Class 7th

Chapter – 10

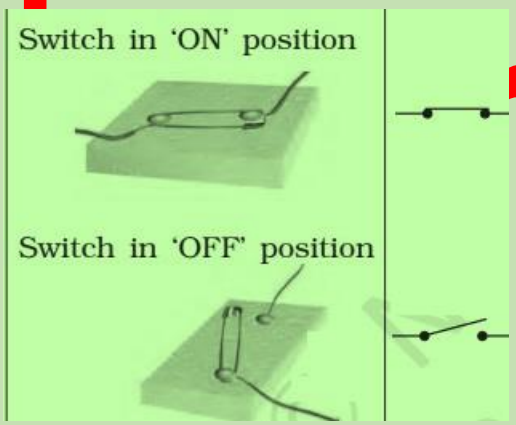
Electric Current And Its Effect

SYMBOLS OF ELECTRIC COMPONENTS

Some common electric components can be represented by symbols

In the symbol of the electric cell, the longer line represents the positive terminal and the thicker, shorter line represents the negative terminal

For a switch the 'ON' position and the 'OFF' position are represented by the



The wires used to connect the various components in a circuit are represented by lines

Battery

The positive terminal of one cell is connected to the negative terminal of the next cell. Such a combination of two or more cells is called a battery.

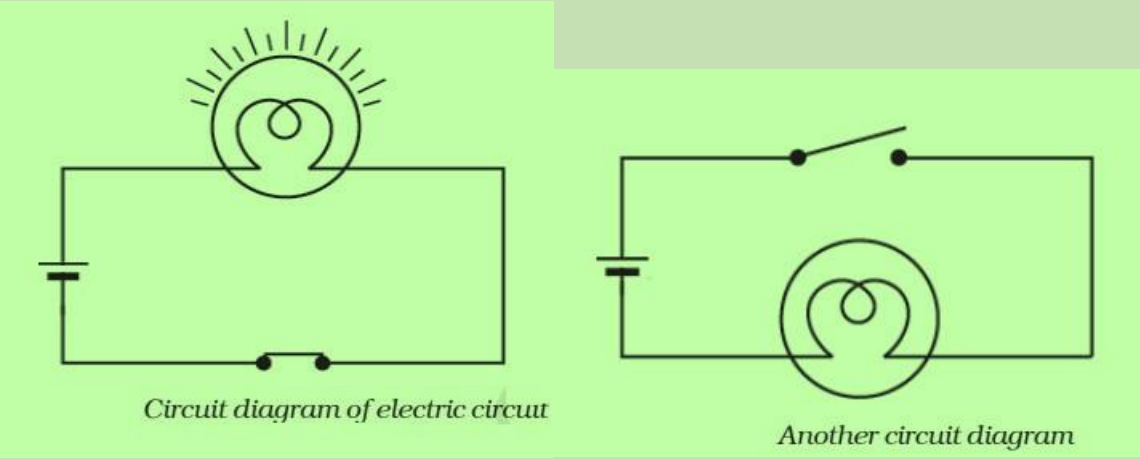
The symbol used for representing a battery is

circuit diagram of an electric circuit using symbols

The key or switch can be placed anywhere in the circuit.

When the switch is in the 'ON' position, the circuit from the positive terminal of the battery to the negative terminal is complete. The circuit is then said to be closed and the current flows throughout the circuit instantly.

When the switch is in the 'OFF' position, the circuit is incomplete. It is said to be open. No current flows through any part of the circuit.



Circuit diagram of electric circuit

Another circuit diagram

In the bulb there is a thin wire, called the filament, which glows when an electric current passes through it. When the bulb gets fused, its filament is broken.

HEATING EFFECT OF ELECTRIC CURRENT

When an electric current passes through a conductor (like a high resistance wire) the conductor becomes hot after some time and produces heat. This is called heating effect of Electric Current.

Example

Take an electric cell, a bulb, a switch and connecting wires. Keep the switch in the 'OFF' position. Does the bulb glow? Touch the bulb. Now move the electric switch to the 'ON' position and let the bulb glow for a minute or so. Again, touch the bulb. After moving the switch back to the 'OFF' position, touch the bulb again.

Switch off the current. Touch the wire again after a few minutes. The wire gets hot when an electric current passes through it. This is the heating effect of the electric current.

Element

The coil of wire used in electric heaters is called a heating element. The heating coil of the electric room heater transfers the electric energy into heat energy

The amount of heat produced in a wire depends on its material, length and thickness. Thus, for different requirements, the wires of different materials and different lengths and thicknesses are used.

Electric fuses

An electrical fuse is a safety device that operates to provide protection against the overflow of current in an electrical circuit. An important component of an electrical fuse is a metal wire or strip that melts when excess current flows through it.

Miniature circuit breakers

(MCBs) are increasingly being used in place of fuses. These are switches which automatically turn off when current in a circuit exceeds the safe limit. You turn them on and the circuit is once again complete.

MAGNETIC EFFECT OF ELECTRIC CURRENT

scientist called Hans Christian Oersted He was the first person who noticed the deflection of compass needle every time the current was passed through the wire. So, when electric current passes through a wire, it behaves like a magnet. This is the magnetic effect of the electric current.

Electromagnets

An electromagnet is a type of magnet in which the magnetic field is produced by an electric current. Electromagnets usually consist of wire wound into a coil. A current through the wire creates a magnetic field which is concentrated in the hole in the center of the coil.

ELECTRIC BELL

It consists of a coil of wire wound on an iron piece. The coil acts as an electromagnet. An iron strip with a hammer at one end is kept close to he electromagnet. There is a contact screw near the iron strip. When the iron strip is in contact with the screw, the current flows through the coil which becomes an electromagnet. It, then, pulls the iron strip. In the process, the hammer at the end of the strip strikes the gong of the bell to produce a sound.

The coil is no longer an electromagnet. It no longer attracts the iron strip. The iron strip comes back to its original position and touches the contact screw again.