



Chapter 12

Electricity and Circuits

SOLUTIONS:

Exercises:

Q1. Fill in the blanks:

A device that is used to break an electric circuit is called

An electric cell has terminals.

Ans: a. Switch b. Two

Q2. Mark “True” or “False” for following statements:

Electric current can flow through metals.

Instead of metals wires, a jute string can be used to make a circuit.

Electric current can pass through a sheet of thermo Col.

Ans: a. True b. False. c. False

Q3. Explain why the bulb would not glow in the arrangement shown in Fig.12.13.



Fig: 12.13

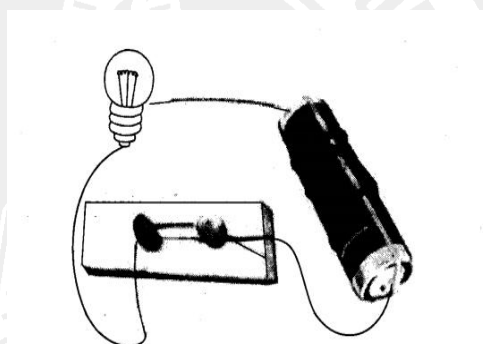
Ans: In the given arrangement, an insulator breaks the flow of electric current so the circuit is not complete. So, **the bulb would not glow.**

Q4. 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

Ans: The given circuit is not complete. To complete the given circuit, the positive free terminal of the cell should be connected to one end of the switch and the other terminal of the bulb should be connected to the other end of the switch as shown in the following figure.



Q5. What is the purpose of using an electric switch? Name some electrical gadgets that have switches built into them.

Ans: The purpose of using an electric switch is to complete or break an electric circuit.

Some electrical gadgets that have switches built into them are oven, rice cooker, electric lamps, cooler, washing machine, table Fan, TV, radio etc.



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Q6. Would the bulb glow after completing the circuit shown in Fig. 12.14, if instead of safety pin we use an eraser?



Fig. 12.14

Ans: If we complete the circuit given in Fig. 12.14 using an eraser instead of safety pin then the bulb would not glow because eraser is an insulator, current cannot pass through it. Hence, it will break the circuit.

Q7. Would the bulb glow in the circuit shown in Fig. 12.15?



Fig. 12.15

Ans: No, the bulb would not glow in the given circuit because the two terminal of the cell is connected to the single terminal of bulb.

Q8. 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.

Ans: Yes, the given object is a conductor. The bulb begins to glow means electric current is pass through the object which means the object is a conductor. If it is an insulator, the bulb would not glow.

Q9. Why should an electrician use rubber gloves while repairing an electric switch at your home? Explain.

Ans: Human body is a good conductor of electricity. Rubber is an insulator so it does not allow the electric current to pass through it and will save the electrician from any electric shock while repairing an electric switch.

Q10. 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?

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



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Extra Questions and Answers:

Q1. What is filament?

Ans: It is the thin wire inside the electric bulb that light when electric current passes to it.

Q2. What are the uses of electricity?

Ans: Importance of electricity:

Used to operate pumps that lift water from well.

To light our homes, roads, offices, markets etc

Used to run many appliances like TV, Fan etc.

To run machinery in factories and Industries.

Q3. What is the direction of electric current in a circuit?

Ans: Electric current flows from positive terminal to negative terminal in an electric circuit.

Q4. Why does an electric cell stops producing electricity after sometimes?

Ans: Electric cell is a device capable of producing electricity from the chemicals stored inside it. When the chemicals in the electric cell are used up, the electric cell stops producing electricity.

Q5. Name some devices in which we used electric cell.

Ans: Wristwatches, Radio, Torch light, Camera etc.

Q6. What is an electric circuit?

Ans: An electric circuit is the pathway through which an electric current flow.

Q7. Why electric cell and bulbs have two terminals?

Ans: Electric cell and bulbs have two terminals in order to allow the flow of electric current.

Q8. Define conductors and insulators. Give two examples each.

Ans: Conductors are the materials that allow electric current to pass through them.

Example: Iron and Aluminium.

Insulators are the materials that do not allow electric current to pass through them.

Example: Rubber and Glass.

Q9. Why a fused electric bulb does not glow even if it is connected to the cell?

Ans: Fused electric bulb means there is break in its filament. A break in the filament of an electric bulb means a break in the path of the electric current between the terminals of the electric cell. Therefore, a fused bulb does not glow as no electric current passes through the filaments.



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