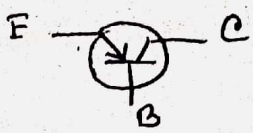
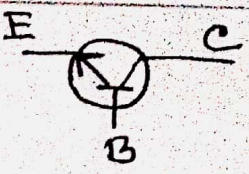
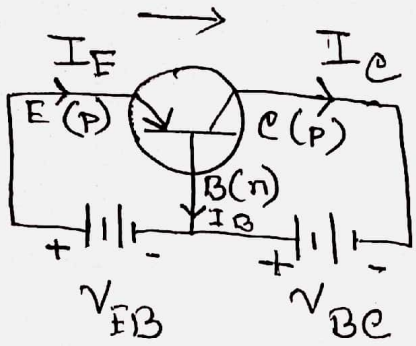
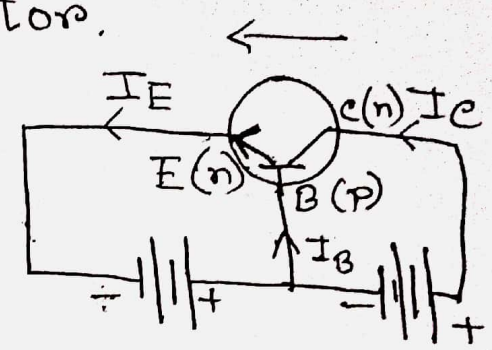
① p-n-p 

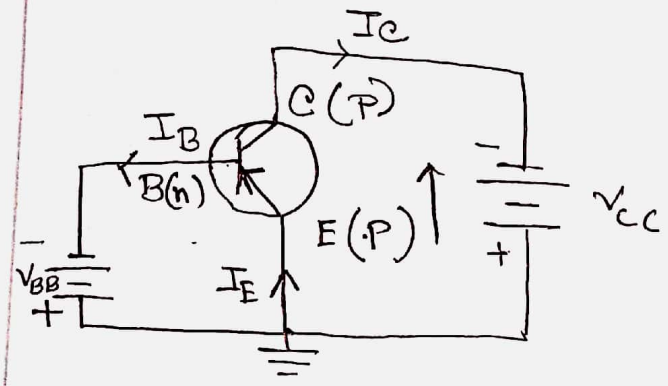
② n-p-n 

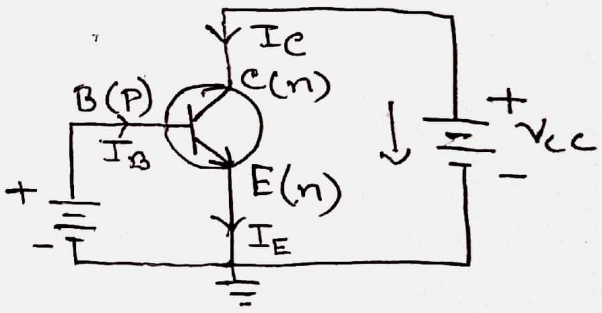
③ Common base-transistor.



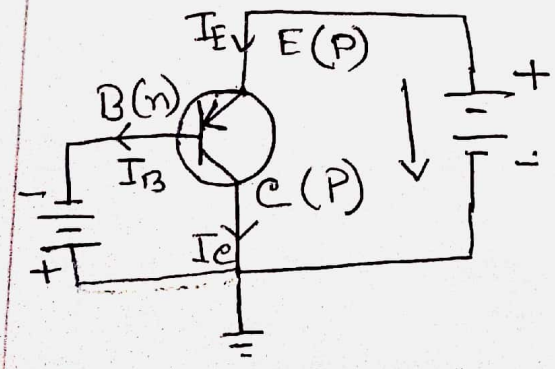


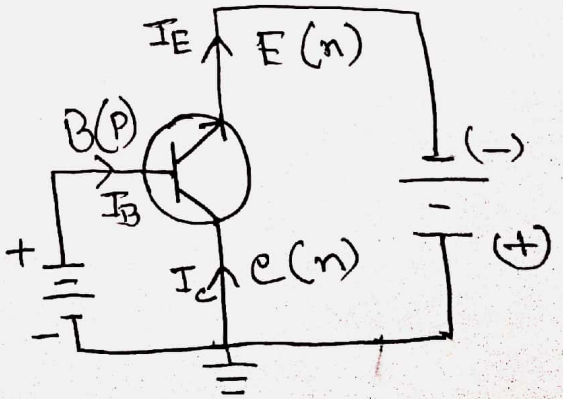
④ Common-emitter transistor.





⑤ Common-collector transistor.





Q: How to identify emitter, base and collector of a transistor using Ohmmeter.

Ans: Ohmmeter is used to measure the resistance.

In PNP transistor,

The Emitter-base junction is forward biased.

So, by holding two ends one on Emitter and other on base a very low resistance is found

So, voltage is low. which indicates emitter

The base-collector junction is reverse biased

For less doping high resistance. So, high voltage is found.

$\therefore R_{EB} < R_{BC}$ read on Ohmmeter. So,

$V_{EB} < V_{BC}$ in PNP transistors.

In NPN transistor,

The ~~Emitter~~ emitter-base is reverse biased

So, high resistance is detected by ohmmeter.

The base-collector ~~is~~ junction is forward biased. So, low resistance means low voltage.

$R_{EB} > R_{BC}$ detected in Ohmmeter.

$\therefore V_{EB} > V_{BC}$ in NPN transistors.

Q: Explain transistor operation.

Ans: The basic operation of transistor can be descri-bed using pnp transistor. The operation of npn transistor is exactly the same if the roles played by the electron and hole are interchanged. In the figures below the forward & reverse biased parts are individually shown-

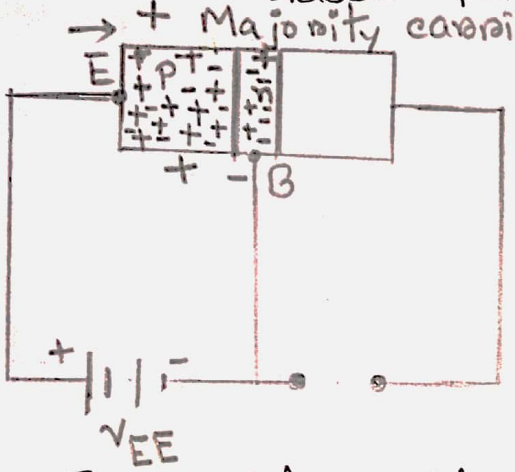


Figure -(a) forward bias

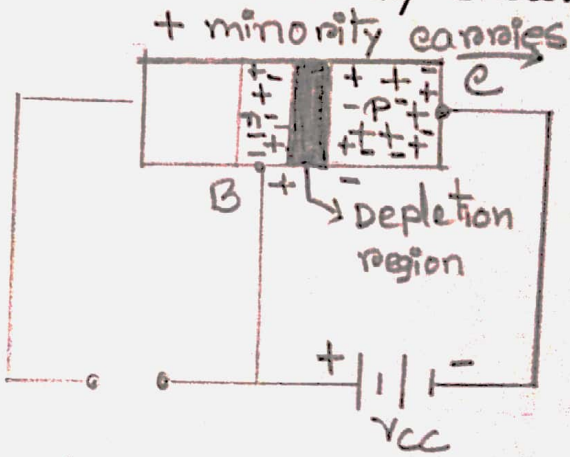


figure -(b) reverse bias

In first loop between Emitter & base is p-n junction where large number of majority carriers diffuse across the forward biased p-n junction into the n-type material.

N-type material is very thin and has a low conduc-tivity, a very small number of the majority carr-ier becomes minority carriers about microampere compared to miliampere. In ~~re~~ reverse bias both majority carriers break through depletion layer ~~and~~ following minority carriers.

$I_E = I_C + I_B$

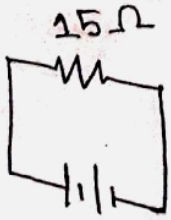
$I_C = I_{C\,majority} + I_{CO\,minority}$

Q: Why the middle ~~ea~~ layer is made thin?

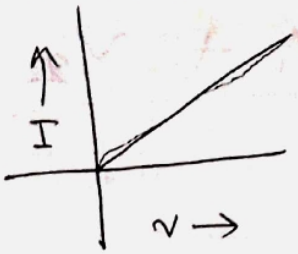
Ans: The base is made thin and lightly doped so that the majority carriers supplied by the ~~ea~~ emitter do not combine in the base region and most of them pass on to the collector.

Date:.....

1. Ohm's law:



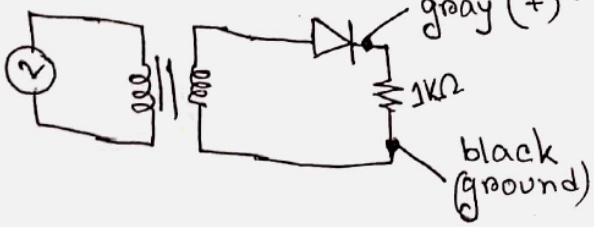
V	I
–	–
–	–
–	–



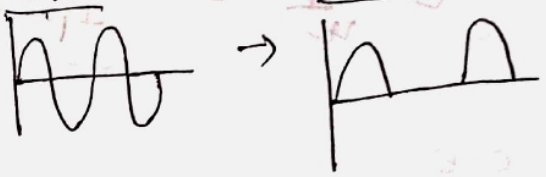
① Internal Resistance of Resistor not constant.

② Temp. not fixed.

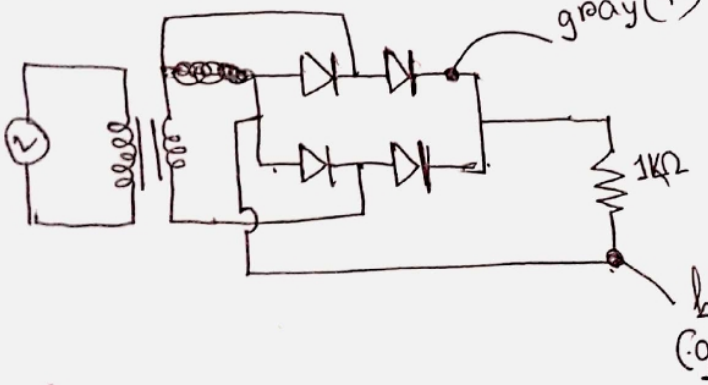
2. Half-wave rectification:



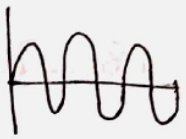
(input) AC → (output) DC



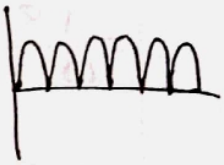
3. Full-wave rectification:



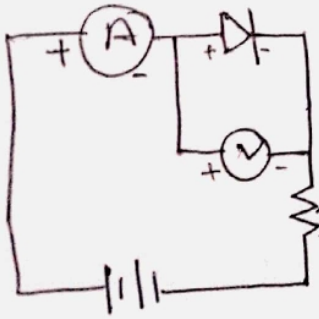
(input) AC



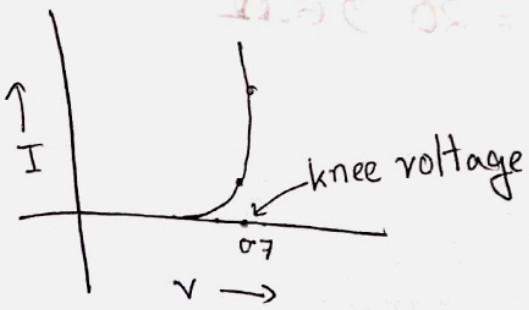
(output) DC



4. PN junction diode:



V	I
–	–
–	–
0·62	20
0·7	80



- The minimum voltage at which current starts to flow through the diode is knee voltage.