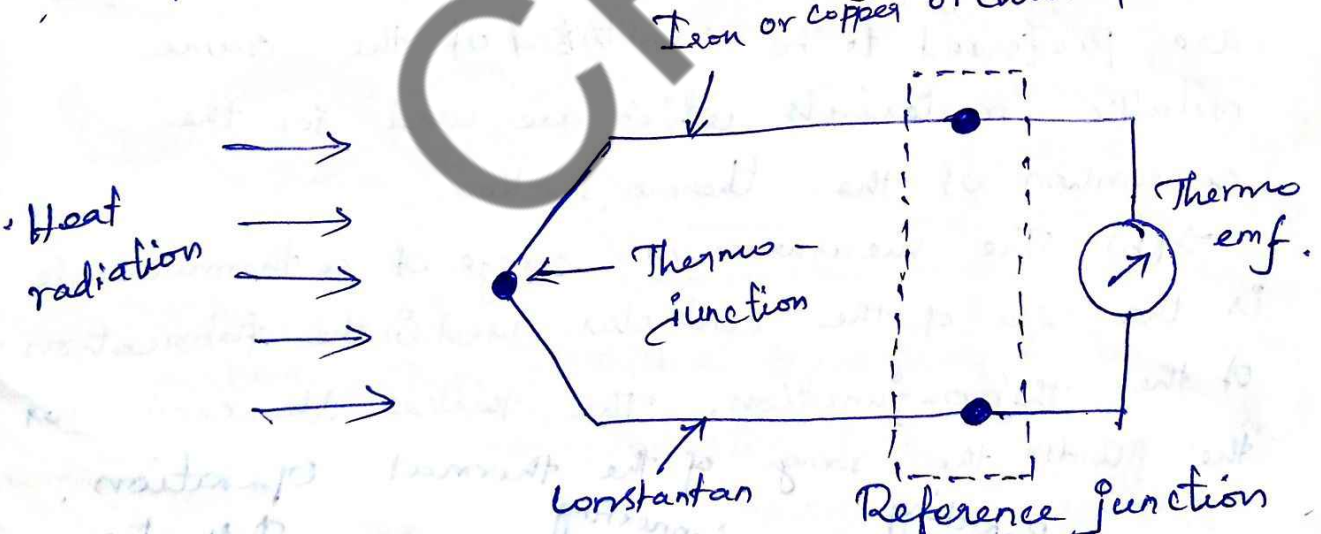
Thermocouple Transducer:-

It is based on thermo electricity and known as the seebeck effect. According to this effect when two different (material) conductors are coupled at one end and subjected to heat as their free ends are held at a constant Low temperature an emf is developed across the free ends.

⇒ It is refered to as thermo-emf. The constant low temperature at the free ends is named the reference temperature.

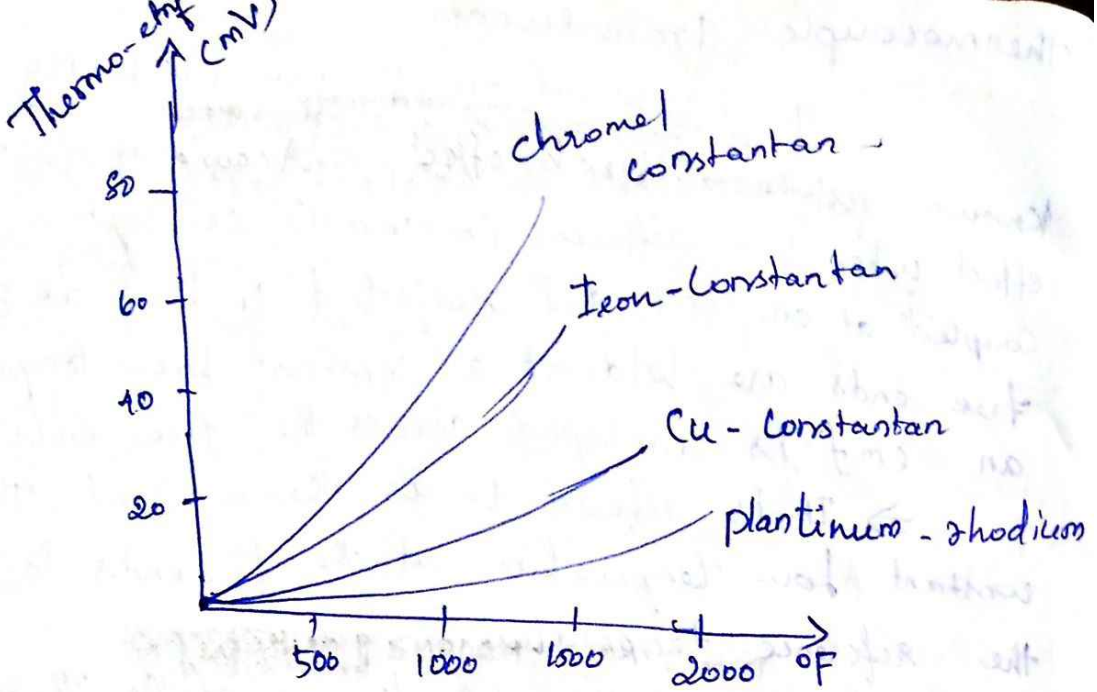
⇒ The coupled end is known as the thermo junction and the device ~~as it is~~ known as a Thermocouple.

⇒ The same difference of temperature created between the thermo-junction and the reference junction, the thermo-emf developed is different for different junctions materials. one such comparative study of the various thermo couples.



⇒ with the reference temperature held at 32°F and the thermo-junction temperature at 1800°F

⇒ The thermo-emf by a Chromel constantan junction is about 50 mV and that across an iron constantan junction about 54 mV.



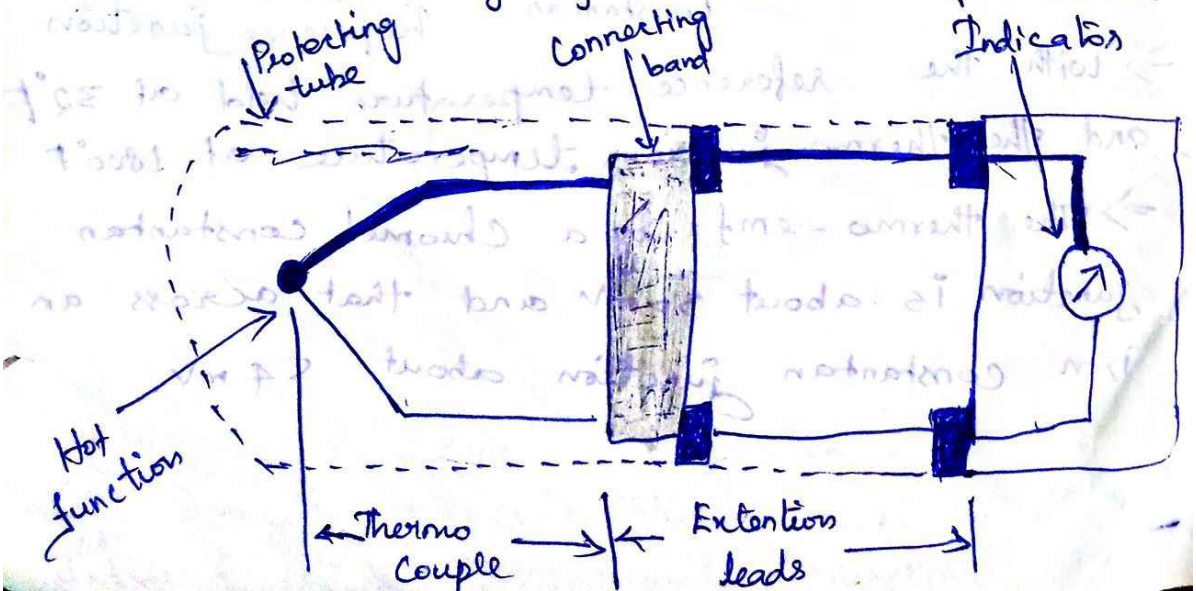
Construction of Thermo couples :-

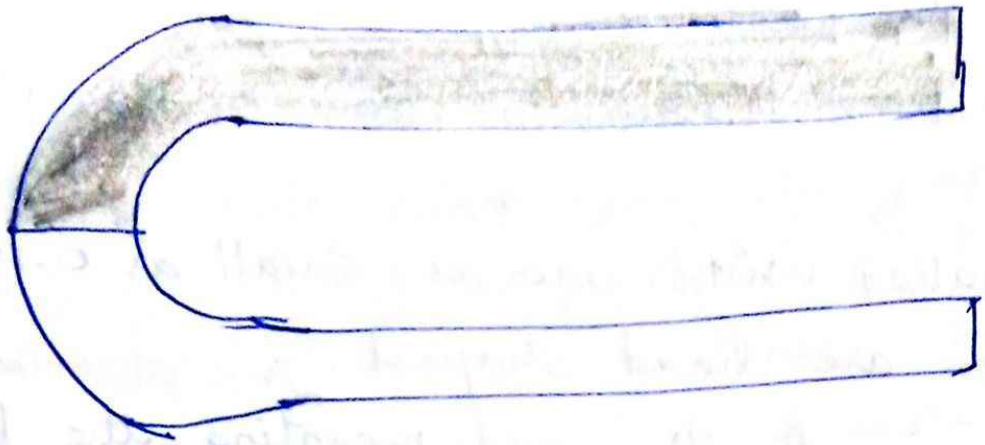
⇒ Wires of different materials and gauges are jointed together to form a junction.

⇒ In the majority application it is housed in a protective tube.

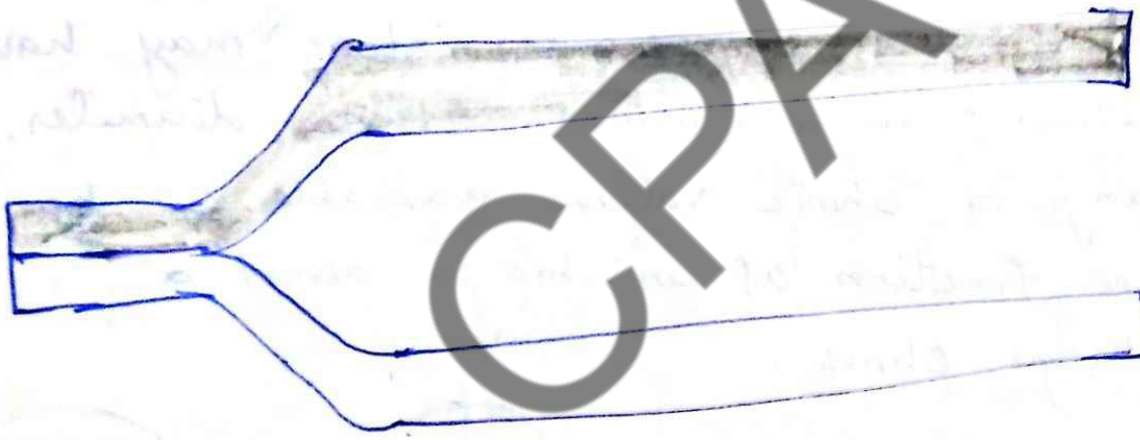
⇒ The extension leads used between the the connecting head and the indicator instrument are preferred to be constituted of the same metallic materials which are used for the composition of the thermo junction.

⇒ (b) The measurement range of a thermocouple is the size of the conductor used in the fabrication of the thermo-junction. The thicker the conductor the wider the range of the thermal operation.

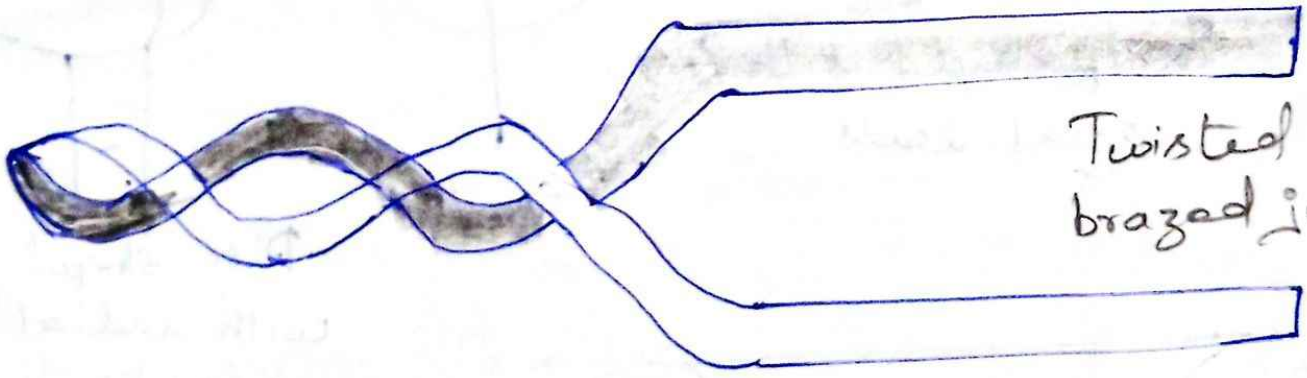




Arc welded junction



Resistance welded junction



Twisted and brazed junction