

Electric potential : It is define as the workdone required to move ~~one~~ ^{unit} charge from infinity to one point. It is denoted by V

$$V = \frac{W}{q}$$

unit \rightarrow Volt

\hookrightarrow 1 Volt is defined as if 1 joule energy required to move 1 Coulomb charge then Electric potential is said to be 1 Volt.

\hookrightarrow Electric potential difference is defined as workdone per unit charge in moving unit positive charge from one point to another.

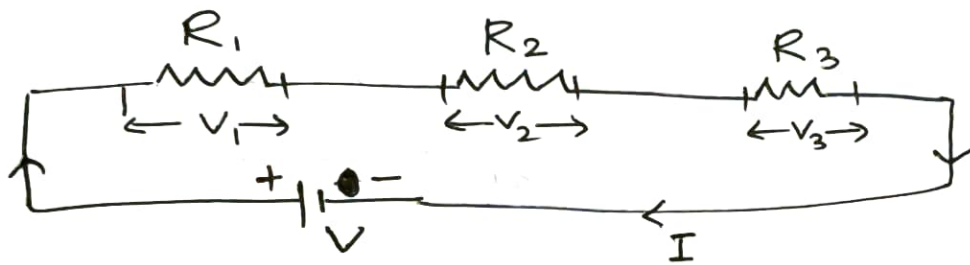
$$\Delta V = V_A - V_B$$

Voltmeter is used to measure potential difference.

Resistance of system of resistors

① When resistors are connected in Series

Two or more resistors are said to be connected in series if they are connected one after other such that current flow through each resistor is same.



Let V is the applied voltage / potential and R_1, R_2, R_3 are the three resistors connected in series.

If V_1, V_2, V_3 are the potential difference across R_1, R_2, R_3 respectively. Then in series connection

$$V = V_1 + V_2 + V_3$$

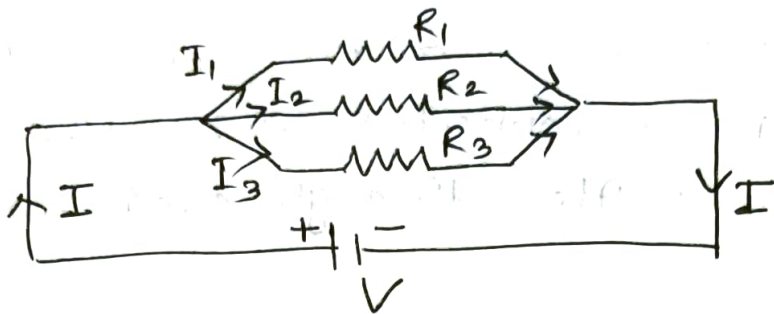
$$\Rightarrow IR_{eq} = IR_1 + IR_2 + IR_3$$

$$\Rightarrow \boxed{R_{eq} = R_1 + R_2 + R_3}$$

$R_{eq} \rightarrow$ Equivalent resistance.

2) When resistors are connected in Parallel

When two or more resistors are connected in such a way that one end of each resistor is connected to one common point and the other ends to the other common point so that there are different



Paths for the flow of current, the resistors are said to be connected in parallel connection.

In parallel connection

$$I = I_1 + I_2 + I_3$$

$$\Rightarrow \frac{V}{R_{eq}} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$$

$$\Rightarrow \boxed{\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$