



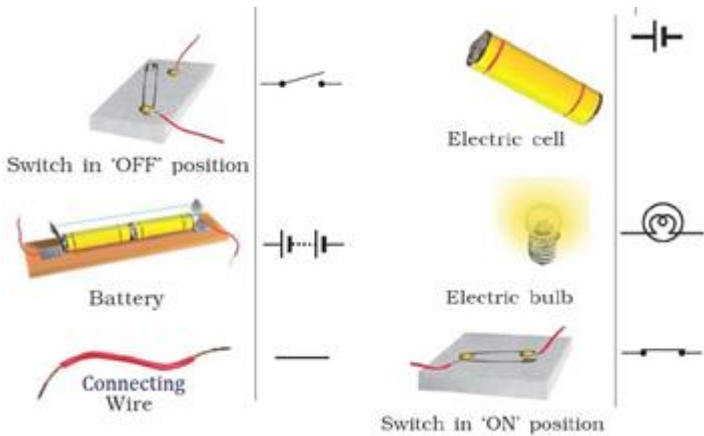
UNIQUE STUDY POINT

Chapter 14 Electric Current and Its Effects NCERT Solutions

EXERCISES

Question 1: Draw in your notebook the symbols to represent the following components of electrical circuits: connecting wires, switch in the 'OFF' position, bulb, cell, switch in the 'ON' position, and battery

Answer:

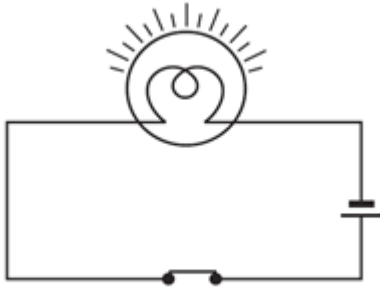


Question 2: Draw the circuit diagram to represent the circuit shown in Fig.14.21.



Fig. 14.21

Answer:



Circuit diagram of electric circuit

Question 3: Fig.14.22 shows four cells fixed on a board. Draw lines to indicate how you will connect their terminals with wires to make a battery of four cells.

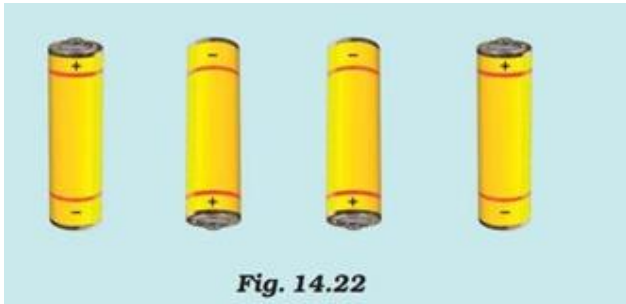
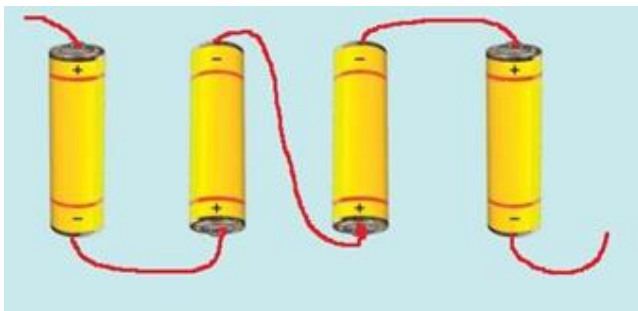
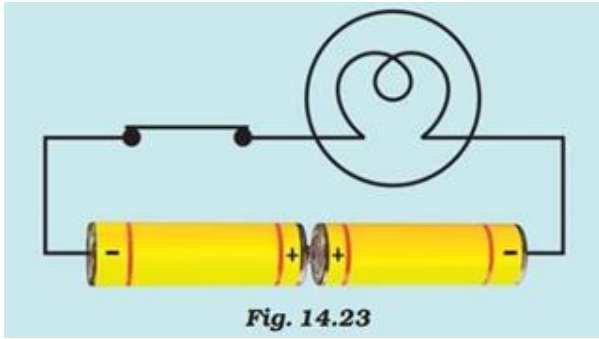


Fig. 14.22

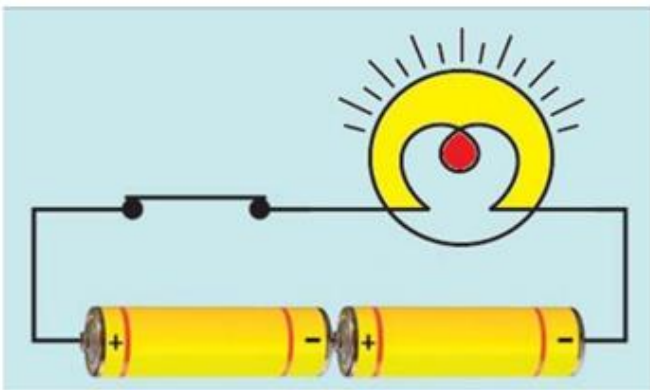
Answer: To make a battery of cells, the positive terminal (+) of one cell always be connected to negative terminal (-) of another cell.



Question 4: The bulb in the circuit shown in Fig.14.23 does not glow. Can you identify the problem? Make necessary changes in the circuit to make the bulb glow.



Answer: The positive terminal (+) of one cell always be connected to negative terminal (-) of another cell. Here the two positive terminals are connected to each other. The correct arrangement is as follows:



Question 5: Name any two effects of electric current.

Answer: (i) **Heating Effect of current:** When an electric current passes through a wire, the wire gets heated. This is known as the heating effect of current. Which is used in many heating applications like electric heater, electric iron, light bulb etc.

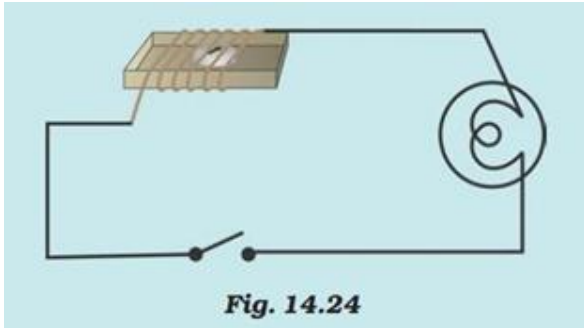
(ii) **Magnetic Effect of current:** When an electric current flows through a wire, it generates magnetic field around it. This effect is called magnetic effect of current. Magnetic Effect of electric current has many applications like power lift, electric bell, electric fan etc.

Question 6: When the current is switched on through a wire, a compass needle kept nearby gets deflected from its north-south position. Explain.

Answer: The current carrying wire produces magnetic field around it. When a compass is kept nearby this wire, the two magnetic field (magnetic field due to wire and magnetic field due to

compass) interact each other causing deflection in magnetic needle. When the current is switched off, there is no magnetic field produced by the wire, magnetic needle does not deflect from its north-south position.

Question 7: Will the compass needle show deflection when the switch in the circuit shown by Fig.14.24 is closed?



Answer: No, the compass needle will not show deflection even though the switch is closed, because there is no source of electric current (Battery or cell). An electric cell or battery needs to be connected here. In the absence of electric current, there is no magnetic field produced by the wires. Hence there is no deflection.

Question 8: Fill in the blanks:

- (a) Longer line in the symbol for a cell represents its terminal.
- (b) The combination of two or more cells is called a .
- (c) When current is switched 'on' in a room heater, it .
- (d) The safety device based on the heating effect of electric current is called a .

Answer: (a) Longer line in the symbol for a cell represents its **positive** terminal.

(b) The combination of two or more cells is called a **battery**.

(c) When current is switched 'on' in a room heater, it **produces heat**.

(d) The safety device based on the heating effect of electric current is called a **fuse**.

Question 9: Mark 'T' if the statement is true and 'F' if it is false:

(a) To make a battery of two cells, the negative terminal of one cell is connected to the negative terminal of the other cell. (T/F)

(b) When the electric current through the fuse exceeds a certain limit, the fuse wire melts and breaks. (T/F)

(c) An electromagnet does not attract a piece of iron. (T/F)

(d) An electric bell has an electromagnet. (T/F)

Answer:

(a) False

(b) True

(c) False

(d) True

Question 10: Do you think an electromagnet can be used for separating plastic bags from a garbage heap? Explain.

Answer: No, because plastic does not have magnetic property to get attracted to a magnet hence magnet cannot be used to separate plastic bags.

Question 11: An electrician is carrying out some repairs in your house. He wants to replace a fuse by a piece of wire. Would you agree? Give reasons for your response.

Answer: It is not a wise idea to replace fuse by a piece of wire, as it has very low melting point. In case of metal piece, melting point will be high and the circuit will be intact in case there is overload or overheat.

Question 12: Zubeda made an electric circuit using a cell holder, a switch and a bulb. When she put the switch in the 'ON' position, the bulb did not glow. Help Zubeda in identifying the possible defects in the circuit.

Answer: Possible reasons are as follows:

- The bulb may be fused or defective.
- Cells are not connected properly.
- There may be loose connections.
- The switch is not functioning well.
- The cells are dried up i.e. the power of the cell has been exhausted.

Question 13: In the circuit shown in Fig. 14.25

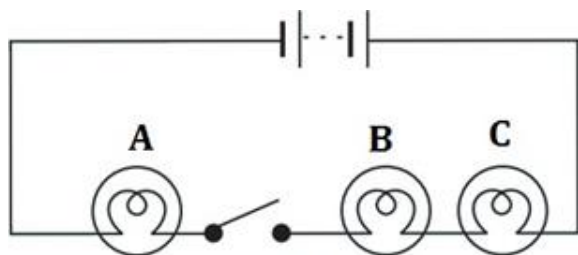


Fig. 14.25

- Would any of the bulb glow when the switch is in the 'OFF' position?
- What will be the order in which the bulbs A, B and C will glow when the switch is moved to the 'ON' position?

Answer: (i) No.

When the switch is in 'OFF' position, the current does not flow through the circuit. Hence, none of the bulbs will glow.

- Bulbs will glow simultaneously.

When the switch is moved to the 'ON' position, then all the bulbs will glow at once. This is because they all are connected to the same battery and switch.

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