LAB SESSION 09

To study and plot the transistor characteristics in CE configuration

Name of Student: ……

Roll No.: ……Section: ……

Date of Experiment: …….

Report submitted on: ……

Marks obtained: ……

Remarks: ……

Instructor's Signature: ……...

DEPARTMENT OF MECHANICAL ENGINEERING
UNIVERSITY COLLEGE OF ENGINEERING AND TECHNOLOGY

LAB SESSION 06

To study and plot the transistor characteristics in CE configuration

Objectives

To study and plot the transistor characteristics in CE configuration

APPARATUS REQUIRED:

S.No.	Name	Range	Type	Qty
1	R.P.S	(0-30)V		2
2	Ammeter	(0–10)mA		1
		(0–1)A		1
3	Voltmeter	(0–30)V		1
		(0–2)V		1

COMPONENTS REQUIRED:

S.No.	Name	Range	Type	Qty
1	Transistor	BC 147		1
2	Resistor	10kΩ 1KΩ		1
3	Bread Board			1
4	Wires			

THEORY:

A BJT is a three terminal two – junction semiconductor device in which the conduction is due to both the charge carrier. Hence it is a bipolar device and it amplifier the sine waveform as they are transferred from input to output. BJT is classified into two types – NPN or PNP. A NPN transistor consists of two N types in between which a layer of P is sandwiched. The transistor consists of three terminal emitter, collector and base. The emitter layer is the source of the charge carriers and it is heartily doped with a moderate cross sectional area. The collector collects the charge carries and hence moderate doping and large cross sectional area. The base region acts a path for the movement of the charge carriers. In order to reduce the recombination of holes and electrons the base region is lightly doped and is of hollow cross sectional area. Normally the transistor operates with the EB junction forward biased. In transistor, the current is same in both junctions, which indicates that there is a transfer of resistance between the two junctions. Hence known as transfer resistance of transistor.

PROCEDURE:

INPUT CHARECTERISTICS:

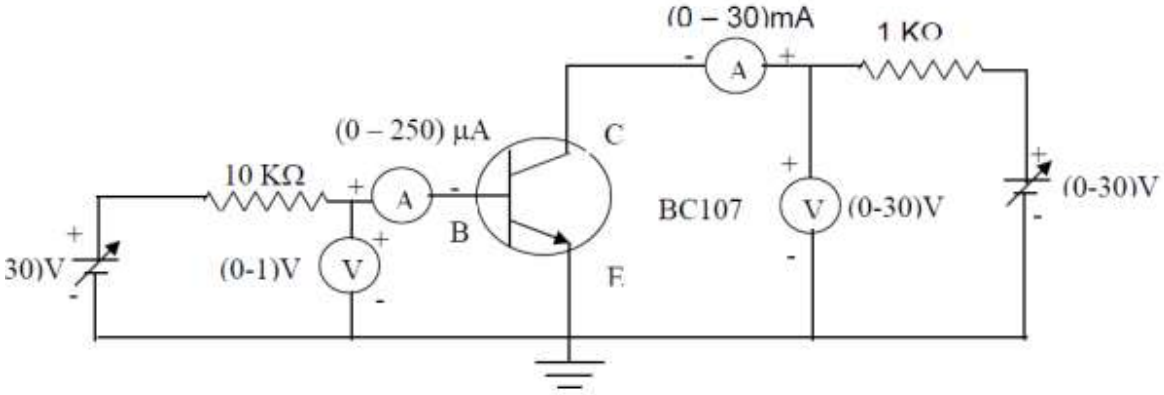
1. Connect the circuit as per the circuit diagram.
2. Set V_{CE}, vary V_{BE} in regular interval of steps and note down the Corresponding I_B reading. Repeat the above procedure for different values of V_{CE}.

3. Plot the graph: V_{BE} vs I_B for a constant V_{CE}.

OUTPUT CHARACTERISTICS:

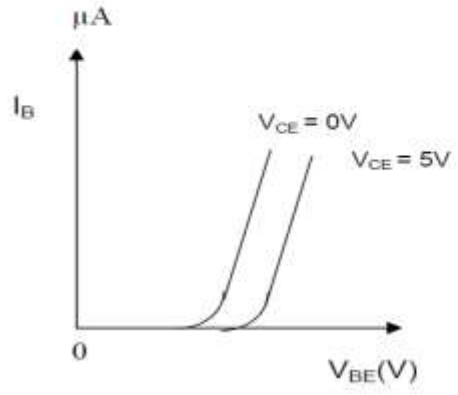
1. Connect the circuit as per the circuit diagram.
2. Set I_B, Vary V_{CE} in regular interval of steps and note down the corresponding I_C reading. Repeat the above procedure for different values of I_B.
3. Plot the graph: V_{CE} Vs I_C for a constant I_B.

CIRCUIT DIAGRAM:

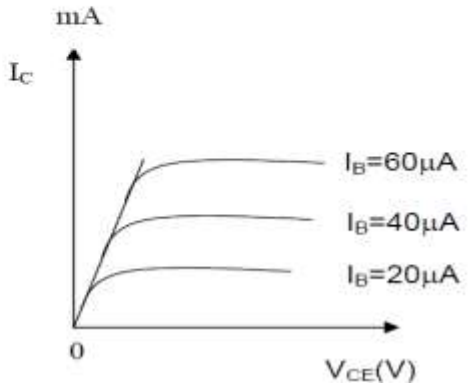


MODEL GRAPH:

INPUT CHARACTERISTICS:



OUTPUT CHARACTERISTICS:



TABULAR COLUMN:

INPUT CHARACTERISTICS:

V_{CE}=1V		V_{CE}=2V	
V_{BE}(V)	I_B(μA)	V_{BE}(V)	I_B(μA)

OUTPUT CHARACTERISTICS:

I_B=20μA		I_B=40μA	
V_{CE}(V)	I_C(mA)	V_{CE}(V)	I_C(mA)