connecting wires

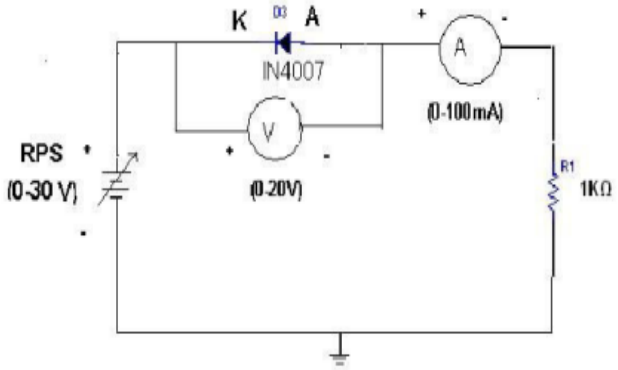


**Fig. 6.1. PN Junction Forward Bias**

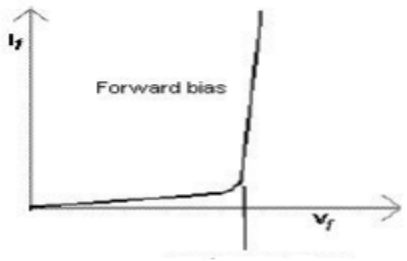


**Fig. 6.2. I-V Characteristics**

**Procedure:**

For the forward bias of a P-N junction, P-type is connected to the positive terminal while the N-type is connected to the negative terminal of a battery. The potential at P-N junction can be varied with the help of potential divider. At some forward voltage (0.3 V for Ge and 0.7V for Si) the potential barrier is altogether eliminated and current starts flowing. This voltage is known as threshold voltage (Vth) or cut in voltage or knee voltage .It is practically same as barrier voltage $V_B$. For $V<V_{th}$, the current is negligible. As the forward applied voltage increase beyond threshold voltage, the forward current rises exponentially.

**Observation:**

| S. No | Forward Voltage ($V_f$) Volt | Forward Current ($I_f$) mA |
|---|---|---|
| 1 | 0 | 0 |
| 2 | 0.2 | 0 |
| 3 | 0.4 | 0.5 |
| 4 | 0.6 | 1 |
| 5 | 0.8 | 2 |
| 6 | 1.0 | 3 |
| 7 | 1.2 | 5 |
| 8 | 1.4 | 7.5 |
| 9 | 1.6 | 10 |
| 10 | 1.8 | 15 |
| 11 | 2.0 | 20 |
| 12 | 2.2 | 25 |

**Assignment Question:**

1. By using the readings in the tabular coloum (V and I), to draw V-I characteristic curve.

2. Write the result in the following order

The V-I characteristic of PN Junction diode is studied and curve is drawn.

Finally, submit the scanned copy of your observation note book in GCR on (or) before THREE working days from the date of experiment.