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4.TRANSISTOR CHARACTERISTICS

Date submitted : 03-04-2022 04:51:52

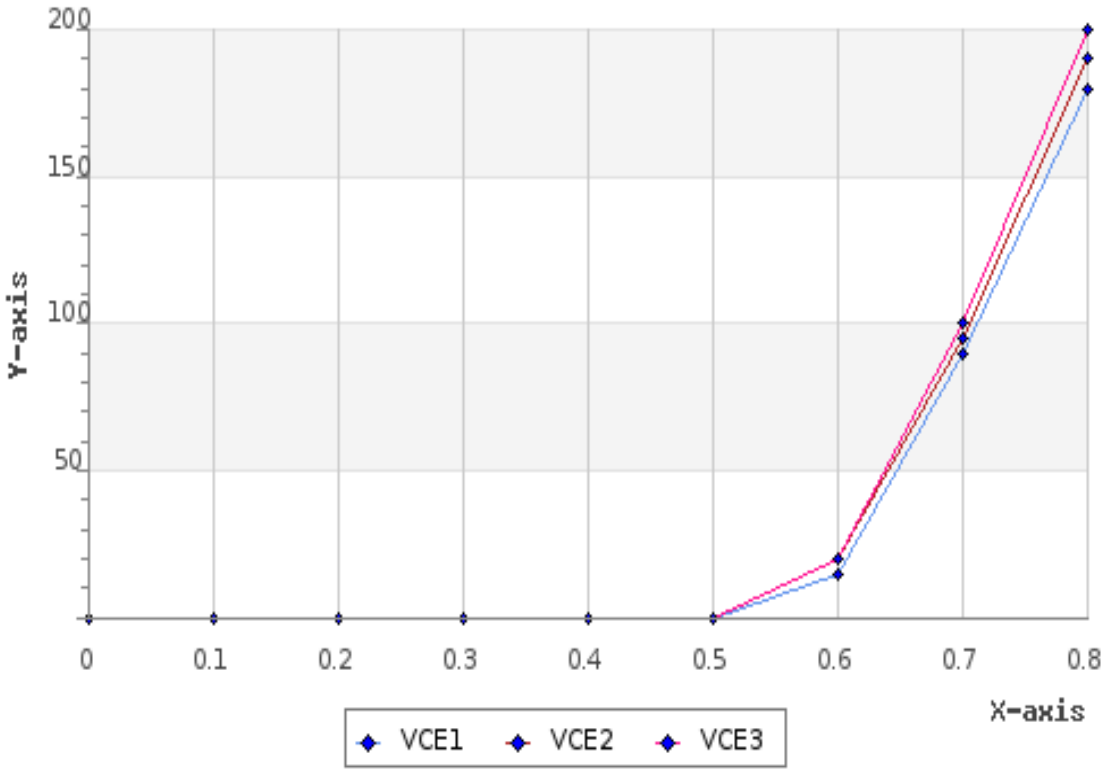
USN : 01FE21BEC268
Name : PRASHANTH SHIVAKUMAR ASKI
Department : Physics
Roll Number : 1736
Subject Name : Applied Physics Lab (ES)

Enter the Number of Observations : 9

INPUT CHARACTERISTICS:

Sl Nos.	V_{CE}=50V		V_{CE}=75V		V_{CE}=100V	
	V_{BE} in(V)	I_B in (μA)	V_{BE} in(V)	I_B in (μA)	V_{BE} in(V)	I_B in (μA)
1	0	0	0	0	0	0
2	0.1	0	0.1	0	0.1	0
3	0.2	0	0.2	0	0.2	0
4	0.3	0	0.3	0	0.3	0
5	0.4	0	0.4	0	0.4	0
6	0.5	0	0.5	0	0.5	0
7	0.6	15	0.6	20	0.6	20
8	0.7	90	0.7	95	0.7	100
9	0.8	180	0.8	190	0.8	200

Graph :


200
150
100
50
Y-axis
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
X-axis
VCE1
VCE2
VCE3

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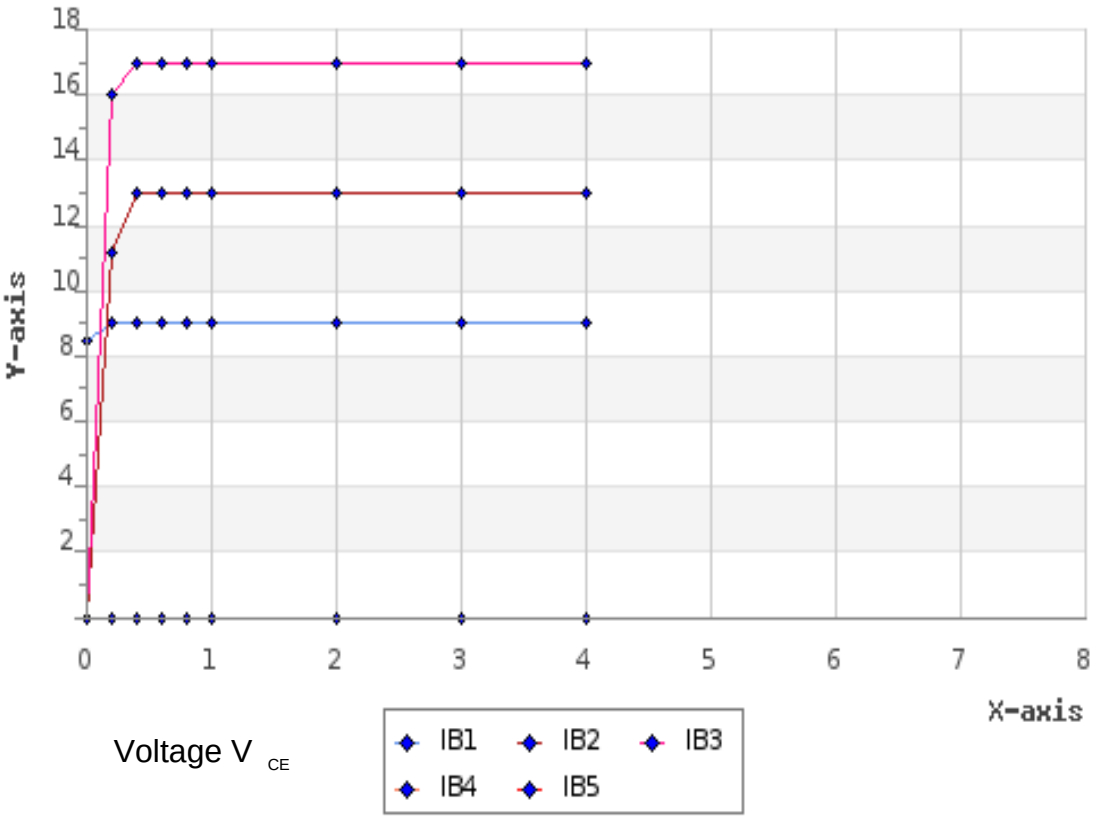
Variation of collected current I_B with V_{CE} at constant base Current I_B

Sl No.	I_B=50 μA		I_B=75 μA		I_B=100μA		I_B=0 μA		I_B=0 μA	
	V_{CE} in(V)	I_{CE} in(mA)	V_{CE} in(V)	I_{CE}in(mA)	V_{CE} in(V)	I_{CE} in(mA)	V_{CE} in(V)	I_{CE}in(mA)	V_{CE} in(V)	I_{CE} in(mA)
1	0	8.5	0	0	0	0	0	0	0	0
2	0.2	9	0.2	11.2	0.2	16	0	0	0	0
3	0.4	9	0.4	13	0.4	17	0	0	0	0
4	0.6	9	0.6	13	0.6	17	0	0	0	0
5	0.8	9	0.8	13	0.8	17	0	0	0	0
6	1	9	1	13	1	17	0	0	0	0
7	2	9	2	13	2	17	0	0	0	0
8	3	9	3	13	3	17	0	0	0	0
9	4	9	4	13	4	17	0	0	0	0

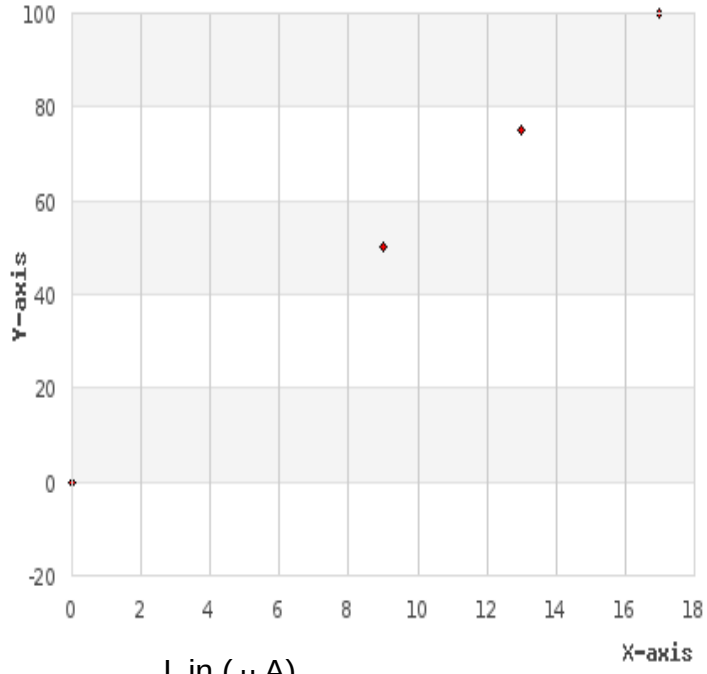
Graph :



Current I_C (mA)

Voltage V_{CE}

Saturated collector current with base current		
Sl No	Base Current I_B in (μA)	Collector Current I_C (in mA)
1	50	9
2	75	13
3	100	17
4	0	0
5	0	0



I_C in (mA)

I_B in (μ A)

Results

The current amplification factor From graph $\beta = (\Delta I_C / \Delta I_B)_{VCE}$= 173

Conclusion

The current amplification factor is the ratio of change
in the collector current (?IC) to the change in base current (?IB) at a constant collector-emitter
voltage (VCE) and its value from the graph is 173.