

Subject - Physics

Chapter-1 (Electricity)

- Electric Current :- It is a potential difference between the ends of the wire which makes the electric charges (current) to flow in the wire.

“ — The electric current is a flow of electric charges (electron) in a conductor such as a metal wire.”

- (i) The magnitude of electric current in a conductor is the amount of electric charges passing through a given point of the in one second.

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

where,  
 $I = \text{Current}$   
 $Q = \text{Charge}$   
 $t = \text{time}$

- (ii) The SI unit of electric current is Ampere.  
 (iii) Ampere is written as 'A'.

1 Ampere :- When 1 coulomb of charge flows through any cross-section of a conductor in 1 second, the electric current flowing through it is said to be 1 ampere.

$$1 \text{ ampere} = \frac{1 \text{ Coulomb}}{1 \text{ Second}}$$

$$\boxed{1 \text{ ampere} = \frac{1 \text{ C}}{1 \text{ Sec.}}}$$

Note (i) Current is measured by an instrument called ammeter.

(ii) An ammeter should have very low resistance.

(iii) An ammeter is connected in series with a conductor to measure the current passing through it.

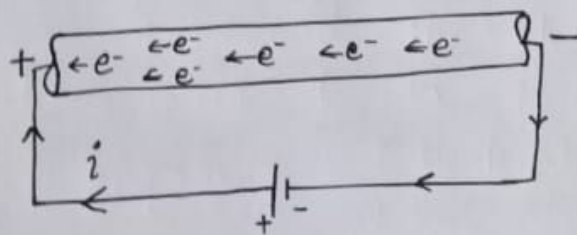
• Continuous Flow of electric Current -

The simplest way to maintain a potential difference between the two ends of a conductor so as to get a continuous flow of current is to connect the conductor between the terminals of a cell or a battery.

• Direction of electric current :-

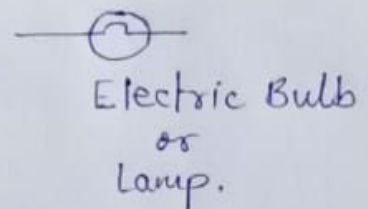
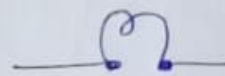
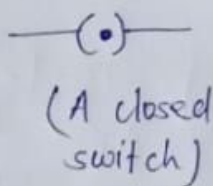
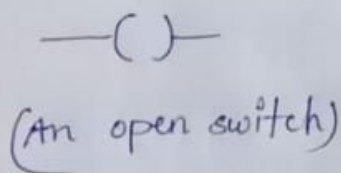
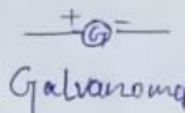
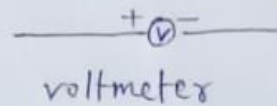
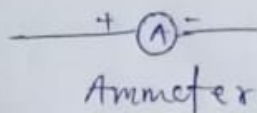
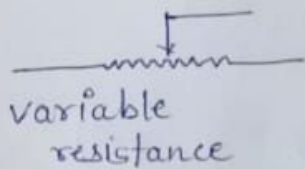
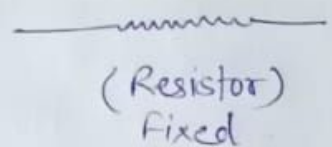
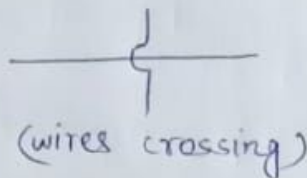
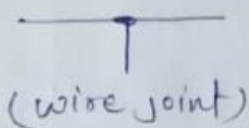
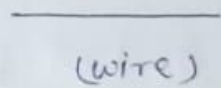
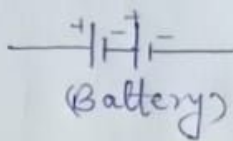
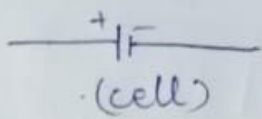
The conventional direction of electric current is from positive terminal of a cell to the negative terminal through the outer circuit.

Note :- The direction of electric current is opposite the flow of electron.



- Electric Circuit :- A continuous conducting path consisting of wires and other resistances and a switch, between the two terminals of a cell or a battery along which an electric current flows, is called a circuit.

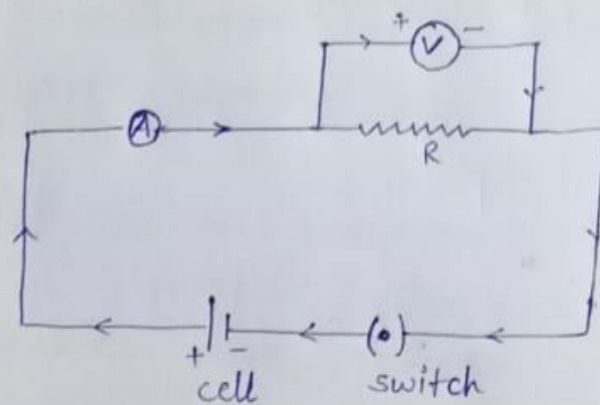
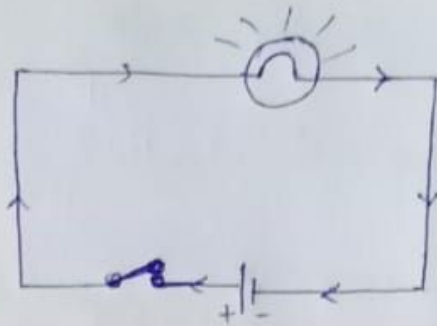
Circuit Symbols :-



Note (i) Battery is a combination of two or more than two cells.

(ii) Variable resistance is also known as Rheostat.

Circuit Diagram :- A diagram which indicates how different components in a circuit have been connected by using the electrical symbols for the components, is called a circuit diagram.



A = Ammeter

V = Voltmeter

R = Resistance

## Questions

Que 1. What is the flow of charge called?

Que 2. What is the unit of electric current?

Que 3. Compare how an ammeter and a voltmeter connected in a circuit.

Que 4. What is a circuit diagram?

Que 5. What is an electric current?

Que 6. If the charge on an electron is  $1.6 \times 10^{-19} \text{ C}$  how many electrons should pass through a conductor in 1 second to constitute 1 ampere current.

Que 7. What is an ammeter? How is it connected in a circuit? Draw a diagram to illustrate your answer.

Que 8. Which instrument is used to measure electric current? How should it be connected in a circuit?

Que 9. A flash of lightning carries 10 C of charge which flows for 0.01 sec. What is the current? If the voltage is 10 MV, what is the energy?

Que 10. How many electrons are flowing per second past a point in circuit which there is a current of 5 Ampere.