Electric Circuit

Introduction

Electricity is the most convenient form of energy we use electricity at home, at office, in factories, etc. The cables/wires you see around carry electricity from the Power station to our houses and factories.

How does this is electricity reach every corner of our house? This is done by laying various electrical circuits. The circuit diagrams are first drawn on paper and then actual electric circuits are laid.

In the following section we will learn to draw such simple circuit diagrams and leather real electric circuits.

Electric circuit:

An electric circuit is a complete path for the flow of electric current. A circuit consists of an electric cell devices which use the electrical energy, a switch and connecting wires. These all are called components of the circuit or circuit elements.

If any part of a circuit is broken, electric current does not flow through it and such a circuit is called an open circuit.

If there are no breaks in a circuit, it provides a closed for the flow of electric current and such a circuit is called a closed circuit.

Electric current can flow only through closed circuit.

Electric Circuit

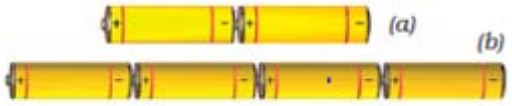
Components of an electric circuit:

1. Cell or battery:

- A cell is a source of current.
- It has a positive and a negative terminal.
- When two or more cells are connected such that the positive terminal of one cell touches the negative terminal of the other, it forms a **battery**, but they have to be connected in a proper manner for electricity to flow through the circuit.
- They can be connected in series or in parallel.

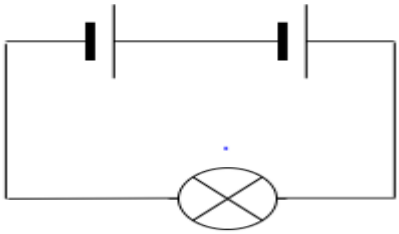
Connecting cells in series:

When the cells are connected in series, the positive (+) terminal of one cell is connected to the negative (-) terminal of the other cell. When you complete connecting cells, you will have a positive terminal at one end and the negative terminal at the other end.



Connecting cells in parallel:

When cells are connected in parallel, the light terminals of cells are linked together. This means that the positive terminal or negative terminal of all the cells are connected together.



Electric Circuit

2. Switch:

- A switch is used to close or open a circuit.
- When the switch is off, the circuit is open and no current flows through it.
- When the switch is on the circuit is closed allowing current to flow.

3. Electrical appliance:

- An electrical appliance is a device that uses the current flowing through it to function.
- Electric bulbs, electric iron, fans, electric motors are some commonly used electrical appliances in our daily life.

4. Wires:

- Wires connect the element of the electric circuit. They are made up of materials that are good conductors of electricity such as copper.

5. Light Bulb:

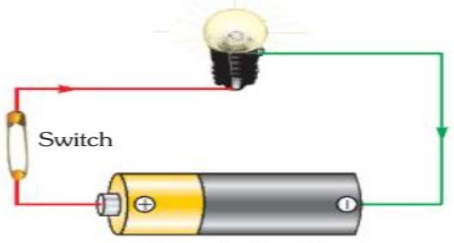
- A light bulb is a device that produces light from electricity. Light bulbs turn the electricity to light by sending current through a thin wire called filament.
- The filament is usually made of tungsten, a material that emits light when electricity is passed through it.
- The emission of light is due to the high resistance offered by the material tungsten, which we will learn in higher classes.
- Apart from lighting, the light bulbs are used in electronic items as an indicator, traffic signals, indicator lights in cars, etc.

Electric Circuit

Electrical Circuits and Circuit Diagrams

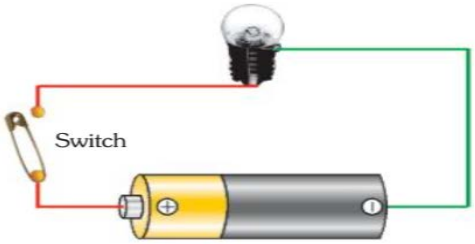
- The continuous path of flow of electricity through various electrical components connected to a source of electricity is called an electrical circuit.
- The electrical circuit consisting of a dry cell a switch at a torch bulb is shown alongside.
- An electrical circuit maybe closed or open.

Closed circuit: The circuit in which electric current flows from the positive terminal of a battery to the negative terminal through all the components in the circuit is called a closed circuit.



Closed circuit
Current flows through the circuit

Open circuit: The circuit in which electrical contact at any point in the circuit is broken is called an open circuit no current flows through and open circuit. No current flows through an open circuit.

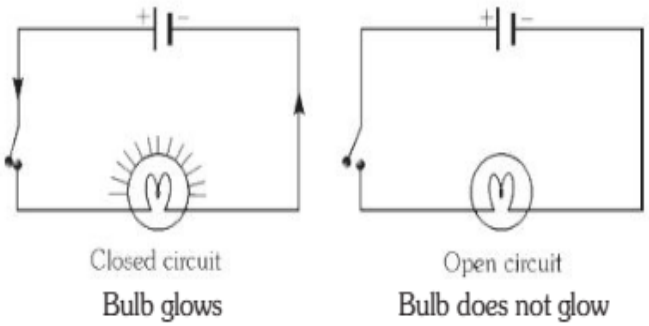


Open circuit
No current flows through the circuit

Electric Circuit

Circuit Diagram

- The above electrical circuit can be shown in terms of symbols of the various electrical components in it.
- A diagram which shows the arrangement of various components in an electric circuit with the help of their symbols is called the circuit diagram.



Circuit diagrams of an electrical circuit

- For example, the diagram shown is the current diagram of the electrical circuit shown in the above figure.