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ELECTRIC CURRENT AND ITS EFFECT

Chapter: 14

SCIENCE
CLASS: - 7TH
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Chapter: 14
Electric Current and its Effect

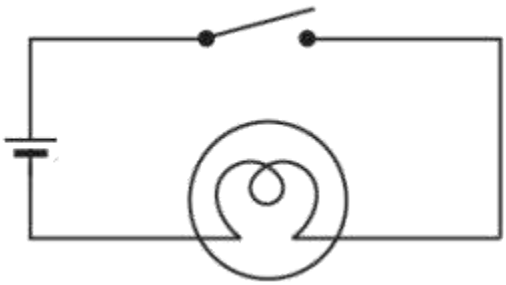
Q1: Draw in your notebook the symbols to represent the following components of electrical circuits: connecting wires, switch in the 'OFF' position, bulb, cell, switch in the 'ON' position, and battery.

Ans:

Components of electrical circuits	Symbols
(a) Connecting wires	
(b) Switch in the 'OFF' position	
(c) Bulb	
(d) Cell	
(e) Switch in the 'ON' position	
(f) Battery	

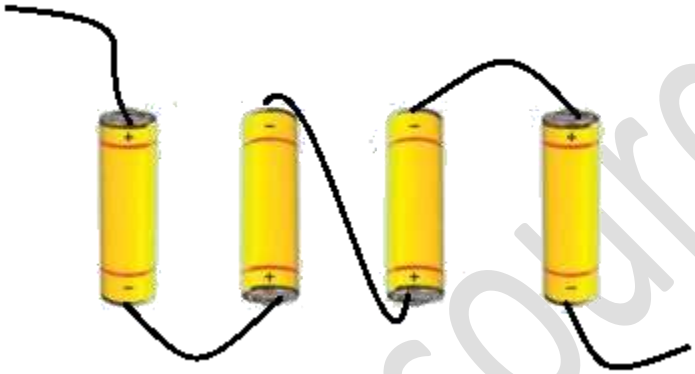
Q2: Draw the circuit diagram to represent the circuit shown in Fig.

Ans:



Q3: Fig. 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.

Ans:



Q4: 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.

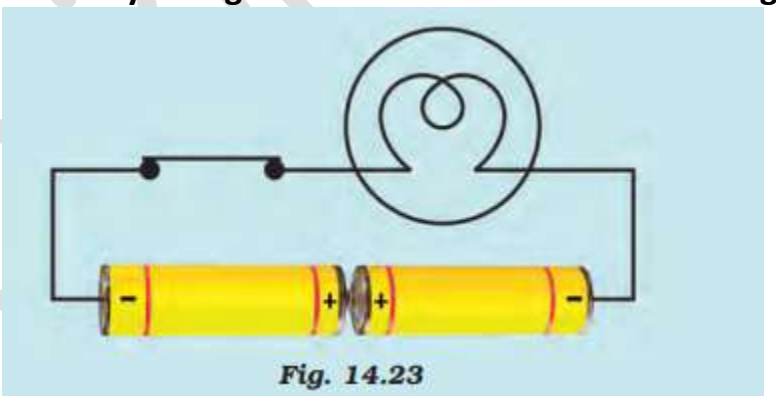
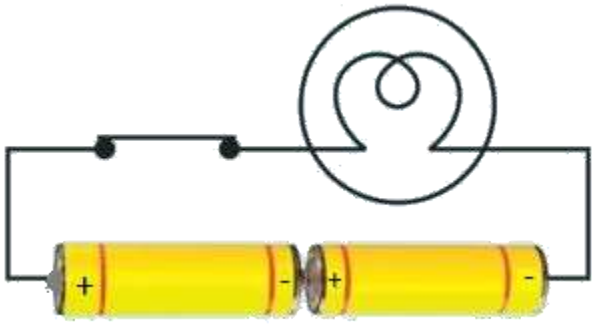


Fig. 14.23

Ans: In this circuit the connection of the battery is wrong so that bulb does not glow.

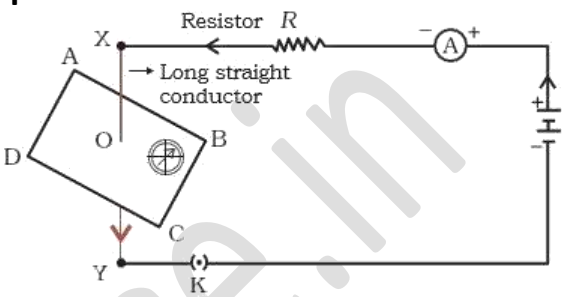


Q5: Name any two effects of electric current.

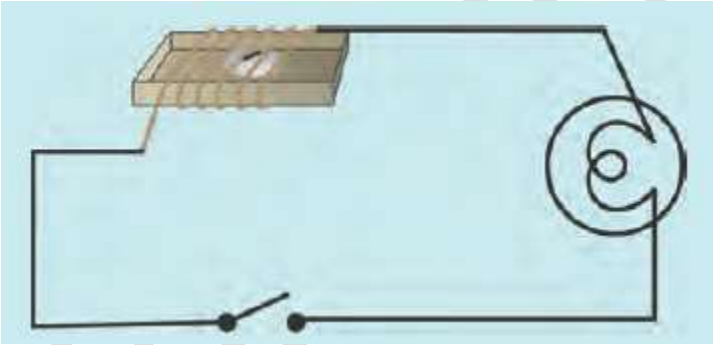
Ans: Heating effect and lighting effect.

Q6: When the current is switched on through a wire, a compass needle kept nearby gets deflected from its north-south position. Explain.

Ans: When a current is switched on through a wire, a magnetic field is created around the wire. This magnetic field causing the compass needle to get deflected from its north-south position.



Q7: Will the compass needle show deflection when the switch in the circuit shown by Fig.14.24 is closed?



Ans: This circuit do not show any deflection when the switch is on because there is no source of current.

Q8: Fill in the blanks:

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

Q9: 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. (F)
(b) When the electric current through the fuse exceeds a certain limit, the fuse wire melts and breaks. (T)
(c) An electromagnet does not attract a piece of iron. (F)
(d) An electric bell has an electromagnet. (T)

Q10: Do you think an electromagnet can be used for separating plastic bags from a garbage heap? Explain.

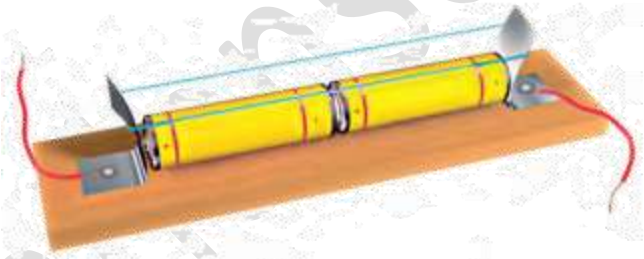
Ans: No, electromagnets only attract piece of metals like iron, steel they do not attract non- metals like plastic and rubber so that is why electromagnet cannot be used for separating plastic bags from a garbage heap.

Q11: 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.

Ans: No, I would not agree to replace a fuse with a piece of wire.

Fuses are designed to protect electrical circuits from overloading or short circuits by breaking the circuit when excessive current flows. They act as a safety measure to prevent damage to the electrical system and reduce the risk of fire.

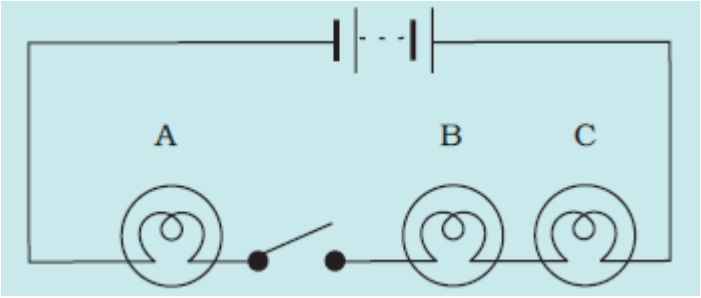
Q12: Zubeda made an electric circuit using a cell holder shown in Fig. 14.4, a switch and a bulb. When she put the switch in the 'ON' position, the bulb did not glow. Help Zubeda in identifying the possible defects in the circuit.



Ans: There may be more than one reason to not glow the bulb, the rubber band may not be tight enough to keep two cells on contact with each other, and there is no flow of current.

The other reason Is that the terminals of the cell may not be directly contact to ach other.

Q13: In the circuit shown in Fig. 14.25



(i) Would any of the bulb glow when the switch is in the 'OFF' position?

(ii) What will be the order in which the bulbs A, B and C will glow when the switch is moved to the 'ON' position?

Ans:

(i) No bulb can glow.

(ii) All the bulb can glow simultaneously.

Key Words

(a) Battery: A device that stores and provides electrical energy by converting chemical energy into electrical energy.

(b) Circuit diagram: A graphical representation of an electrical circuit using symbols to illustrate the connections and components in the circuit.

(c) Electric components: Devices or elements that are used in electrical circuits to control or manipulate the flow of electric current.
Examples resistors, switches.

(d) Electric bell: An electromechanical device that produces sound when an electric current flows through it. It typically consists of an electromagnet, a striker, and a bell.

(e) Electromagnet: A type of magnet created by passing an electric current through a coil of wire. It produces a magnetic field that can attract ferromagnetic materials or other magnets.

(f) Fuse: A safety device used to protect electrical circuits from overloading or short circuits. It consists of a thin wire that melts when excessive current passes through it.

(g) Heating effect of current: When an electric current flows through a conductor, it which leads to the generation of heat.

(h) Magnetic effect of current: When an electric current flows through a conductor, it generates a magnetic field around the conductor. This effect is the basis for electromagnets and is utilized in various applications such as electric motors and transformers.