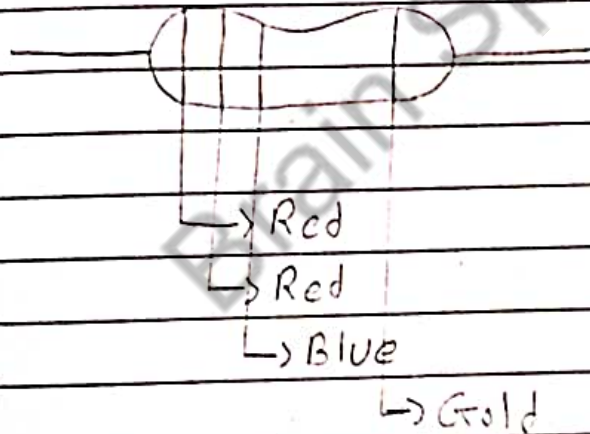


Unit: 6 Introduction For different Electronics Components.

4. A resistor has a color band sequence: red, red and blue. Find the range which its value must lie so as to satisfy the tolerance.



$$R = 22 \times 10^6 \pm 5\%$$

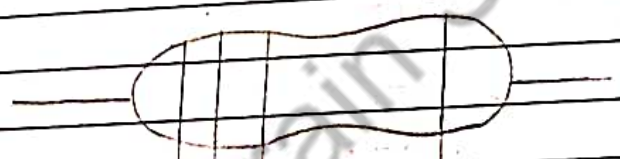
5 Explain the colour coding in detail.

There are main two types of color coding use

- 1 Using colour bands
- 2 Using characters

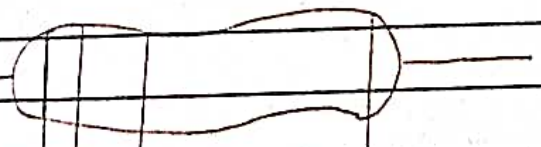
1. Using colour bands:

(i) 4 Band system



- ↳ 1st digit
- ↳ 2nd digit
- ↳ Multiplier
- ↳ Tolerance

Ex.



- ↳ Green
- ↳ Blue
- ↳ yellow
- ↳ Silver

5 Explain the colour coding in detail.

There are main two types of color coding use.

- 1 Using colour bands
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1. Using colour bands:

(i) 4 Band System



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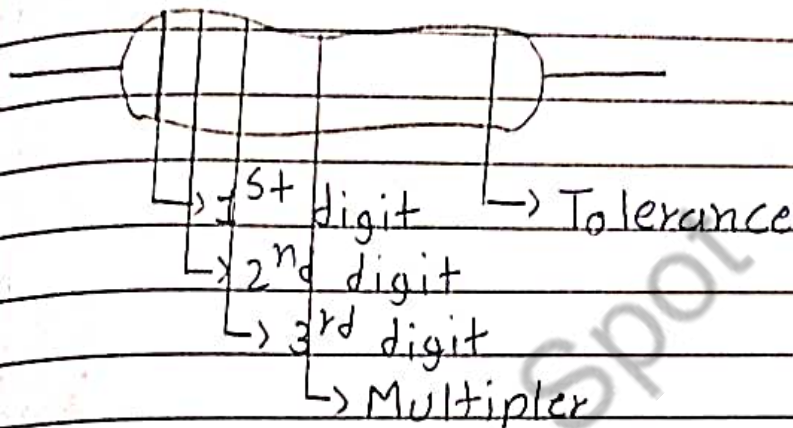
Ex.



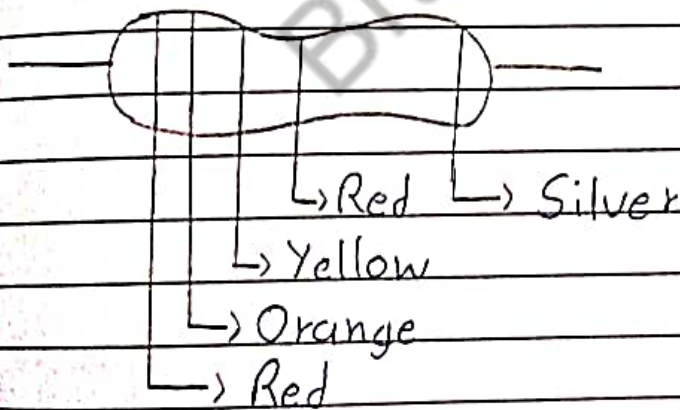
- ↳ Green
- ↳ Blue
- ↳ yellow
- ↳ Silver

$$R = 56 \times 10^4 \pm 10\%$$

(ii) 5 Band system:



Ex

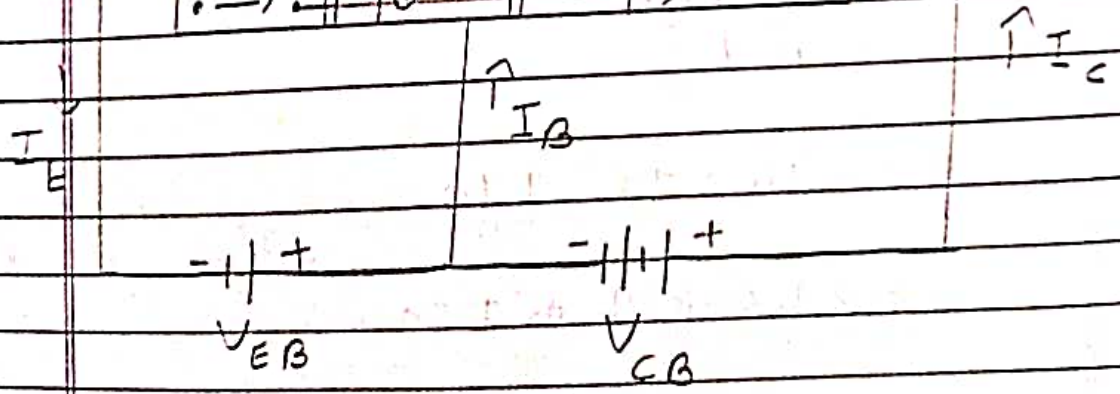
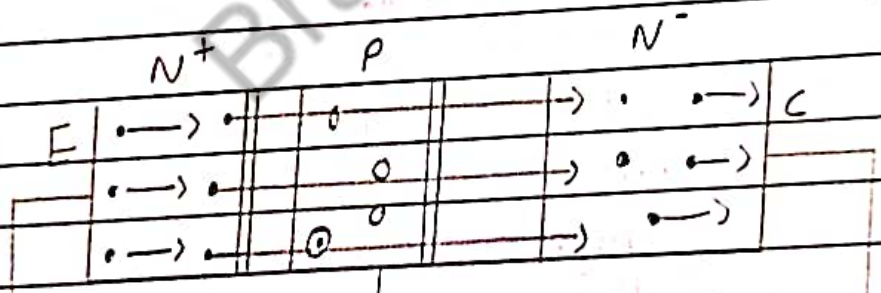
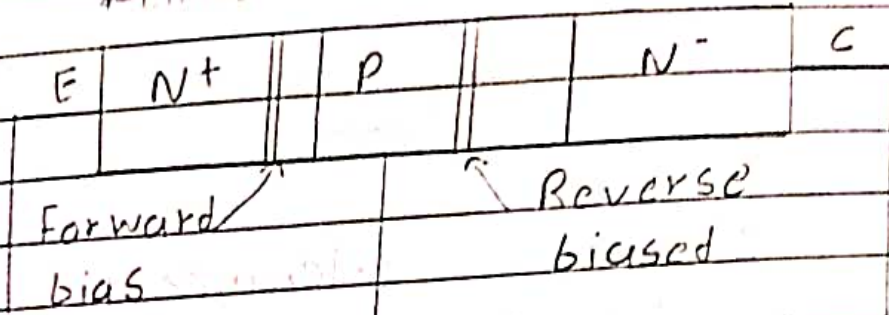


$$R = 234 \times 10^2 \pm 10\%$$

$$R = 23.4 \text{ k}\Omega \pm 10\%$$

12 Explain the operation of NPN transistor in detail.

Emitter → Base → Collector →



The process of applying dc voltages across the different terminals of a transistor is called biasing.

NPN transistors are a type of bipolar transistor with three layers that are used for signal amplification.

In NPN transistor, the forward biased is applied across the collector-emitter-base junction.

The reversed biased is applied across the collector-base junction.

The forward biased voltage V_{EB} is small as compared to the reversed biased voltage V_{CB} .

→ Emitter:

The emitter of the NPN transistor is heavily doped.

When forward bias is applied, then the majority charge carriers move towards the base.

The current of emitter is I_E .

-> Base:

The Base of the NPN transistor is lightly doped and the current of base is I_B .

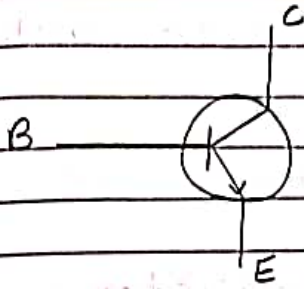
This bases current enters into the collector and reversed biased potential applies the high attractive force on the electrons on collector junction.

Thus, collect the electrons at the collector.

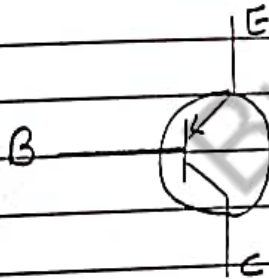
Thus, we can say that the emitter current is the sum of the collector and the base current.

15 Draw the symbol of NPN, PNP transistor.

-> Symbol of NPN transistor.



-> Symbol of PNP transistor.



-> ~~Classification of~~

=> Application of transistor.

1 Transistor switches can be used to switch and control lamps, motors.

- 2 Use for Amplification.
- 3 Use for Digital and analog switch
- 4 Use for Voltage, Current and power regulator.
- 5 Used in building blocks of IC.

=> Classification of Transistor

