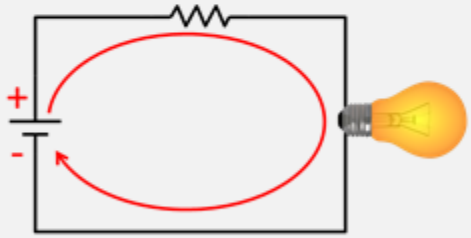
What is Electric Current

Electric current is defined as rate of flow of charge



How current is produced?

Metals contains large number of free electrons which move randomly throughout the material. Under ordinary conditions the net movement in any given direction is zero.

However when a battery is connected across conductor the electrons are attracted by the positive pole of the battery and repelled by the negative Pole. This movement of charges is referred as electric current.

SI unit of Electric Current

The SI unit of Electric current is ampere

Ampere is defined as flow of 1 coulomb per second

Mathematically

$$I = \frac{Q}{t}$$

Where I = current in amps
Q = charge in coulombs
t = time interval in seconds

A Numerical

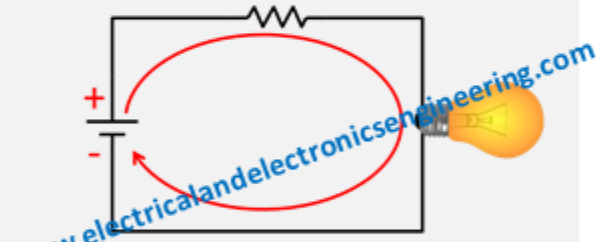
If 1000 coulombs of charge pass through certain area during a time interval of 50 seconds, what is the current?

Solution:

$$I = \frac{Q}{t} = \frac{1000\ C}{50\ s} = 20\ A$$

Direction of Current (Conventional current)

In beginning of electricity era many scientists believed that current results due to movement of
positive charges and that move around the circuit from the positive
terminal of the battery to the negative terminal
This flow of current is referred as Conventional current

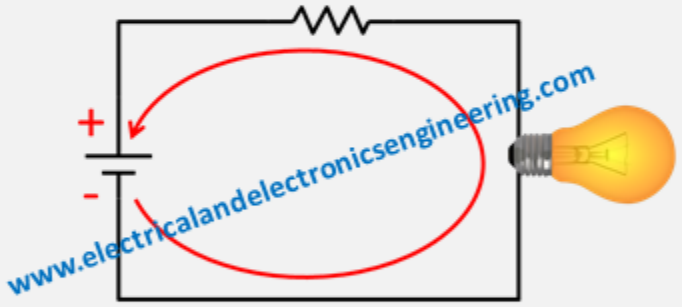


Conventional flow of current from positive to negative terminal

Direction of Current (Electron flow current)

The actual current through metallic conductors is due to the movement of electrons move through the circuit from negative to the positive terminal of battery

This flow of current is referred as the electron flow current



Electron flow of current from negative to positive terminal

The End

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