

Electricity and Circuits

Class 6 Science

Complete Study Notes

Learning Objectives

In this chapter, students will understand the basic concepts of electricity and electric circuits. They will learn about electric cells, torch bulbs, switches, conductors, insulators, complete and incomplete circuits, and safe handling of electrical devices. Students will also understand how electricity flows through a circuit and why electrical safety is important in everyday life.

Introduction to Electricity and Circuits

Electricity is one of the most important forms of energy used in our daily lives. It powers lights, fans, televisions, computers, mobile chargers, refrigerators, and countless other electrical appliances. Electricity generated at power stations reaches our homes through transmission wires and makes modern life comfortable and convenient.

This chapter introduces students to the basic principles of electricity and explains how electric circuits allow electric current to flow safely through different devices.

Electric Cell and Torch Bulb

An electric cell is a portable source of electrical energy. It produces electricity through chemical reactions taking place inside the cell. Every dry cell has two terminals: the positive (+) terminal and the negative (–) terminal. Electric current flows from the positive terminal to the negative terminal through a complete circuit.

A torch bulb consists of a thin wire called the filament, enclosed inside a glass bulb. When electric current passes through the filament, it becomes hot and produces light. If the filament breaks, the bulb becomes fused and no longer glows. Modern lighting devices such as LED and CFL bulbs use electricity more efficiently and consume less power than traditional bulbs.

Electric Circuits and Switches

An electric circuit is a complete path through which electric current flows. A bulb glows only when the circuit is complete. If there is any break in the path, the circuit becomes incomplete and current cannot flow.

An electric switch is a device used to open or close a circuit. When the switch is turned ON, the circuit is completed and current flows. When the switch is turned OFF, the circuit is broken and the electrical device stops working. Understanding electric circuits helps students explain the working of many electrical appliances used every day.

Conductors and Insulators

Materials can be classified based on their electrical conductivity:

- **Conductors:** Materials that allow electricity to pass through them easily are called conductors. Metals such as copper, aluminium, silver, iron, and steel are good conductors and are commonly used for making electrical wires.
- **Insulators:** Materials that do not allow electricity to pass through them are called insulators. Rubber, plastic, glass, dry wood, and thermocol are common insulators.

Warning: The human body is also a conductor of electricity, which is why touching exposed electrical wires can be extremely dangerous. Always follow proper safety guidelines.

Electrical Safety

Electricity should always be handled carefully. One should never touch damaged wires, open sockets, or electrical appliances with wet hands. Rubber gloves and insulated tools are used by electricians because they prevent electric current from passing through the body. Following electrical safety rules helps prevent accidents and ensures the safe use of electrical appliances at home and school.

Practice Questions

1. What is an electric cell? Name its two terminals.
2. What is an electric circuit?
3. Differentiate between conductors and insulators.
4. Why does a bulb glow only in a complete circuit?
5. Mention any three electrical safety precautions.

Answer Key

- **ANSWER 1:** An electric cell is a source of electrical energy produced by chemical reactions. Its two terminals are the positive (+) terminal and the negative (–) terminal.
- **ANSWER 2:** An electric circuit is a complete closed path through which electric current flows from one terminal of a cell to the other.
- **ANSWER 3:** Conductors allow electricity to pass through them easily, whereas insulators do not allow electricity to pass through them.
- **ANSWER 4:** A bulb glows only when the circuit is complete because electric current can flow continuously through the filament.
- **ANSWER 5:** Never touch exposed wires, avoid using electrical appliances with wet hands, and always use insulated tools or rubber gloves while handling electricity.