



Current Electricity

Electric Charge

The electricity developed on bodies, when they are rubbed with each other is called frictional electricity. When a glass rod is rubbed with silk, the glass rod becomes positively charged while the silk becomes negatively charged.

Charge is something that a body attains when it loses or gains the electrons. Charge is of two types:

1. Positive charge
2. Negative charge

Electric Current

Rate of flow of charge is called the electric current. Its SI unit is ampere.

Electric Circuit

An electric circuit consists of all the components such as electric bulbs, electric switch and cell, so that on completion of circuit bulb glows.

Electric Power

It is the electric work done by the electric

instruments per unit time, i.e. $P = \frac{W}{t}$.

Its SI unit is watt.

1 kilowatt hour = 3.6×10^6 joule.

Heating Effect of Electric Current

- Production of heat in an electric device due to flow of electric current is called heating effect of electric current.
- An electric bulb, electric fuse heater used for food cooking or room heater, etc., are examples of heating effect of current.
- Electric bulb is a device which converts electrical energy into light and heat energy.
- An electric bulb contains a tiny wire inside the glass cover which is called filament.
- Filament is made up of tungsten.
- An electric fuse is a device which works on the heating effect of current.
- It prevents from electric fires or damage to electrical appliances.
- Electric fuse consists of a short length of a thin wire (plated copper) and having low melting point and high resistance.
- We should not use a thick wire as a fuse wire because it will have a low resistance.

Chemical Effect of Current

- When electric current is passed through conducting liquids, then chemical changes take place. This is called chemical effect of electric current.
- Cell is an example of chemical effect of current.

Sources of Electric Current

Few sources of electric current are

- (i) Cell (ii) Generator or Dynamo

Cell

Cell converts chemical energy into electrical energy. These are of two kinds:

Primary Cells

In this type of cells, the chemical energy is converted into electrical energy, but the chemical reactions occurring are irreversible.

Secondary Cells

Secondary cells are those cells in which it is possible to restore electrical energy from the chemicals present in the cell.

☑ Solar Batteries

It is a technique by which energy of sun converts into electric energy. It is used to give the power to the artificial satellites.

Generator or Dynamo

The dynamo or generator works on the principle of electromagnetic induction in which when any pole of a permanent magnet is fastIy moved

inside or outside of a coil of wire, the current is induced in the coil.

Dynamo converts the mechanical energy into electrical energy.

Current Measuring Devices

For measuring current there are following types of devices which we can use as

Galvanometer

It is a device used to detect and measure electric current in a circuit. It can measure current upto 10^{-6} A.

- ☑ **Note** Shunt is a low resistor connected in parallel with a circuit or device that reduces the amount of electric current flowing through it.

Ammeter

It is a device which is used to measure electric current in a circuit. It is a connected in series in the circuit.

Voltmeter

- It is a device used to measure the potential difference between two points in a circuit.
- It is connected in parallel in the circuit.
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Practice Exercise

1. The unit of electric current is
(a) Joule (b) ampere
(c) watt (d) newton
2. Which of the following is a conductor of electricity?
(a) wood (b) glass
(c) ebonite (d) human body
3. Which of the following is not bad conductor of heat?
(a) Mica (b) Iron
(c) Wood (d) Rubber
4. A fuse wire is
(a) of low melting point
(b) of high melting point
(c) of very high melting point
(d) None of the above
5. Fuse is used in an electric circuit to
(a) break the circuit when excess current flows through the circuit
(b) break the circuit when power goes off
(c) indicate if the current is flowing
(d) complete the circuit for flow of current

- # Answers

[illegible]