

10th Class

➤ ELECTRIC CURRENT:

❖ Introduction

- **Definition:** Electric current is the flow of electric charge through a conductor.
- **Symbol:** It is represented by the symbol "I".
- **Unit:** The unit of electric current is the ampere (A).

❖ Conductors and Insulators:

- **Conductors:** Materials that allow electric current to flow easily through them. Examples include metals like copper, silver, and aluminum.
- **Insulators:** Materials that do not allow electric current to flow easily. Examples include rubber, plastic, and glass.

❖ Flow of Electric Charge:

- Electric current is the flow of electrons in a circuit.
- Electrons flow from the negative terminal to the positive terminal of a battery or power source.

❖ Types of Electric Current:

- **Direct Current (DC):**
 - Current flows only in one direction.
 - Examples include batteries and solar cells.
- **Alternating Current (AC):**
 - Current changes direction periodically.
 - Examples include electricity from power plants and wall outlets.

❖ Factors Affecting Electric Current:

- **Voltage (Potential Difference):**
 - The driving force that pushes electric charges through a circuit.
 - Measured in volts (V).
- **Resistance:**

- The opposition to the flow of electric current.
- Depends on the material and dimensions of the conductor.
- Measured in ohms (Ω).

- **Ohm's Law:**

- States that the current flowing through a conductor is directly proportional to the voltage applied across it and inversely proportional to the resistance.
- Mathematically represented as $I=V/R$ where I is current, V is voltage, and R is resistance.

❖ **Circuit Components:**

- **Resistors:**

- Components designed to have specific resistance values to control the flow of current in a circuit.

- **Switches:**

- Devices used to open or close a circuit, controlling the flow of current.

- **Batteries and Power Sources:**

- Provide the voltage needed to drive electric current through a circuit.

❖ **Safety Precautions:**

- **Avoid Overloading Circuits:**

- Do not connect too many appliances to a single circuit to prevent overheating and fire hazards.

- **Insulation:**

- Ensure that wires are properly insulated to prevent electric shock.

- **Turn Off Power:**

- Always turn off the power before working on electrical circuits to avoid accidents.