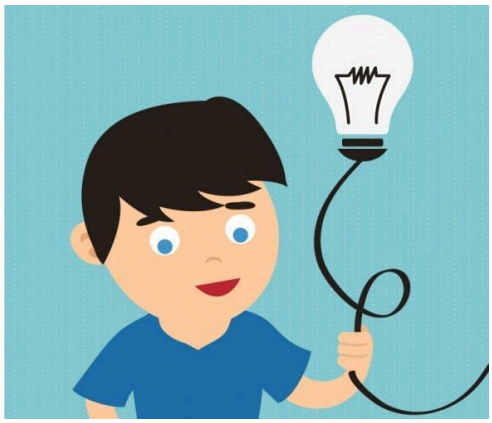
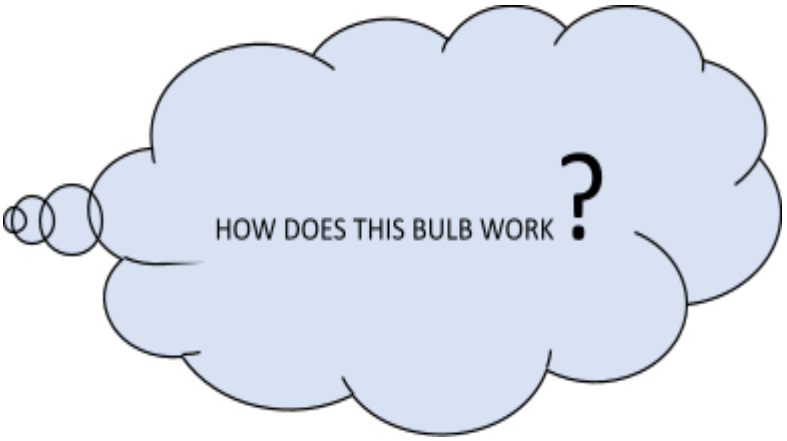
LESSON- 12

ELECTRICITY AND CIRCUITS





USES OF ELECTRICITY

1. It is used to light up homes, factories, roads etc.
2. It is used to run pumps.
3. It is used in many electrical appliances like toaster, geyser, radio, television, laptop, electric kettle etc.

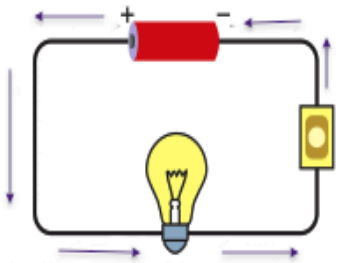
ELECTRIC BULB-

- The outer covering is glass and the base is metallic.
- The part of the bulb which glows is called **Filament** and is made up of tungsten.
- The filament is attached to two wires. One of the wires is connected to the metal case at the base and the other wire is connected to the metal wire at the centre of the base.

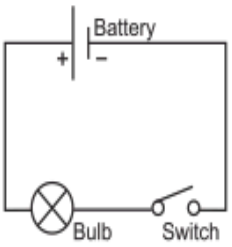
Base of the bulb and metal tip are the terminals of the bulb and they do not touch each other.

ELECTRIC CIRCUIT-

A closed path in which current flows is known as an Electric circuit. Electric circuit comprises of electrical components (e.g. cell or battery, bulb, switch, wire)



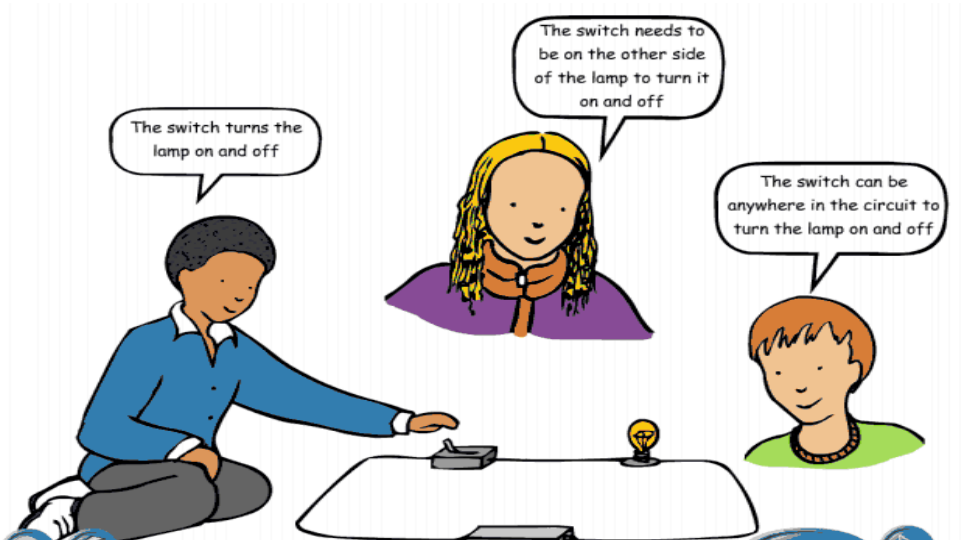
Circuit diagram with actual instruments



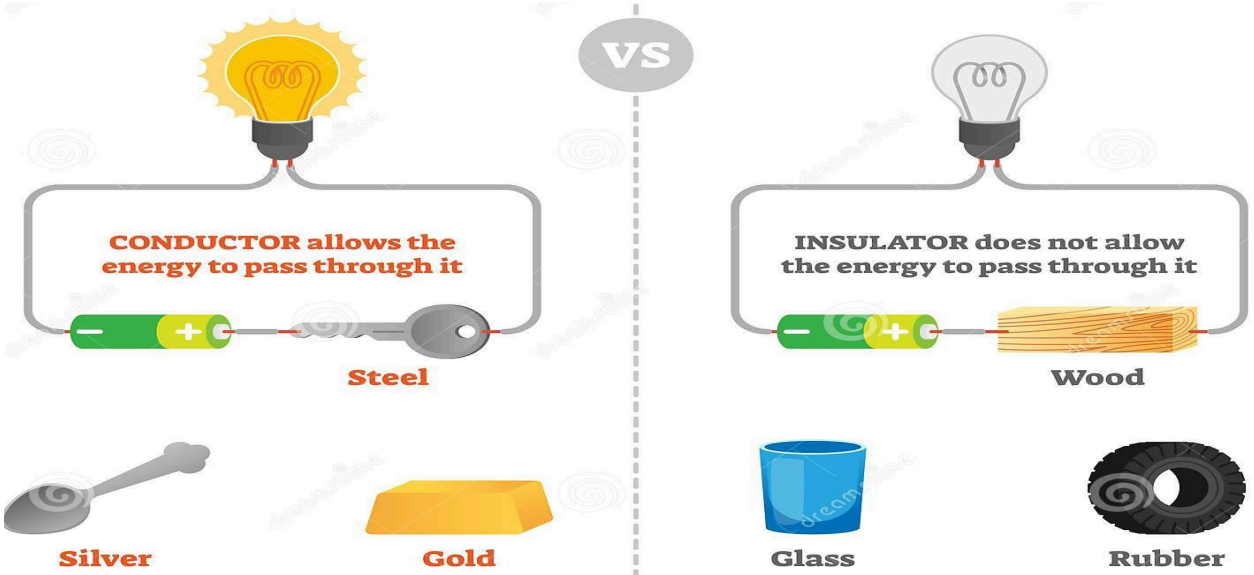
Circuit diagram with symbols

Direction of current: positive terminal of battery to its negative terminal

SWITCH -It is a simple device that either breaks the circuit or completes it.



CONDUCTORS AND INSULATORS:-



ACTIVITIES

1. **Filament of A Bulb :-**

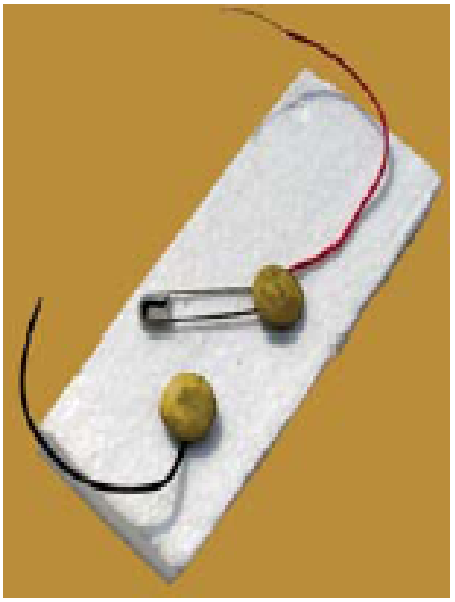
Take a torch and look inside its bulb. You can also take out the bulb with the help of your teacher. What do you notice? Do you find a thin wire fixed in the middle of the glass bulb (in the figure below) ? Now switch the torch on and observe which part of the bulb is glowing.
The thin wire that gives off light is called the **filament** of the bulb.

2. **Filament of A Bulb :-**

Take a torch bulb and a piece of wire. Remove the plastic covering at the two ends of the wire as you did before. Wrap one end of a wire around the base of an electric bulb as shown in the given figure. Fix the other end of the wire to the negative terminal of an electric cell with a rubber band. Now, bring the tip of the base of the bulb that is, its other terminal, in contact with the positive terminal of the cell. Does the bulb glow? Now move the bulb away from the terminal of the electric cell. Does the bulb remain lighted? Is this not similar to what you do when you switch your torch on or off?

3. Filament of A Bulb :- You can make a switch using two drawing pins, a safety pin (or a paper clip), two wires and a small sheet of thermo Col or a wooden board. Insert a drawing pin into the ring at one end of the safety pin and fix it on the thermo Col sheet as shown in the given figure. Make sure that the safety pin can be rotated freely. Now, fix the other drawing pin

on the thermo Col sheet in a way that the free end of the safety pin can touch it. The safety pin fixed in this way would be your switch in this activity.



KEY WORDS:

1. Electric cell: An electric cell is a source of electric current that contains a semi-solid ingredient.
2. Filament: a thin wire in the bulb which glows when current is passed through it.
3. Electric circuit: A path for an electric current to flow is called an electric circuit.
4. Electric switch: An electric switch is a device that is used to open or close a circuit.
5. Conductor: A material that allows electric current to pass through it is called a conductor.
6. A material that does not allow electric current to pass through it is called a insulator.

MINDMAP