INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VII	**DEPARTMENT: SCIENCE 2025-2026**	**DATE: 03-02-2026**
TEXTBOOK- Q & A	**CHAPTER: ELECTRICITY: CIRCUITS AND THEIR COMPONENTS**	**NOTE: A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT**	**ROLL NO.**

1. Choose the incorrect statement.
(i) A switch is the source of electric current in a circuit.
(ii) A switch helps to complete or break the circuit.
(iii) A switch helps us to use electricity as per our requirement.
(iv) When the switch is in the 'OFF' position, there is an air gap between its terminals.

[Hint: (i) A switch is the source of electric current in a circuit.]

2. Observe Fig. 3.16. With which material connected between the ends A and B, the lamp will not glow?

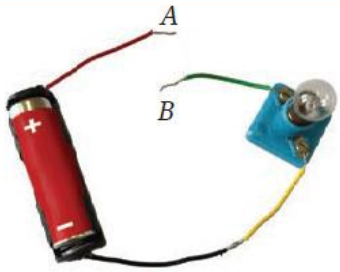


Fig. 3.16

[Hint: The lamp will not glow if an insulating material is connected between points A and B. Examples of such materials: Plastic, Rubber, Wood, and Glass. These materials do not allow electric current to pass through them, so the circuit remains incomplete, and the lamp does not glow.]

3. In Fig. 3.17, if the filament of one of the lamps is broken, will the other glow? Justify your answer.

[Hint: No, the other lamp will not glow. In the given figure, the two lamps are connected in series. In a series circuit, the current flows through each component one after the other. If the filament of one lamp is broken, the circuit becomes open, and current cannot flow, so the other lamp will not glow.]

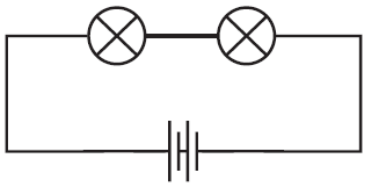


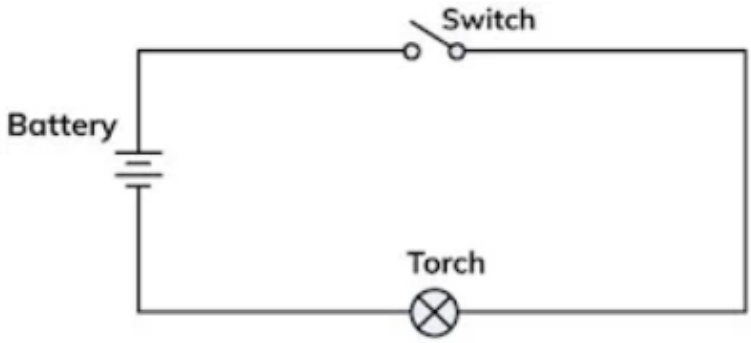
Fig. 3.17

4. A student forgot to remove the insulator covering from the connecting wires while making a circuit. If the lamp and the cell are working properly, will the lamp glow?

[Hint: No, the lamp will not glow. The insulator covering (plastic or rubber) on the wires prevents electric current from flowing. Even if the lamp and cell are working properly, the circuit remains incomplete, so the lamp does not light up.]

5. Draw a circuit diagram for a simple torch using symbols for electric components.

[Hint: A simple torch circuit can be represented as:



This is a simple series circuit where the battery provides power, the switch controls the current, and the lamp glows when the current flows.]

6. In Fig. 3.18:
(i) If S2 is in 'ON' position, S1 is in 'OFF' position, which lamp(s) will glow?
(ii) If S2 is in 'OFF' position, S1 is in 'ON' position, which lamp(s) will glow?
(iii) If S1 and S2 both are in 'ON' position, which lamp(s) will glow?
(iv) If both S1 and S2 are in 'OFF' position, which lamp(s) will glow?

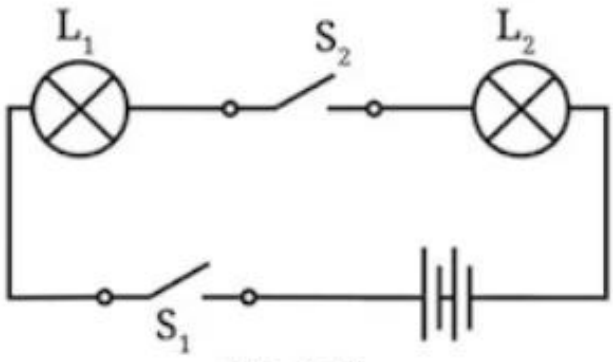


Fig. 3.18

[Hint: (i) Neither lamp will glow because switch 1 is open.
(ii) Neither lamp will glow because switch 2 is open.
(iii) Both Lamp 1 and Lamp 2 will glow, as both switches are closed, allowing current to flow to both lamps.
(iv) Neither lamp will glow because both switches are open, preventing current flow.]

7. Vidyut has made the circuit as shown in Fig. 3.19. Even after closing the circuit, the lamp does not glow. What are the possible reasons? List as many possible reasons as you can for this faulty operation. What will you do to find out why the lamp did not glow?

Fig. 3.19

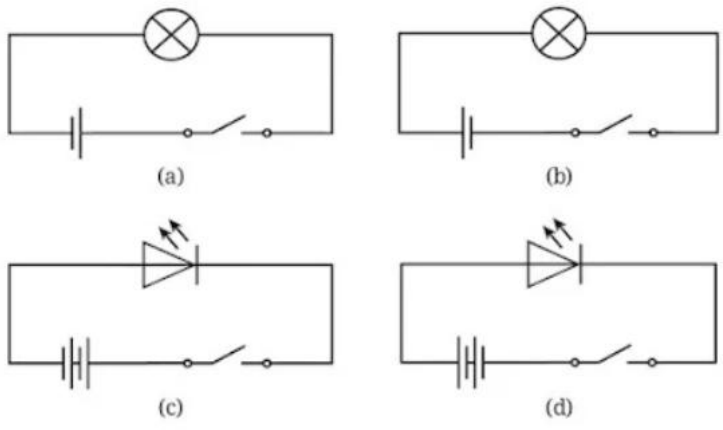
[Hint: Possible reasons:

- **Broken filament in the lamp (if it's an incandescent lamp).**
- **Loose connections or poor contact in the circuit.**
- **Dead battery or improper placement of battery terminals.**
- **Wires not properly connected to the lamp or battery.**
- **Open circuit due to a faulty switch or a disconnected part of the circuit.**

To find out why the lamp did not glow, one should:

- **Check the lamp for a broken filament.**
- **Ensure all connections are secure.**
- **Test the battery using a simple tester to ensure it is working.**
- **Verify that the switch is in the 'ON' position.**
- **Check the wiring to ensure proper electrical contact.]**

8. In Fig. 3.20, in which case(s) will the lamp not glow when the switch is closed?



[Hint: Case (a), (b), and (d) will glow when the switch is closed, but Case (c) will not glow because the negative terminal of the battery is connected to the positive terminal of the LED, meaning the LED is reverse-connected. In this case, no current will flow through the LED, and it will remain off.]

9. Suppose the '+' and '–' symbols cannot be read on a battery. Suggest a method to identify the two terminals of this battery.

[Hint: To identify the positive and negative terminals of the battery:

I. Take a known working LED (which has a longer wire for the positive terminal and a shorter wire for the negative terminal).

II. Connect one terminal of the battery to the longer wire of the LED and the other terminal to the shorter wire using wires.

III. If the LED glows, the battery terminal connected to the longer wire is the positive terminal, and the other is the negative terminal.

IV. If the LED does not glow, reverse the connections. When the LED glows, the terminal connected to the longer wire is positive.]

10. You are given six cells marked A, B, C, D, E, and F. Some of these are working, and some are not. Design an activity to identify which of them is working.
(i) List the items that you require.
(ii) Write the procedure that you will follow.
(iii) With the items, carry out the activity to identify the cells that are working.

[Hint: (i) Items required: Electric lamp, Wires, Cell holders, Cells A, B, C, D, E, F.

(ii) Procedure:

- **Connect each cell one by one in the circuit with the lamp.**
- **Observe if the lamp glows.**
- **Record which cells cause the lamp to glow.**

(iii) Activity to identify the working cells:

- **Test each cell individually in the circuit.**
- **Mark the cells that cause the lamp to glow as working, and those that don't glow the lamp as non-working.]**

11. An LED requires two cells in series to glow. Tanya made the circuit as shown in Fig. 3.21. Will the lamp glow? If not, draw the wires for correct connections.

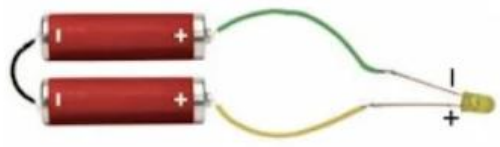


Fig. 3.21

[Hint: No, the LED will not glow if the cells are not connected in the correct polarity. To make the LED glow, the positive terminal of the battery should be connected to the positive terminal of the LED (longer wire), and the negative terminal of the battery should be connected to the negative terminal of the LED (shorter wire).

Corrected connections:

Fig. 3.21

Prepared by: *Ms Alysia Fernandes*	*Checked by:* *HOD Science*