

SEE BECK EFFECT

In 1822, Thomson Johann Seebeck discovered that an emf could be produced by thermal means alone, in a circuit composed of two different metals with their junctions at different temperatures. This effect is called Seebeck effect, after his name. The two metals constitute a thermocouple, the emf produced in a circuit is called thermo emf (thermoelectric motive force) or a Seebeck emf, and the current in the circuit due to this emf is known as thermo electric current.

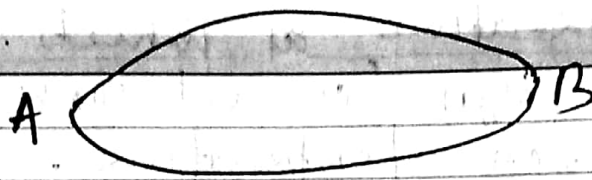


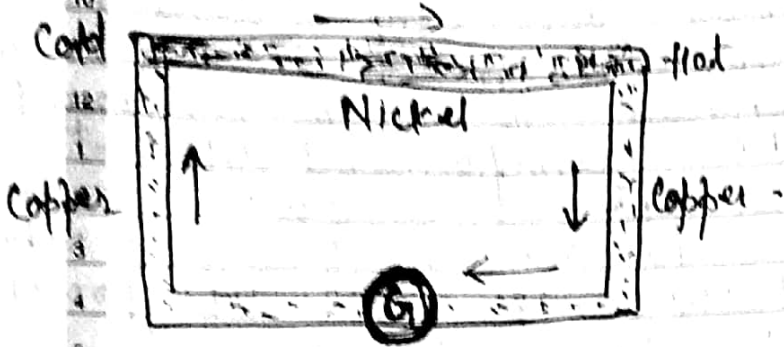
Fig-1

Figure 1 shows two metallic strips, made of different metals and joined at the ends to form a loop.

"When two wires of different metals are joined to form two junctions and kept at two different temperatures, an emf is set up. This is called Seebeck effect."

M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
●	●	●	●	●	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	●	●	●	●	●	●

Neutral and Inversion Temperature.



Copper-nickel thermocouple.

"The temperature of the hot junction at which the thermo-emf is maximum is called the neutral temperature and the temperature at which the thermo-emf changes its sign (current reverses) is called the inversion temperature."

If θ_c , θ_n and θ_i denote the temperature of the cold junction, the neutral temperature and the inversion temp. respectively, we have.

$$\theta_n - \theta_c = \theta_i - \theta_n \quad \text{--- (i)}$$

