CLASS 6 SCIENCE

ELECTRICITY

Sub-topics:

- Introduction
- Electric Cell
- Bulb
- Switch
- Electric Circuit
- Conductors and Insulators

INTRODUCTION

- We use electricity for many purposes to make our tasks easier.
- For example, we use electricity to operate pumps that lift water from wells or from ground level to the roof top tank.
- A power station provides us with electricity. However, the supply of electricity may fail or it may not be available at some places.
- In such situations, a torch is sometimes used for providing light.

ELECTRIC CELL

- Electricity to the bulb in a torch is provided by the electric cell.
- They are also used in alarm clocks, wrist watches, transistor radios, cameras and many other devices.
- All electric cells have two terminals; a positive terminal and a negative terminal.
- The metal cap is the positive terminal
- The metal disc is the negative terminal
- An electric cell produces electricity from the chemicals stored inside it.
- When the chemicals in the electric cell are used up, the electric cell stops producing electricity.
- The electric cell then has to be replaced with a new one.

BULB

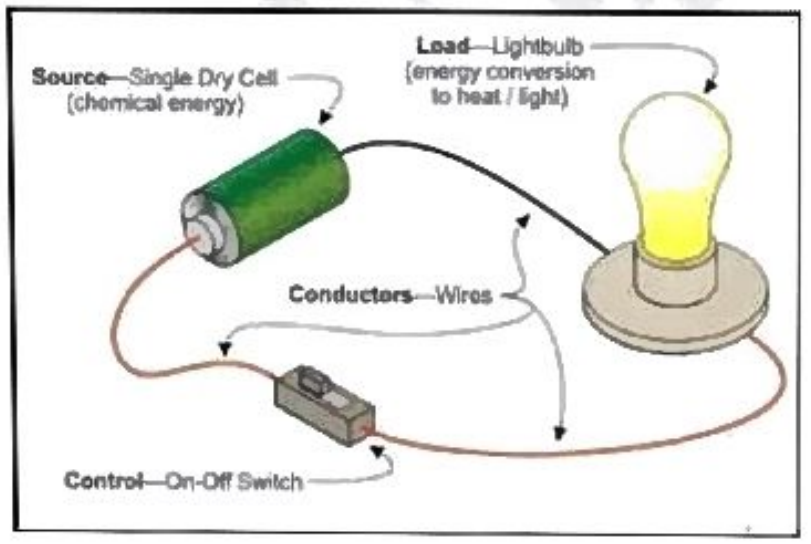
- The thin wire that gives off light is called the filament of the bulb.
- The filament is fixed to two thicker wires, which also provide support to it.
- One of these thick wires is connected to the metal case at the base of the bulb.
- The other thick wire is connected to the metal tip at the centre of the base.
- The base of the bulb and the metal tip of the base are the two terminals of the bulb.
- These two terminals are fixed in such a way that they do not touch each other.
- The electric bulbs used at home also have a similar design.
- Thus, both the electric cell and the bulb have two terminals each.
- When the terminals of the bulb are connected with that of the electric cell by wires, the current passes through the filament of the bulb.
- This makes the bulb glow.
- Sometimes an electric bulb does not glow even if it is connected to the cell.
- This may happen if the bulb has fused.
- An electric bulb may fuse due to many reasons.
- One reason for a bulb to fuse is a break in its filament.
- A break in the filament of an electric bulb means a break in the path of the current between the terminals of the electric cell.
- Therefore, a fused bulb does not light up as no current passes through its filament.

AN ELECTRIC SWITCH

- A switch is a simple device that either breaks the circuit or completes it.
- The switches used in lighting of electric bulbs and other devices in homes work on the same principle although their designs are more complex.

AN ELECTRIC CIRCUIT

- The electric circuit provides a complete path for electricity to pass (current to flow)between the two terminals of the electric cell.
- The bulb glows only when current flows through the circuit.
- In an electric circuit, the direction of current is taken to be from the positive to the negative terminal of the electric cell.



CONDUCTORS AND INSULATORS

- Not all materials allow current to flow through them, hence they are classified as conductors and insulators.

- **Conductors**
  - These are the materials that allow electric current to flow through them.
  - Metals such as iron, copper, silver and aluminium are good conductors of electricity except graphite.

- **Insulators/Poor Conductors**
  - These are the materials that do not allow electricity to flow through them.
  - For example, rubber, wood, plastic, etc., are insulators.

EXERCISES

1. What is the purpose of using an electric switch? Name some electrical gadgets that have switches built into them.

Answer:

Electric switch is used to make electric circuit open or closed for a particular appliance.

2. Using the "conduction tester" on an object it was found that the bulb begins to glow. Is that 'object' a conductor or an insulator? Explain.

Answer:

Yes, if the object is good conductor of electricity then current will pass through conduction tester and the bulb will glow. Hence the object will be a conductor of electricity.

3. Why should an electrician use rubber gloves while repairing an electric switch at your home? Explain.

Answer:

Our body is good conductor of electricity and rubber is insulator. During repairing work if the body comes in contact with current carrying wire then there will not be any accident as rubber does not allow the passage of current through it. Hence electrician uses rubber gloves while repairing an electric switch.

4. The handles of the tools like screwdrivers and pliers used by electricians for repair work usually have plastic or rubber covers on them. Can you explain why?

Answer:

Plastic or rubber is an insulator which does not allow electric current to pass through it. The handles of the tools like screwdrivers and pliers used by electricians for repair have covering of plastic or rubber so that electric current may not pass through these tools to the body of the electrician to harm him.