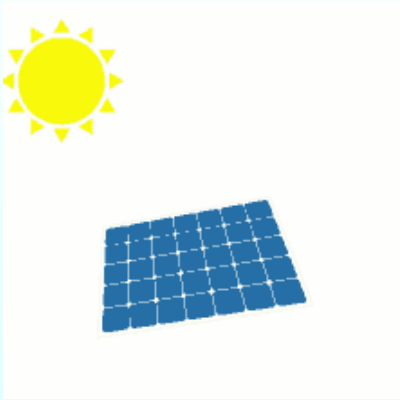
Kirchhoff's Laws



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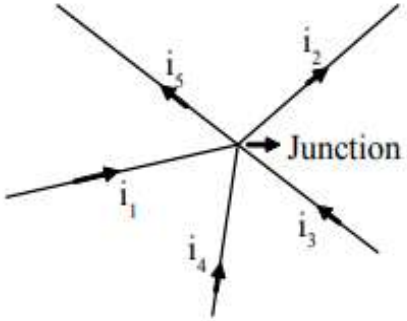
Kirchhoff's Current Law :



Kirchorr;s Current Law

It states that, the sum of currents entering a junction is equal to the sum of currents leaving that junction.

(Or)

The algebraic sum of the currents meeting at a junction is equal to zero where currents entering are given positive sign and currents leaving are given negative sign.

i.e, Σ current entering = Σ currents leaving

$$i_1 + i_4 + i_3 = i_5 + i_2$$

(or) $$i_1 + i_4 + i_3 - i_2 - i_5 = 0$$

Kirchhoff's Voltage Law :

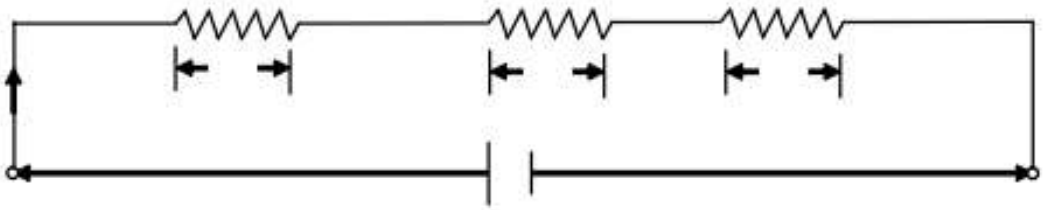


Fig. Kirchorr;s Voltage Law

It states that, in a closed circuit, the sum of potential rises (E) is equal to the sum of potential drops.

(Or)

The algebraic sum of potential differences in any closed circuit is zero.

Rise of potential is considered as positive (+) and potential drop is considered as negative (-).

$$\sum E - \sum IR \text{ drops} = 0 \text{ (in a closed loop)}$$

i.e., $\sum E = \sum IR$

(or) $\sum$ Potential rise = $\sum$ Potential drop.

$$E - V_1 - V_2 - V_3 = 0$$

$$E = V_1 + V_2 + V_3$$

$$E = IR_1 + IR_2 + IR_3$$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Thank You


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