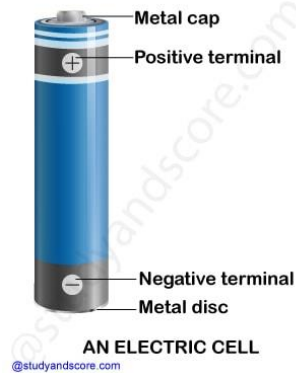




**New words:** Bulb, Filament, Conductors, Insulators, Electric cell, Switch, Electric circuit, Terminal

**Pre-activity:** Draw a neat labelled diagram of an Electric cell.



I. Very short answer questions :

1. What is a cell?

Ans: It is a device that produces electricity.

2. What is electricity?

Ans: The flow of an electric current constitutes electricity.

3. What do you mean by an electric circuit?

Ans: The closed path along which the electric current flows from one terminal to another is called as an electric circuit.

4. How many terminals are there in a cell?

Ans: There are two terminals in a cell.

5. What is the direction of flow of current in a dry cell?

Ans: The current flows in closed circuit from +ve to -ve terminal of cell.

6. What is the name of thin wire in the electric bulb?

Ans: Filament.

7. What is the main function of a switch?

Ans: It is used to regulate the flow of current in a circuit

8. Name some metals which are conductors.

Ans: Silver, copper, aluminium, etc.

9. Name some insulators of electricity.

Ans: Glass, wood, dry air, etc.

10. Write one use of insulators.

Ans: Insulators are used in making switchboard, handles of testers, screw drivers.

## II Short answers

1. How many types of electric circuit are there? Define them.

Ans: There are two types of electric circuit: (a) Open electric circuit: The circuit in which electrical contact at any point is broken is called open electric circuit. (b) Closed electric circuit: The circuit in which electric current flows from one terminal of a cell or battery to the other is called a closed circuit.

4. Identify conductors and insulators from the following: Eraser, paper, matchstick, copper wire, pencil lead, polythene

Ans: Conductors: Copper wire, pencil lead. Insulator: Eraser, paper, matchstick, polythene.

5. Why we are advised not to touch electric appliances and switches with wet hands?

Ans: Water is a good conductor of electricity and if our hands are wet current can pass to us quickly giving us an electric shock.

6. Why is a copper wire usually covered with rubber or plastic?

Ans: Rubber or plastics are insulators. They prevent short circuiting and electric shocks if by mistake any living things come in contact with the wires.

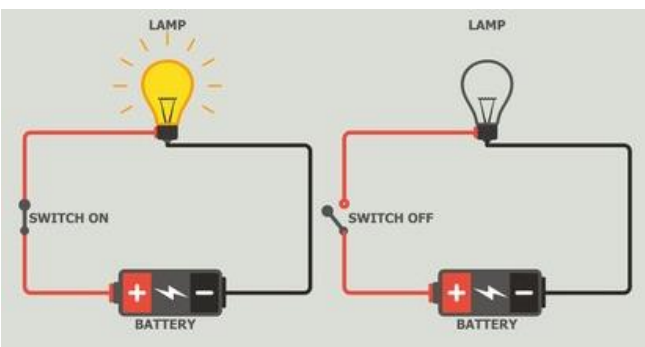
7. What is an open circuit? Does current flow in it?

Ans: The circuit in which arrangements of components is disturbed any way or electric contact of any point is broken is called an open circuit. An electric current does not flow in an open circuit as the electrical path required for flow of current is not completed.

## III. Long answer questions:

1. Explain how does an electric current flow in an electric circuit.

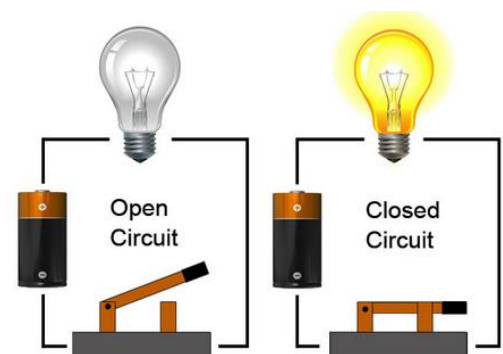
Ans: An electric current flows from the positive (+ve) terminal to the negative (-ve) terminal of the cell in the circuit through the connecting wires as shown in the given figure.



The current flows only when the circuit is complete, i.e., all the connections are intact and the key is switched 'on'. We see that the bulb glows. But when the wires are broken or not properly connected to the terminals of the cell, the circuit is incomplete and the current does not flow in the circuit. The bulb does not light up.

2. Describe a closed and open circuit with the help of diagrams.

Ans: A circuit which is complete in all respects, i.e., its all connections are intact is called a closed circuit. When the switch is on, the current flows in it and the bulb glows (Fig.a). On the other hand, a circuit is called open or not complete (Fig.b), when connections are not intact, i.e., broken. In an open circuit, when the switch is on, the bulb does not glow. It means that current is not flowing in the circuit. This is due to broken wires or all



components in the circuit are not connected properly.

3. Mention different safety measures and precautions while using electricity and electrical appliances.

Ans: Electricity is very useful to us. It has made our life comfortable, easy and luxurious. On the other hand, it is dangerous also. It may cause great injuries and sometimes even death. So we must adopt some safety measures and take precautions discussed below:

- i. Never touch electrical switches or gadgets when your body is wet.
- ii. If you need to operate or repair any electrical appliances, wear rubber hand gloves and stand on a dry wooden or plastic base.
- iii. Never play with electric sockets or wires.
- iv. In case of short circuit or a spark in a switch, put the main switch off immediately with the help of a plastic or wooden stick.
- v. In case of fire in electric wires, never use water to extinguish it. First switch off them mains, then use dry sand to extinguish the fire.

4. You have a single piece of connecting wire. Can you make a bulb glow without cutting the wire into two? Explain with the help of a circuit diagram.

Ans: Yes, we can glow the bulb by joining one end of the wire to the negative terminal of battery and other to the metal cap of the bulb. Then by placing the bulb on the positive terminal of the cell will make the bulb glow.

5. How does a light bulb produce light?

Ans: A thin wire like structure known as filament is present inside the bulb. When we switch on the bulb, electricity passes through filament causing it to heat up and glow to produce light. In this process the electric energy changes into light energy.

6. Explain the role of a switch in a circuit. What is it made up of?

Ans: An electric switch is a circuit component that can be used to control the flow of electricity through the circuit. It has the ability to both complete and break the circuit. A conducting substance is used to make the switch. The circuit is complete and power flows through it when the switch is in "ON" position. The circuit is broken and power cannot flow through it while the switch is in "OFF" position.

7. Differentiate between conductors and insulators.

Ans: **Conductors**

- Materials that allow the flow of electricity.
- These are used in the construction and completion of circuits.
- It's a type of wire that's used in electric wiring.
- E.g. Metals, salt solution, and so on.

**Insulators**

- Materials that make it difficult/impossible for electricity to flow freely.
- It's used to break circuits.
- Switchboards, handles, and the casing of electrical equipment are all made of this material.
- E.g. Rubber, plastic, wood, and glass.

8. Draw a neat labeled diagram of an electric bulb.

Ans:

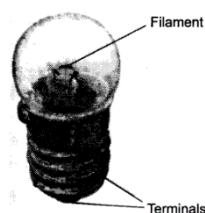
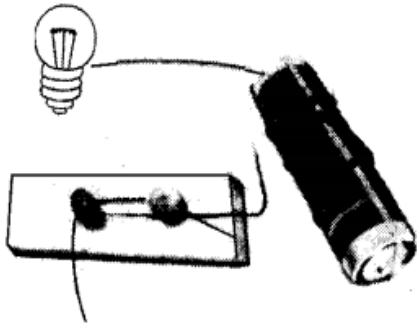
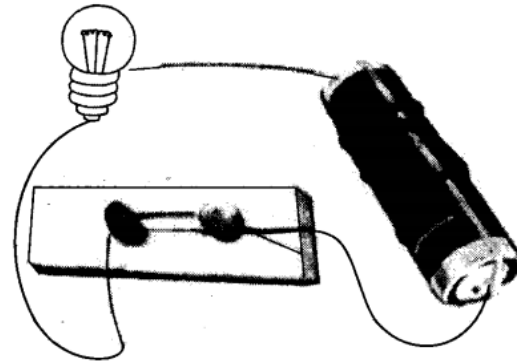


Fig. 12.12 Torch bulb

4. Complete the drawing shown in Fig. 9.9 to indicate where the free ends of the two wires should be joined to make the bulb glow.



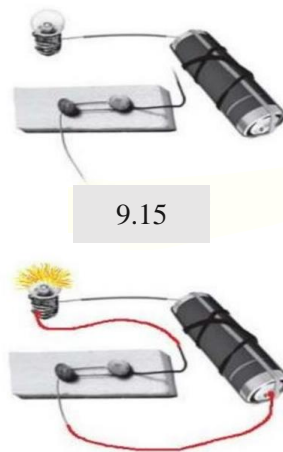
Ans:



5: What is the purpose of using an electric switch? Name some electrical gadgets that have switches built into them.

Ans: A switch is a simple device that either breaks the circuit or completes it. The switches used in lighting of electric bulbs and other devices in homes work on the same principle. Ans: No the bulb will not glow, as the eraser is an insulator.

Q7. Would the bulb glow in the circuit shown in fig. 9.15?



9.15

Ans: Both the wires are connected to only one terminal of the bulb, so current will not flow through the bulb and it would not glow. To make the bulb glow we should make the connections as shown in figure 2.

**POST ACTIVITY:** Draw inside view of a torch and label the part

