INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VI	**DEPARTMENT: SCIENCE** **2021 - 22**	**DATE: 27.02.2022**
WORKSHEET NO.: 16 WITH ANSWERS.	**TOPIC:** **ELECTRICITY AND CIRCUITS**	**Note: A4 FILE FORMAT**
NAME OF THE STUDENT:	**CLASS & SEC:**	**ROLL NO.**

I. VERY SHORT ANSWER TYPE QUESTIONS (1M):

1. Name any five appliances used in our everyday life which work with electricity. [Hint: Refrigerator, Washing machine, Computer, Television and Geyser]
2. Define the term electric circuit. [Hint: The path along which an electric current can flow.]
3. Why we should not touch electric appliances and switches with wet hands?? [Hint: Water is a good conductor of electricity. Therefore, it can give us an electric shock.]
4. How does an electric cell produce electricity? [Hint: The electric cell produces electricity due to chemical reactions that occurs inside it.]
5. Write one use of insulators. [Hint: Insulators are used in making switchboard, handles of testers and screwdrivers etc.]
6. Why do bulbs have two terminals? [Hint: Bulb has two terminals to connect the filament with the circuit so that the current can pass through it.]
7. Silver is the best conductor of electric current even then copper is used in electric circuits. Why? [Hint: Copper is cheaper than silver and also a good conductor of electricity.]
8. State the role of electric switch in the circuit. [Hint: It is used either to break the circuit or complete the circuit.]
9. Why are metal wires used to carry electricity? [Hint: All the metals are good conductors of electricity.]
10. Why an electric cell commonly known as dry cell? [Hint :Electric cell commonly known as dry cell because it does not contain any liquid chemical.]

For question numbers 11,12,13, two statements are given- one labeled Assertion (A) and the other labeled 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 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

11. **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. [Ans: i - Both A and R are true and R is correct explanation of the assertion.]

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

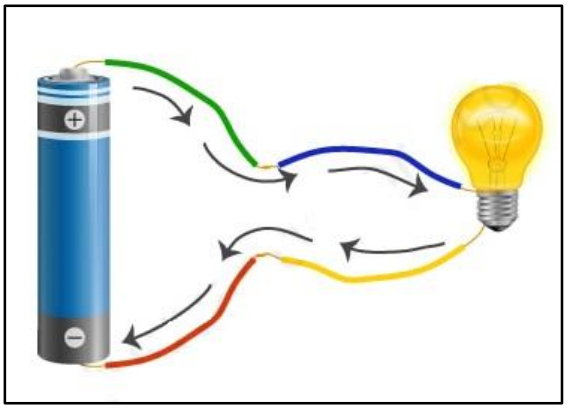
    Reason (R): In an electric circuit the direction of flow of electric current is taken from negative to positive terminal of the electric cell. [Ans: iii - A is true but R is false.]

13. **Assertion (A):** Filaments in light bulbs are made of conductors.

    Reason (R): Tungsten is a good conductor of electricity. [Ans: ii - Both A and R are true but R is not the correct explanation of the assertion.]

II. PASSAGE BASED QUESTIONS:

In the arrangements shown in the Figure, the two terminals of the electric cell were connected to two terminals of the bulb. Such an arrangement is an example of an electric circuit. The electric circuit provides a complete path for electricity to pass (current to flow) between the two terminals of the electric cell. The bulb glows only when current flows through the circuit. In an electric circuit, the direction of flow of current is taken to be from the positive to the negative terminal of the electric cell. When the terminals of the bulb are connected with that of the electric cell by wires, the current passes through the filament of the bulb. This makes the bulb glow.



1. Electric cell converts –

   a) electric energy into chemical energy b) heat energy into electric energy

   c) chemical energy into electric energy d) electric energy into light energy

2. The direction of flow of electric current in an electric circuit is taken to be from-

   a) negative to positive b) positive to negative

   c) sometimes positive sometime negative d) none of these

3. When the switch is in 'OFF' position in an electric circuit, the circuit becomes -

   a) an open circuit b) a closed circuit

   c) partially open d) cannot say

4. The thin wire that gives off light in a torch bulb is called –

   a) cell b) current

   c) bulb d) filament

III. CASE STUDY BASED QUESTIONS:

1. Amar connected two bulbs across two cells in a simple circuit. What should Amar do to make the bulbs glow dimmer?

   a) Replace one cell with a piece of chalk b) Replace one cell with a piece of wire

   c) Replace one bulb with a piece of wire d) Replace one bulb with another cell

2. Pooja is running short of connecting wires. To complete an electric circuit, she may use a -

   a) glass bangle b) thick thread

   c) rubber pipe d) steel spoon

3. 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 safe transfer of electricity

   b) It reduces the wastage of electricity in the wires

   c) It enables transfer of electricity to long distances

   d) It helps electricity to move faster through the wires

IV. a) SHORT ANSWER TYPE QUESTIONS (2 M):

1. What are the essential components of an electric circuit? [Hint: Cell /battery, bulb, switch and connecting wires.]

2. Identify conductors and insulators from the following:

   Eraser, paper, matchstick, copper wire, polythene, pencil lead, candle, coins

   [Hint: Conductors: copper wire, pencil lead, coins

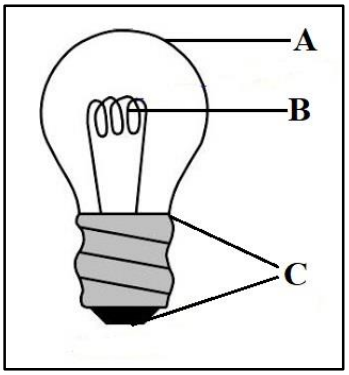
   Insulators: Eraser, paper, matchstick, polythene, candle]

3. Distinguish between:

   a] Conductors and insulators. [Hint: **Conductors**- materials which allow electric current to pass through them. **Insulators**- materials which do not allow electric current to pass through them.]

   b] Cell and a battery [Hint: **Cell**- a cell is a single unit that converts chemical energy into electrical energy. **Battery**- a battery is a collection of cells.]

4. Label the following diagram- [Hint: A – glass cover, B- filament, C- Terminals]



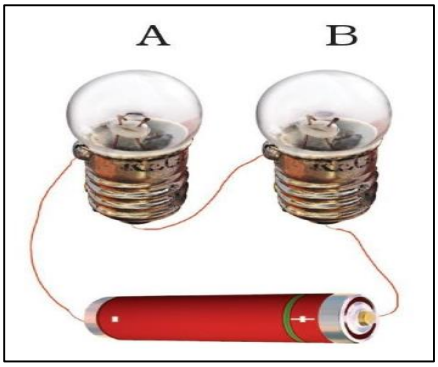
5. Why does an electric bulb not glow when both the wires are connected to the same terminal of a cell? [Hint: The current flows from one terminal to the other. When both wires are connected to same terminal, current will not flow.]
6. When a bulb is fused, it does not light up. Explain why? [Hint: In a fused bulb the filament is broken and the circuit is incomplete. The current will not flow and the bulb will not glow.]
7. 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? Explain, how?

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

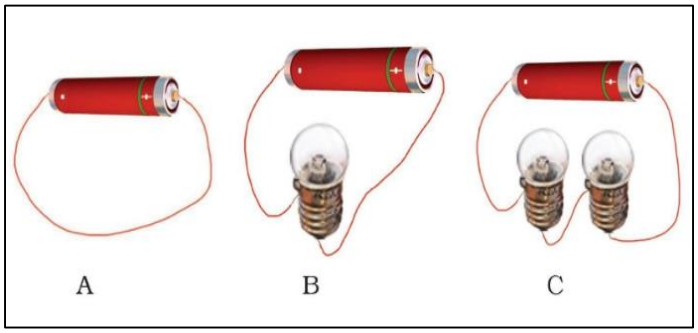
8. Why is handle of tools like screw driver, pliers are covered with plastic or rubber?

   [Hint: Plastic or rubber is an insulator and avoid direct contact with electric current while touching electric wires.]

9. Rahul connected two bulbs to a cell as shown in the figure given alongside. He found that filament of bulb 'B' is broken. Will the bulb 'A' glow in this circuit? Give reason.
[Hint: Bulb 'A' will not glow as the circuit will become incomplete/ broken.]



10. Which of the following arrangement A, B, and C given in figure should not be set up? Explain why. [Hint: Arrangement A should not be set up because in this arrangement cell will be used up very rapidly as no appliance is connected between the two terminals of the cell.]

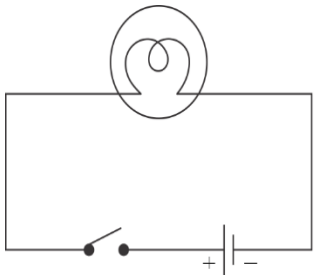


11. Why should an electrician use rubber gloves while repairing an electric switch at your home? Explain. [Hint: As rubber is a bad conductor of electricity so it does not allow the electric current to pass through it. Thus, the rubber gloves will save the electrician from any electric shock while repairing an electric switch or appliance.]

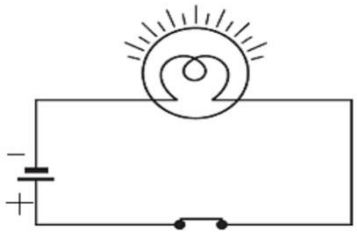
IV. b) SHORT ANSWER TYPE QUESTIONS (3 M):

1. How can you explain that the human body is a good conductor of electricity?
[Hint: If stand barefoot on the ground and touch an electric wire, we will get an electric shock. This is because human body is a good conductor of electricity. Without slippers, current can pass through.]

2. Give one activity to prove that air is an insulator. [Hint: Take an electric circuit, 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. Identify the types of circuits A and B shown below and write the difference between them.



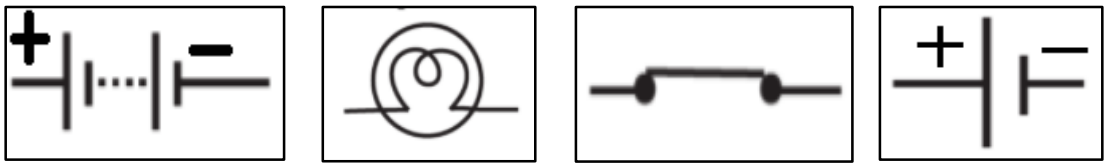
[A]



[B]

[Hint: **[A] Open circuit** - The electric circuit in which there is gap in the connections between the terminals of the cell, wires and bulb i.e. If there is a break anywhere in the circuit.
[B] Closed circuit - The electric circuit in which there is no gap in the connections between the terminals of the cell, wires and bulb i.e. If there is no break anywhere in the circuit.]

4. Mention the function of a) cell b) bulb c) wires d) switch in an electric circuit?
[Hint: Cell- provides electricity, Bulb- converts electricity into light and heat energy, Wires- wires connect the cell, bulb and switch, Switch- turns 'ON' or 'OFF' the circuit]
5. Draw the symbols for components of an electric circuit:
a] a battery of two cells b] a bulb c] a closed switch d] a cell
[Hint: [a] [b] [c] [d]



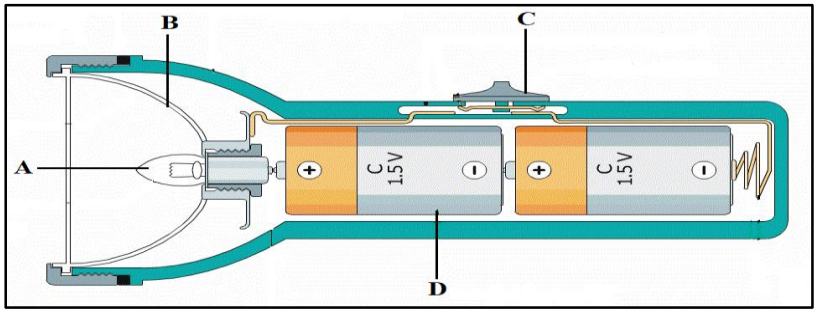
6. An electric bulb is connected to a cell through a switch. When the switch is brought in 'ON' position, the bulb does not glow. What could be the possible reasons for it.
[Hint: The bulb may be fused, the cell may have been used up, break in connecting wire, loose connection between the components of the circuit.]
7. Electrical fire and oil fires should not be extinguished with water. Why? [Hint: Water should not be used on an electrical fire because water conducts electricity and can cause a shock. Water

should not be used on oil fires because oil floats on water. The water causes the burning oil to spread.]

8. Write few precautions that you must follow while handling electrical gadgets. [Hint: 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 fly kites overhead power lines. Never join the electrical wires with bare hands.]
9. Why does a cell stop producing electricity after sometime? [Hint: When the chemicals in the electric cell are used up, the electric cell stops producing electricity. Since all the chemicals are used, no chemical reaction takes place which will produce energy.]

10.What are the advantages of dry cells? [Hint: Advantages of dry cells are: i) They are light in weight and small in size. ii) They can be transported from one place to another easily.
iii) There is no fear of leakage/spillage in dry cells.]

11.Label the figure given below: [Hint: A- bulb, B-reflector, C- Switch, D– cell]



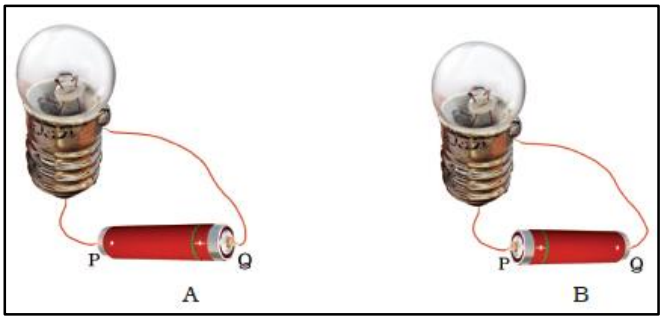
V. LONG ANSWER TYPE QUESTIONS (5 M):

1. Figures A and B show a bulb connected to a cell in two different ways

(a) What will be the direction of the current through the bulb in both the cases (Q to P or P to Q)?

(b) Will the bulb glow in both the cases?

(c) Does the brightness of the glowing bulb depend on the direction of current through it?



[Hint: (a) The direction of current will be from Q to P in A and direction of current will be from P to Q in B. This is because the direction of flow of electric current is always from positive terminal to negative terminal of the cell or battery.

(b) Yes, the bulb will glow in both the cases because for the bulb to glow, we just need to complete the circuit.

(c) No, the brightness of the bulb never depends upon the direction of current passing through it.]

2. A torch is not functioning, though contact points in the torch are in working condition. What can be the possible reasons for this?

[Hint: The possible reasons could be:

i) the bulb may be fused

ii) the cells may have been used up

iii) the cells are not placed in the correct order

iv) the switch is faulty]

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