

ELECTRICITY

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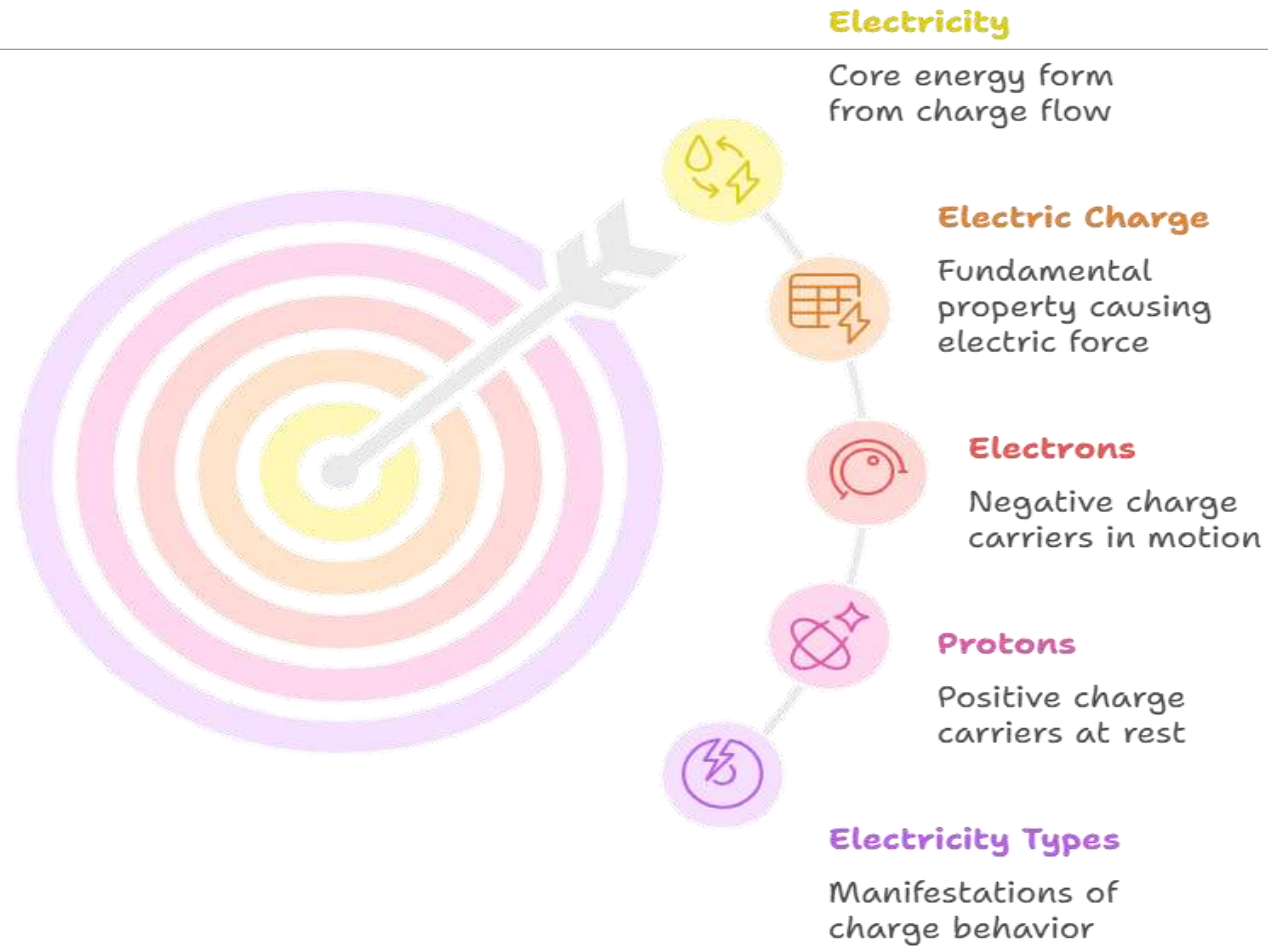
What is Electricity?

Electricity is a form of energy resulting from the existence and flow of electric charge.

Simple Definition:

Electricity is the movement of tiny particles called electrons through a conductor (like a wire).

Electricity Composition



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Electricity is a physical phenomenon associated with the presence and motion of electric charge, primarily electrons (negative charge) and protons (positive charge).

- It can exist as:

Static electricity (charges at rest)

Current electricity (charges in motion)

Types of Electricity

There are two main types of electricity:

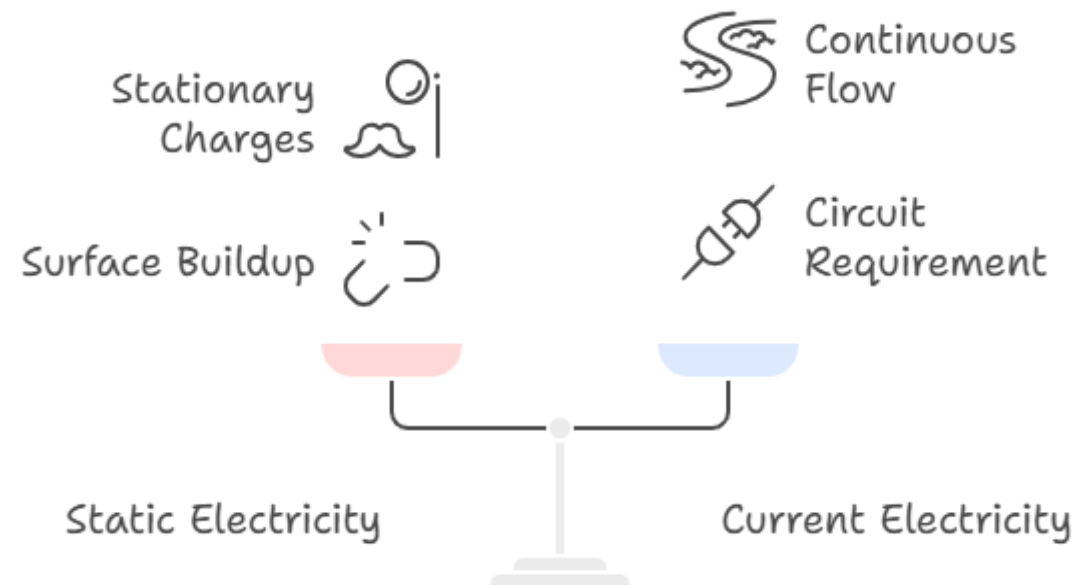
A. Static Electricity

Caused by the buildup of electric charges on the surface of objects.

Charges remain stationary (do not flow continuously).

Occurs due to friction (rubbing two objects together).

Compare static and current electricity types.



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Examples:

Rubbing a balloon on your hair → hair stands up

Lightning (huge discharge of static electricity between clouds and ground)

Getting a shock when touching a doorknob after walking on carpet

B. Current Electricity

Involves the continuous flow of electric charges (electrons) through a conductor.

This is the type we use in homes, phones, lights, etc.

Requires a complete circuit for current to flow.

Type	Description	Flow of Electrons	Common Uses
Direct Current (DC)	Current flows in one direction only	Steady, always same direction	Batteries, solar panels, phones, laptops, LEDs
Alternating Current (AC)	Current changes direction periodically (back and forth)	Reverses direction many times per second (50–60 Hz)	Home electricity, power grids, appliances

Feature	Direct Current (DC)	Alternating Current (AC)
Direction	One direction	Changes direction periodically
Source	Batteries, solar cells	Power plants, generators
Transmission	Hard to transmit over long distances	Easy to transmit over long distances (using transformers)
Frequency	0 Hz	50 Hz (India, Europe) or 60 Hz (USA)
Examples	Phone charger, car battery	Wall sockets, fans, refrigerators

Basic Terms You Must Know

Term

Electric Charge

Electron

Conductor

Insulator

Circuit

Voltage (V)

Current (I)

Resistance (R)

Definition

Property of matter (positive or negative)

Negatively charged particle that moves to create current

Material that allows electricity to flow (e.g., copper, silver, aluminum)

Material that does not allow electricity to flow (e.g., rubber, plastic, glass)

Closed loop that allows current to flow

The "push" or force that makes electrons move (measured in volts)

The flow of electrons (measured in amperes or amps)

Opposition to current flow (measured in ohms Ω)
