

*Electricity is the rate of flow of charges in a conductor.*  
In our modern world its an essential commodity. In this chapter we are dealing with the effects of electricity and the rules governing them.

Conductors	Insulators
Allow charge to flow	Doesn't allow flow of charge
Contains free charges	Doesn't contain free charges
Eg: Metals, Electrolytes, etc	Eg : Non metals

### Electric current

- The ordered flow of charges in a conductor.
- The charge referred here is electron.
- The conventional direction of electric current is opposite to that of the direction of flow of electron.
- Electrons flow from a higher potential to a lower potential

**OHM's Law** *At constant temperature the voltage across any conductor is directly proportional to the electric current flowing through the conductor.*

$$V \propto I$$

$$V = IR$$

where R is the resistance. Unit Ohm ( $\Omega$ )

**Energy :** Energy is the property that must be transferred to an object in order to perform work on, or to heat, the object. Energy is a conserved quantity. The law of conservation of energy states that energy can be converted in form, but not created or destroyed.

### Different forms of Energy

Light energy, Heat energy , electrical energy, etc.

### Electricity and Different forms of energy

In any electrical appliances the electrical energy is converted in different forms energy.

- TV : Electrical energy  $\rightarrow$  Light energy + Heat energy + Sound energy.
- Fan : Electrical energy  $\rightarrow$  Mechanical energy + Heat energy .
- Mobile Battery (charging) : Electrical energy  $\rightarrow$  Chemical energy + Heat energy .
- Mobile Battery (Discharging) : Chemical energy  $\rightarrow$  Electrical energy + Heat energy .
- Induction cooker : Electrical energy  $\rightarrow$  Heat energy .
- Bulb : Electrical energy  $\rightarrow$  Light energy + Heat energy .

### Questions

- Define Electric current ? write its units?
- Differentiate between Conductors Insulators ?
- Classify the following into Conductors and insulators. *Sodium, mineral water, wood, Gold, copper, plastic. ?*
- What is the direction of flow of electric current ?
- Why a metal in its normal state does not produces an electric shock ?
- State and explain Law of Conservation of energy ?
- Write the type of energy exchange in household appliances ( any 10 appliances) ?