



INDIAN SCHOOL AL WADI AL KABIR



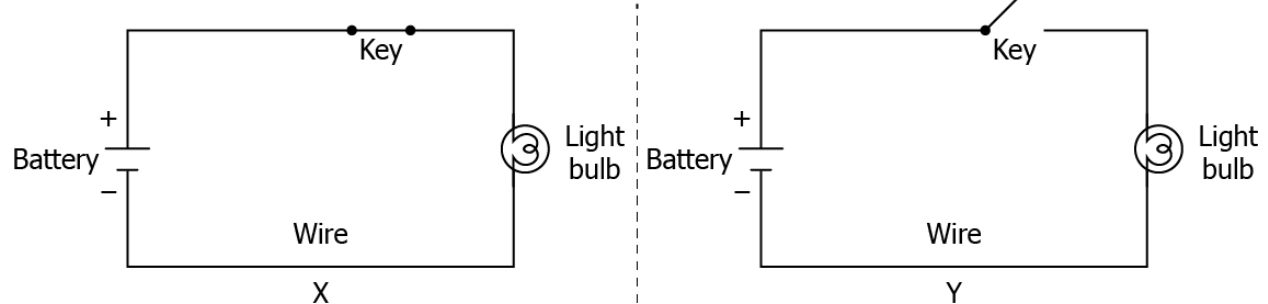
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| Class: VI | DEPARTMENT: SCIENCE 2023-2024 | DATE: 01.02.2024 |
| WORKSHEET NO: 16 WITH ANSWERS | TOPIC: ELECTRICITY AND CIRCUITS | NOTE: A4 FILE FORMAT |
| NAME OF THE STUDENT: | CLASS & SEC: | ROLL NO. |

I. OBJECTIVE TYPE QUESTIONS:

1. A student studies that electric wires generally have a plastic or rubber coating around them. Which of these describes the role of the coating in a wire?

- a) It ensures the safe transfer of electricity
- b) It reduces the wastage of electricity in the wires
- c) It enables the transfer of electricity to long distances
- d) It helps electricity to move faster through the wires.

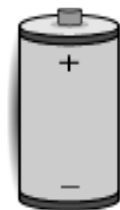
2. The image represents two circuits marked as X and Y.



Which of these matches the correct type of circuit?

- a) X → Complete, Y → Complete
- b) X → Complete, Y → Incomplete
- c) X → Incomplete, Y → Complete
- d) X → Incomplete, Y → Incomplete

3. The image represents an electric cell.



Which of these describes the structure of an electric cell?

- a) Metal cap with a negative sign on both sides
- b) Metal cap on top, metal disc on bottom and a positive sign on both ends
- c) Metal disc on both ends with a positive on the top and negative signal on the bottom
- d) **A Metal cap with a positive sign on top and a metal disc with a negative sign at the bottom**

4. Bulb glows only in

- a) Open circuit
- b) **Closed Circuit**
- c) In both the circuits
- d) In none of the circuits

5. The material present inside the bulb that glows on heating is called-

- a) cell
- b) switch
- c) **filament**
- d) thick wire

6. A bulb whose filament is broken is called-

- a) **fused**
- b) glowing
- c) conductor
- d) none of these

For the questions that follow, two statements are given: - one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

- i) **Both A and R are true and R is the correct explanation of the assertion.**
- ii) **Both A and R are true but R is not the correct explanation of the assertion.**
- iii) **A is true but R is false.**
- iv) **A is false but R is true**

7. Assertion (A): Air is considered as a good insulator.

Reason(R): Those materials that do not allow electric current to pass through them are called insulators.

- i) **Both A and R are true and R is the correct explanation of the assertion.**

8. Assertion (A): An electric bulb glows, only when an electric current passes through a closed circuit.

Reason (R): The metal cap is the negative terminal of the electric cell.

- iii) **A is true but R is false.**

9. Assertion (A): Each cell has two terminals marked positive (+) and negative (-).

Reason (R): The thin wire that gives off light is called the filament of the bulb.

- ii) **Both A and R are true but R is not the correct explanation of the assertion.**

10. Assertion (A): A dry cell is very heavy and big.

Reason (R): A dry cell converts chemical energy to electrical energy.

- iv) **A is false but R is true**

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. Distinguish between open circuit and closed circuit.

[Hint: Open circuit - The electric circuit in which there is a gap in the connections between the terminals of the cell, wires and bulb.]

Closed circuit - The electric circuit in which there is no gap in the connections between the terminals of the cell, wires and bulb.]

2. We should not touch electric appliances and switches with wet hands. Give reason.

[Hint: Water is a good conductor of electricity. Therefore, it can give us an electric shock.]

3. Differentiate conductors and insulators. Give suitable examples for each.

[Hint: Conductors- Materials which allow electric current to pass through them. Eg: Aluminium and Copper. Insulators- Materials which do not allow electric current to pass through them. Eg: plastic and rubber.]

4. Why is an electric cell commonly known as a dry cell?

[Hint: An electric cell is commonly known as a dry cell because it does not contain any liquid chemicals.]

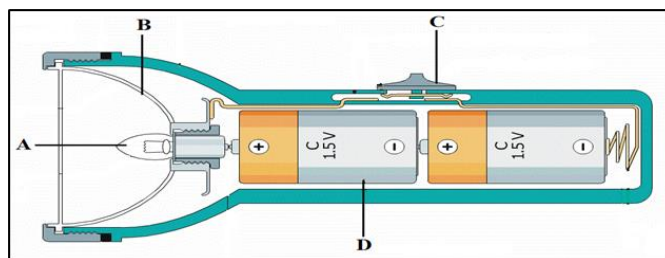
5. We should never join the two terminals of a cell directly by a wire only. Why?

[Hint: The chemicals in the electric cell get used up very fast and the cell stops working.]

6. Why does a fused bulb not light up?

[Hint: A fused bulb means a break in its filament which results in a break in the path of the current between the terminals of the electric cell. Thus a fused bulb does not light up as no current passes through its filament.]

7. Label the various parts of a torch.



[Hint: A- bulb, B-reflector, C- Switch, D- cell]

III. SHORT ANSWER TYPE QUESTIONS (3M):

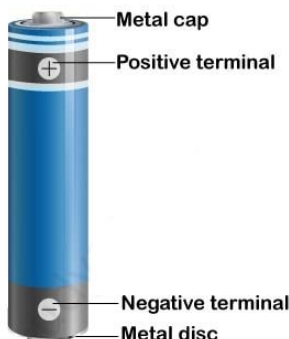
1. Mention the advantages of dry cells.

[Hint: i) They are light in weight and small in size. ii) They can be transported from one place to another easily. iii) They convert chemical energy into electrical energy.]

2. Describe an activity to prove that air is an insulator.

[Hint: Take an electric circuit, and keep the terminals unconnected in the air. The bulb does not glow, as air is an insulator and does not allow the current to flow through it.]

3. Sketch an electric cell and mark its terminals.



4. What is the purpose of using an electric switch?

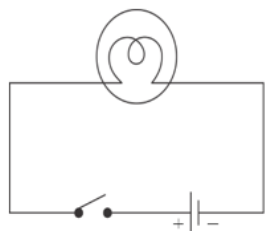
[Hint: In the ON position the switch allows the current to flow through the circuit, making it a closed circuit. In the OFF position, the switch does not allow current to flow through the circuit, making it an open circuit.]

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

[Hint: Plastic or rubber is an insulator which does not allow electric current to pass through it. The handles of the tools like screwdrivers and pliers used by electricians for repair have a covering of plastic or rubber so that electric current may not pass through these tools to the body of the electricians to harm them.]

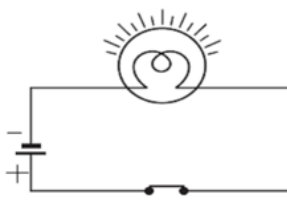
6. What are circuit diagrams? Draw circuit diagrams of an open circuit and a closed circuit.

[Hint: The diagram which shows the arrangement of electrical components in an electrical circuit with the help of their symbols is called a circuit diagram.]



[A]

OPEN CIRCUIT



[B]

CLOSED CIRCUIT

IV. LONG ANSWER TYPE QUESTIONS. (5M)

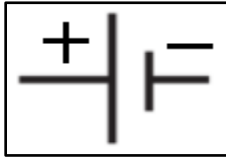
1. What are the essential components of an electric circuit? Mention the role of these components in an electric circuit.

[Hint: cell /battery, bulb, connecting wires and switch.]

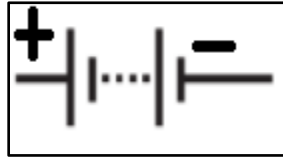
a) cell/battery- a source of electric current. b) bulb- converts electricity into light and heat energy. c) wires- wires connect the cell, bulb and switch and conduct electricity. d) switch- turns 'ON' or 'OFF' the circuit]

2. Draw the symbols for components of an electric circuit:

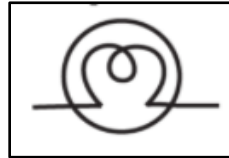
a) cell b) battery of two cells c) bulb d) closed switch e) wire



a)



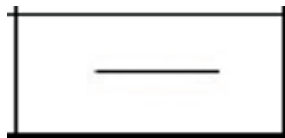
b)



c)



d)

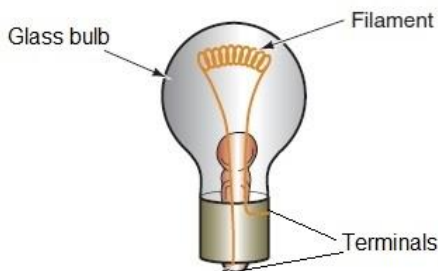


e)

3. Describe the various steps to make a simple switch.

[Hint: A simple switch can be made by using two drawing pins, a safety pin, two wires and a wooden board. Insert a drawing pin into the ring at one end of the safety pin and fix it on the wooden board. Make sure that the safety pin can be rotated freely. Now fix the other drawing pin on the wooden board in a way that the free end of the safety pin can touch it. The safety pin covered the gap between the drawing pins when you made it touch two of them. Now make a circuit by connecting an electric cell and a bulb with this switch.]

4. With the help of a neat labelled sketch explain parts of a torch bulb.



[Hint: A torch bulb has an outer case of glass that is fixed on a metallic base. The thin wire that gives off light is called the filament of the bulb. The filament is fixed to two thicker wires, which also provide support to it. One of these thick wires is connected to the metal case at the base of the bulb. The other thick wire is connected to the metal tip at the centre of the base. The base of the bulb and the metal tip of the base are the two terminals of the bulb. These two terminals are fixed in such a way that they do not touch each other.]

5. Write a few precautions that you must follow while handling electricity.

[Hint: Never attempt to experiment with the electric wires and the sockets. Use only electric cells for all activities related to electricity. Never touch electrical switches or gadgets when our body is wet. Don't try to repair or install electrical wiring or appliances. Do not touch electric poles or transformers on the road. Never join the electrical wires with bare hands.]

V. CASE STUDY- BASED QUESTIONS/ PASSAGE-BASED QUESTIONS-

1. Boojho has an arrangement of a cell and a bulb as shown in the figure. Will the bulb glow? Give reasons.



[Hint: Yes, the torch bulb will glow in the given arrangement. The bulb is connected to the cell directly at one terminal and the other terminal is connected to the negative of the cell, with a wire to complete the circuit.]

2. Paheli wanted to glow a torch bulb using a cell. She could not get connecting wires, instead, she got two strips of Aluminium foil. Will she succeed? Why?

[Hint: Yes. Aluminium foils can act as connecting wires as it is a good conductor of electricity.]

3. Read the given passage and answer the following questions.

A torch is a portable electric lamp which uses two or more cells to light a small bulb. Electricity to the bulb in a torch is provided by the electric cell. An electric cell is a source of electricity that converts chemical energy into electrical energy. Electric cells have a small metal cap on one side and a metal disc on the other side. All electric cells have two terminals – a positive terminal and a negative terminal. The direction of the current is taken to be from the positive terminal to the negative terminal of the electric cell. An electric cell produces electricity from the chemicals stored in it. When the chemicals in the electric cell are used up, the cell stops producing electricity. The electric cell then has to be replaced with a new one. The switch slides between the ON and OFF positions. The bulb glows in the ON position and stops glowing in the OFF position.

i.) What is an electric cell?

[Hint: A source of electricity that converts chemical energy into electrical energy.]

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

[Hint: The direction of current is taken to be from the positive terminal to the negative

the terminal of the electric cell.]

iii.) What happens to electric cells when the chemicals are used up? [**Hint: When the chemicals in the electric cell are used up, the cell stops producing electricity.**]

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