

# Electric Current and its Effects

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## 1. Symbols of Electric components

Electric component	Symbol
Electric cell	
Electric bulb	
Battery	
Wire	
Switch in ON position	
Switch in OFF position	
Ammeter	
Galvanometer	
Voltmeter	

## 2. Combination of cells

Positive (or negative) terminal of a cell is connected to the negative (or positive) terminal of the other cell. This combination is called a **battery**.

3. An unbroken path or line that makes electrical current flow possible through conducting wires connected to other resistances is known as an electric circuit.

4. The circuits where the appliances in connection operate simultaneously once the switch is closed are known as series circuits. In series circuit, the working of each appliance is dependent on each other.

5. The circuits where the working of each appliance present in the circuit is independent on each other are known as parallel circuits.

- **Joule's heating** law suggests that heat produced in a resistor is directly proportional to the

1. square of the current flowing through the resistor i.e.,  $H \propto I^2$
  2. resistance of the resistor i.e.,  $H \propto R$
  3. time for which the current flows through the resistor i.e.,  $H \propto t$
- Electric energy =  $VIt$

$$\begin{aligned} \text{Heat, } H &= VIt \\ &= I^2Rt \end{aligned}$$

- **Application:**

Electric iron, toaster, fused wire, bulb

- **Fused wire:** a low-melting point wire connected in series with electric devices for safety.

1. When an electric current flows through a wire, it behaves as a magnet. This is called the magnetic effect of electric current.
2. **Electric bell** works on the principle of magnetic effect of electric current.
3. A **compass needle** shows deflection when brought near a current carrying wire.
4. An iron nail behaves as a electromagnet when a current is allowed to flow through a wire, which is wrapped around the nail.
5. Magnet is used to separate iron objects from a heap of garbage.
6. **Types of electromagnet** : Bar-shaped or I-shaped electromagnet and Horse-shoe or U-shaped electromagnet
7. An electric bell works on the principle of electromagnetism.