

## Chapter 12

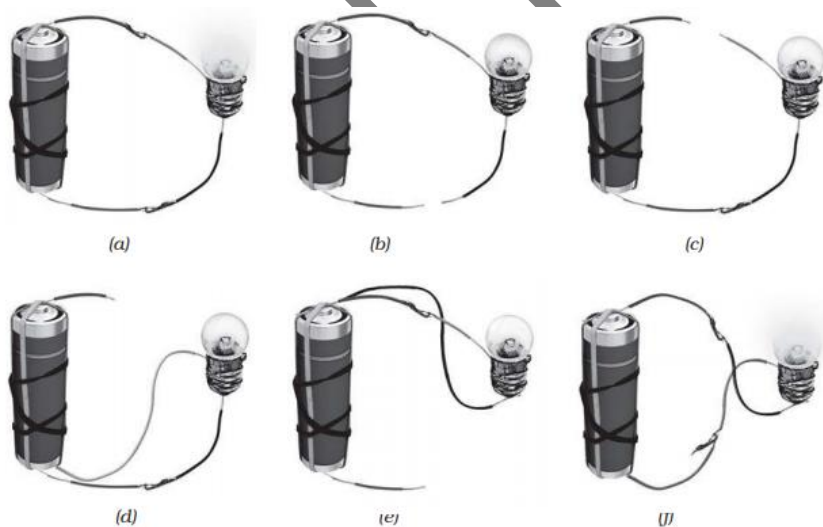
### Electricity and Current

**ELECTRICITY** : Electricity is form of energy, which is used in our daily life like to light up bulb, fan and other electricity equipments.

**ELECTRIC CELL** : Electric cell is a device which produces electricity by using the reaction of chemicals inside it. When the chemicals inside it are used up, the cell stops working. An electricity cell has two terminals one is which are Positive(+ve) and Negative(-ve). The positive terminal has a metal cap and other terminal has metal disk.

**ELECTRIC BULB** : Electric bulb is an device which emits light using electricity. Electric Bulb has two terminal one is called metal case and other is called metal tip. Electric bulb has a filament that is connected to its terminals. An electric bulb glows when electric current passes through it. One main reason of bulb fuse is a break in its filament. A break in the filament of an electric bulb means a break in the path of the current between the terminals of the electric cell. Therefore, a fused bulb does not light.

**ELECTRIC CIRCUIT** : In a closed electric circuit, the electric current passes from one terminal of the electric cell to the other terminal. When the current from one terminal to another terminal then the bulb glows.



Different circuits showing the glowing bulb case : Only (a) and (f) is glowing.

**ELECTRIC SWITCH** : Electric switch is a device which is used to break to complete the flow of current inside a circuit.

**CONDUCTORS AND INSULATORS** : Materials that allow electric current to pass through them are called **conductors**. Some example of conductors are copper and iron. Materials that do not allow electric current to pass through them are called **insulators**. Paper, rubber and wood are example of insulators.

**1. Fill in the blanks:**

- (a) A device that is used to break an electric circuit is called a \_\_\_\_\_.
- (b) An electric cell has \_\_\_\_\_ terminals.

**Answer.**

- (a) A device that is used to break an electric circuit is called a switch.
- (b) An electric cell has two terminals.

**2. Mark 'True' or 'False' for the following statements:**

- (a) Electric current can flow through metals.
- (b) Instead of metal wires, a jute string can be used to make a circuit.
- (c) Electric current can pass through a sheet of thermocol.

**Answer.**

- (a) True; Metals are good conductors of electricity. So, an electric current can easily flow through them.
- (b) False; Jute string is a bad conductor of electricity which means it does not allow electric current to flow through it. Hence, it cannot be used to make a circuit.
- (c) False; Thermocol is a bad conductor of electricity. Hence, electric current cannot pass through it.

**3. Explain why the bulb would not glow in the arrangement shown in Fig.12.13.**

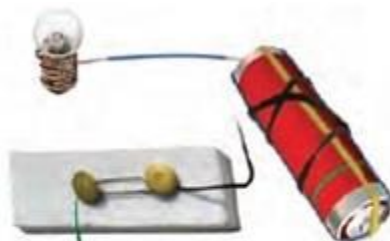


*Fig. 12.13*

**Answer.**

In the given arrangement, a tester is also connected in the circuit. The tester holder is made of plastic which is a bad conductor of electricity. Thus current cannot flow through the circuit. Hence, the bulb would not glow.

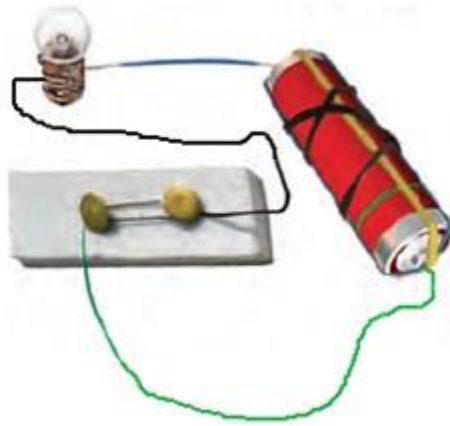
**4. Complete the drawing shown in Fig 12.14 to indicate where the free ends of the two wires should be joined to make the bulb glow.**



*Fig. 12.14*

**Answer.**

To complete the given circuit, the free terminal of the cell should be connected to one end of the switch and the base terminal of the bulb should be connected to the other end of the switch as shown in the following figure.



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

**Answer.**

A switch is used to complete or break an electric circuit to use an electric appliance according our convenience.

Some electrical gadgets that have switches built into them are electric lamps, cooler, washing machines, table fan, TV, radio, etc.

**6. Would the bulb glow after completing the circuit shown in Fig. 12.14, if instead of safety pin we use an eraser?**

**Answer.**

If we complete the circuit given in Fig. 12.14 using an eraser then the bulb would not glow because eraser is a bad conductor of electricity. Hence, it will break the circuit.

**7. Would the bulb glow in the circuit shown in Fig. 12.15?**



**Fig. 12.15**

**Answer.**

Yes, the bulb would glow in the given circuit because the circuit is closed or complete.

**8. Using the 'conduction tester' on an object, it was found that the bulb begins to glow. Is the object a conductor or an insulator? Explain.**

**Answer.**

Yes, the given object is a conductor as it allows the electric current to pass through it and causes the bulb of tester to glow.

**9. Why should an electrician use rubber gloves while repairing an electric switch at your home? Explain.**

**Answer.**

As rubber is a bad conductor of electricity so it does not allow the electric current to pass through it. Thus, the rubber gloves will save the electrician from any electric shock while repairing an electric switch or appliance.

**10. The handles of tools like screwdrivers and pliers used by electricians for repair work usually have plastic or rubber covers on them. Can you explain why?**

**Answer.**

Plastic and rubber both are bad conductors of electricity. So, they do not allow current to pass through them. The handles of tools like screwdrivers and pliers used by electricians for repair work usually have plastic or rubber cover on them so that they do not allow the current to pass through them and save the electrician from any electric shock.

Eduwizara Tutorials