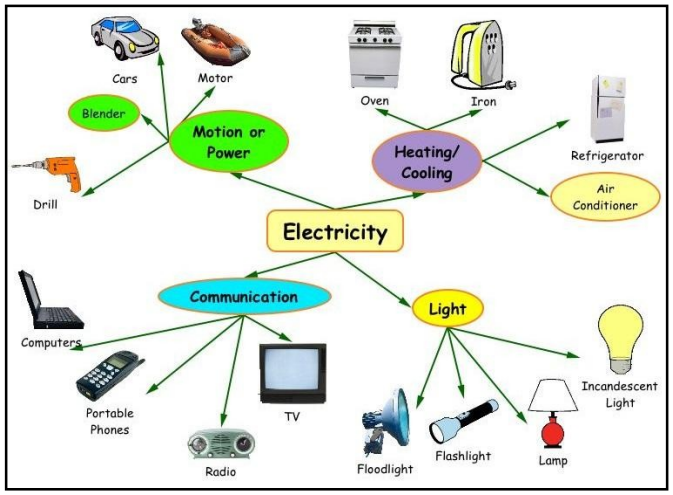
SCIENCE

Electricity and Circuits

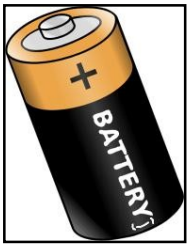
- Electricity is an important source ofenergy.
- We get electricity from sources such as wind energy, solar energy, mechanical energy of water, nuclear energy, heat energy and chemicalenergy.
- Lights, fans, motors, radios, television, computers etc. are some common appliances which work on electricity.



- Electricity is provided by a powerstation.

Electric Cell

- An electric cell provides electricity to various devices in which electricity cannot be suppliedirectly.

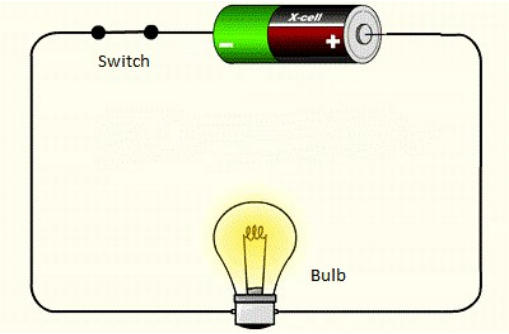


- It consists of twoterminals:
  - Positive terminal with a metalcap.
  - Negative terminal with a metaldisc.
- A chemical is present in the cell which helps to produceelectricity.
- Electricity to a bulb is provided by an electriccell.

- A bulb consists of twoterminals:
  - A filament inside the bulb is a spirally wound wire which is supported by two thick wires at itsends.
  - An electrical cell is connected to the terminals of the bulb so that electricity from the cell can pass throughit.
  - This electricity makes the filament in the blub glow and thus emitlight.
  - Electric cells are also used in alarm clocks, wristwatches, transistor radios, cameras and many other devices.

Electric Circuit

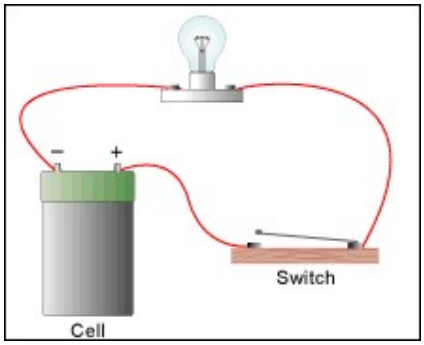
- An electric circuit consists of a complete path for electricity topass.
- The simplest form of a circuit is when two terminals of a cell are connected to the two terminals of a bulb and aswitch.



- When the terminals of the bulb are connected withthe electric cell by wires, the current passes through the filament of the bulb making itglow.
- The direction of current flow is from the positive terminal to the negative terminal of the electriccell.

Electric Switch

- A device used to stop the flow of electricity by breaking the circuit is called a**switch.**



- A switch may be directly manipulated by a human as a control signal to a system, such as a computer's keyboard button, or to control power flow in a circuit, a lightswitch.
- Switches have differentapplications:
  - Toggle switches: Used in ourhouses.

- Pushbutton switches: Used in the starter of a water pump and in anengine.

- Joystick switches: Used in the remote control unit of a toycar.

Electric Conductors and Insulators

Conductors

- Materials which allow electricity to pass through them are calledconductors.
- Metals are good conductors ofelectricity.
- Electric wires are made of metals which act as conducting materials, and are therefore used to make electricalcircuits.

Insulators

- Materials which do not allow electricity to pass through them are called**insulators**.
- Insulators oppose electric current, and are therefore used as **protection** from the dangerous effects ofelectricity.
- **Water** is a **good conductor** of electricity. However, in its purest form i.e.**distilled water**, it acts as an insulator and is used inbatteries.