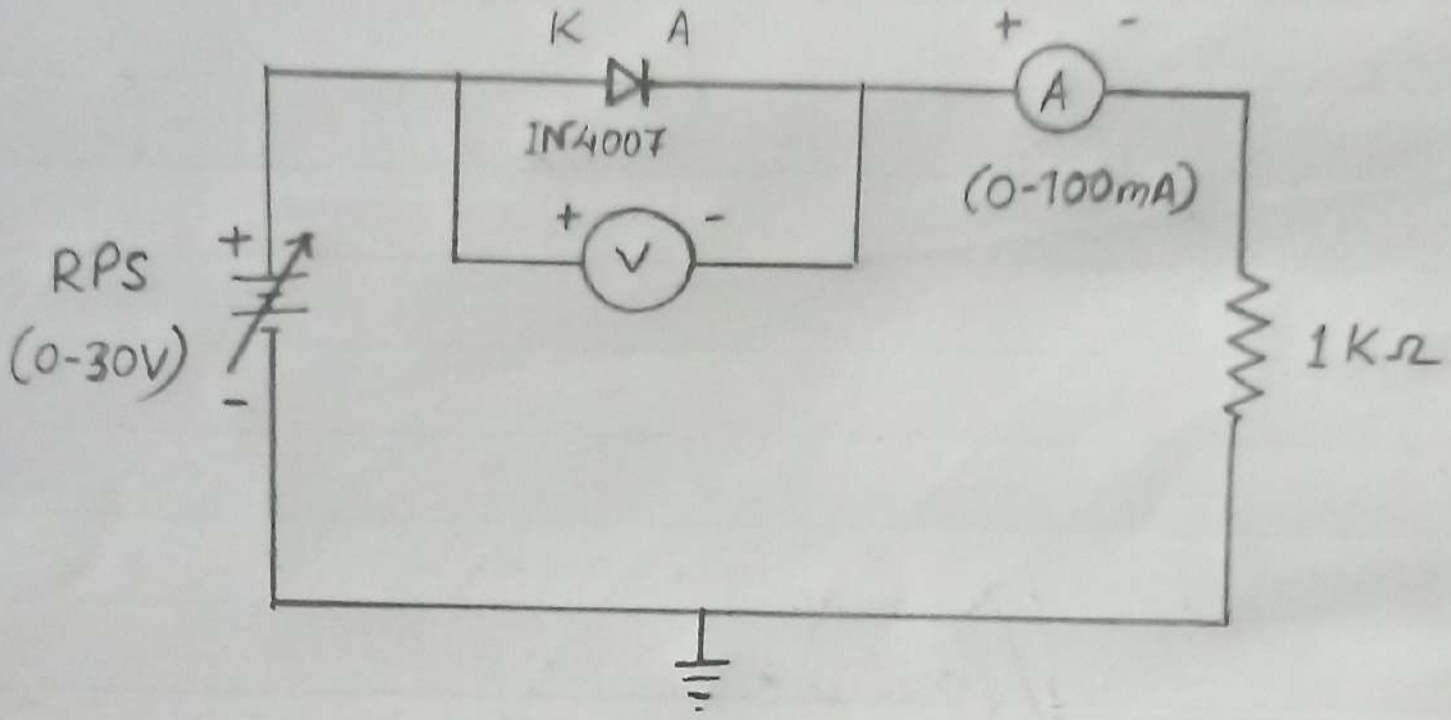
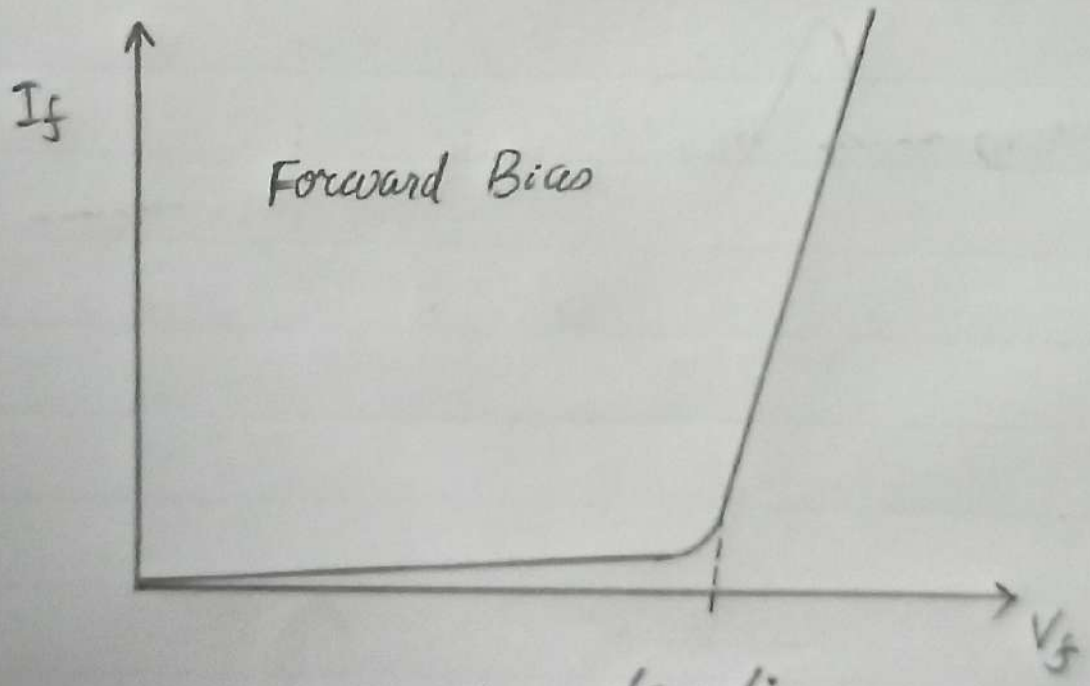


P-N Junction Forward Bias



V-I characteristics

Expt.No.
06

Page No./ 18
Date./ 17/11/20

Characteristics 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, 100 Ω resistor, 2 multimeter for measuring current and voltage and connecting wires.

PROCEDURE:

For the forward bias of a P-N junction diode, P-type is connected to the positive terminal while the N-type is connected to the -ve terminal of a battery. The potential at P-N junction can be varied with help of potential divides. At some forward voltage (0.3 V for Ge and 0.7 V for Si) the potential barrier is altogether eliminated and current starts flowing. This voltage is known as threshold voltage (V_{th}) or cut in voltage or knee voltage. It is 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.

OXFORD

Teacher's Signature .....

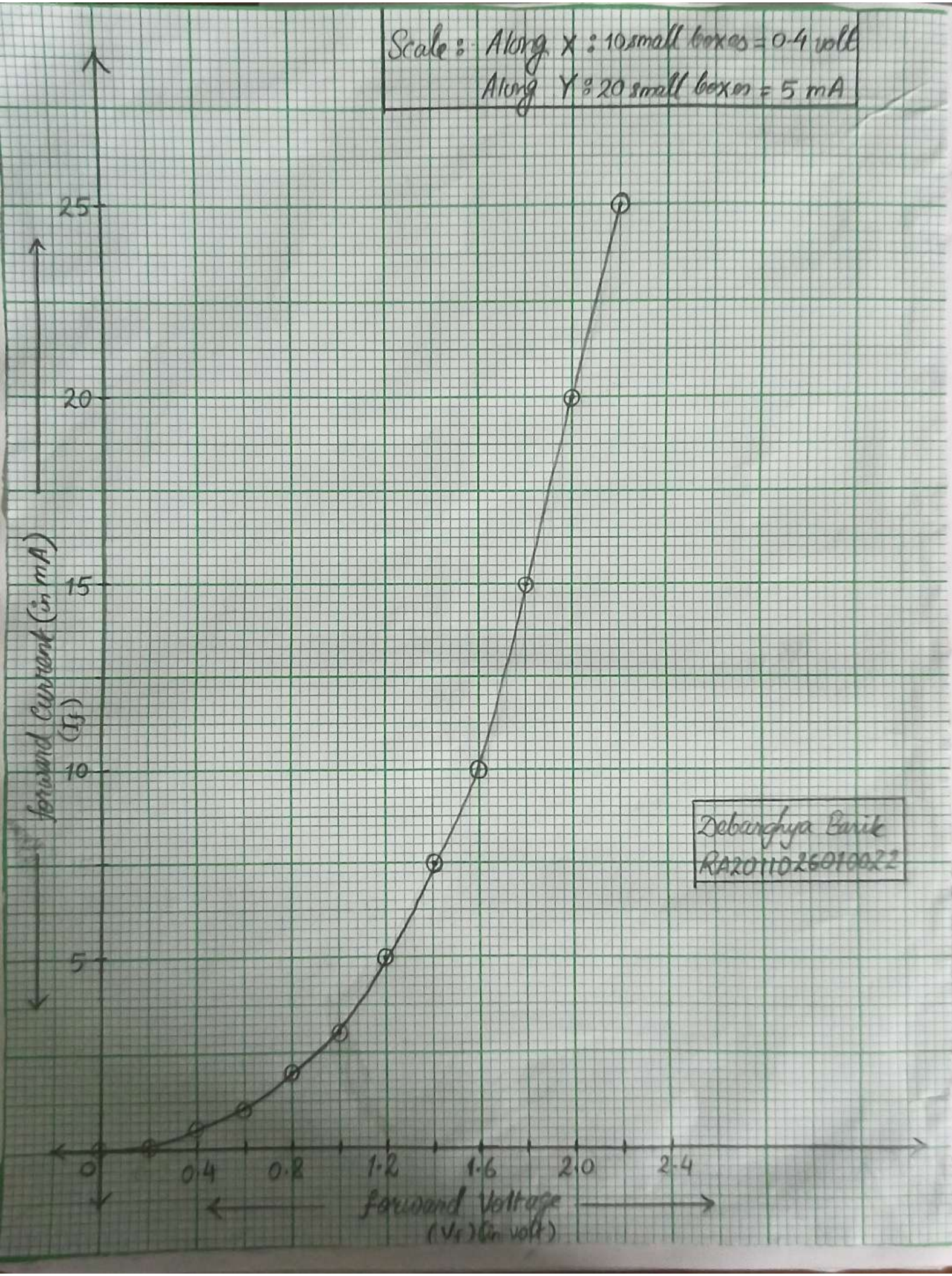
OBSERVATION

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	1.0
5.	0.8	2.0
6.	1.0	3.0
7.	1.2	5.0
8.	1.4	7.5
9.	1.6	10.0
10.	1.8	15.0
11.	2.0	20.0
12	2.2	25.0

Graph drawn on adjacent page.

RESULT : The V-I characteristics of P-N Junction diode is studied and the curve is drawn.

Teacher's Signature .....


Scale: Along X : 10 small boxes = 0.4 volt
Along Y : 20 small boxes = 5 mA
25
20
15
10
5
0
0.4
0.8
1.2
1.6
2.0
2.4
forward current (i_f, mA)
(I_f)
forward Voltage
(V_f) (in volt)
Debarghya Barik
RA2011026010022