

# **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 =  $3.6 \times 10^6$  joule.

## **Heating Effect of Electric Current**

- Production of heat in an electric device due to flow of electrics current is called heating effect of electric current.
- An electric bulb, electric fuse heater used food cooking or room heater, etc, are., the examples of heating effect of current.
- Electric bulb is 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 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 takes 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 wich 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 fastly 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.
- •



- **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 in flowing
  - (d) complete the circuit for flow of current

- **6.** Electric fuse is an alloy of (a) tin and lead (b) zinc ar
  - (b) zinc and lead
  - (c) copper and iron (d) carbon and tin
- **7.** Which one of the following is not the source of electricity?
  - (a) Electric source
- (b) Radio
- (c) Battery
- (d) Dry cell
- **8.** .....inside the bulb.
  - (a) Hydrogen is filled
- (b) Air is filled
- (c) Neon is filled
- (d) None of these
- **9.** Conversion of heat into electrical energy may be achieved by using
  - (a) hydrometer
- (b) thermocouple
- (c) voltmeter
- (d) photoelectric tube
- **10.** An electric current can produce by
  - (a) heating effect
- (b chemical effect
- (c) magnetic effect
- (d) All of these
- **11.** On passing electric current through solution of an electrolyte, the solution experiences.
  - (a) magnetic effect
- (b) heating effect
- (c) chemical effect
- (d) None of these
- **12.** High power electrical appliances are earthed to
  - (a) avoid shock
  - (b) avoid wastage
  - (c) make the appliances look beautiful
  - (d) reduce the bill
- **13**. Electric iron is made up of
  - (a) nichrome
- (b) tungsten
- (c) constantan
- (d) None of these
- **14.** When electric current is passed through a conducting solution, there is a change of colour of the solution. This indicates
  - (a) the chemical effect of current
  - (b) the heating effect of current
  - (c) the magnetic effect of current
  - (d) the lightning effect of current

- 15. An electrolyte is
  - (a) a metal
  - (b) a solution
  - (c) a liquid that conducts current
  - (d) All of the above
- **16**. The solution that can conduct electricity is
  - (a) pure water
  - (b) water and acid solution
  - (c) salt solution
  - (d) Both (b) and (c)
- **17.** Which one of the following solutions will not conduct electricity?
  - (a) lemon juice
- (b) Vinegar
- (c) Tap water
- (d) Vegetable oil
- **18.** The presence of a small amount of impurities makes water
  - (a) a good conductor of electricity
  - (b) a bad conductor of electricity
  - (c) pure
  - (d) None of the above
- **19.** Which of the following solutions will not make the bulb glow?
  - (a) Sodium chloride
  - (b) Copper sulphate
  - (c) Silver nitrate
  - (d) Sugar solution in diluted water
- **20**. When the main switch of the home is put off it disconnects the
  - (a) live wire only
  - (b) live wire and earth wire
  - (c) live wire and the neutral wire
  - (d) earth wire and the neutral wire
- **21.** In a rechargeable cell what kind of energy is stored within the cell?
  - (a) electrical energy
  - (b) potential energy
  - (c) chemical energy
  - (d) kinetic energy

## **Answers**

1	(b)	2	(b)	3	(b)	4	(a)	5	(a)	6	(a)	7	(b)	8	(c)	9	(b)	10	(d)
11	(c)	12	(a)	13	(a)	14	(a)	15	(b)	16	(d)	17	(d)	18	(a)	19	(d)	20	(c)
21	(c)																		