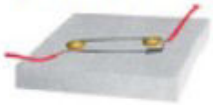
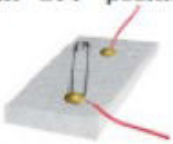
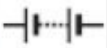
ELECTRIC CURRENT AND ITS EFFECTS

EXERCISE

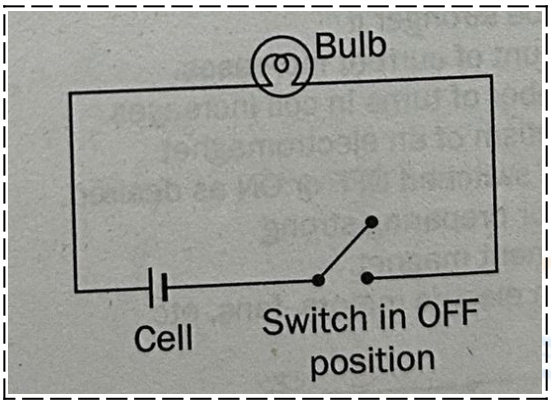
Question 1:
Draw the symbols in your notebook to represent the following components of electrical circuits: connecting wires, switch in the OFF position, bulb, cell, switch in the ON position and battery.

Answer:

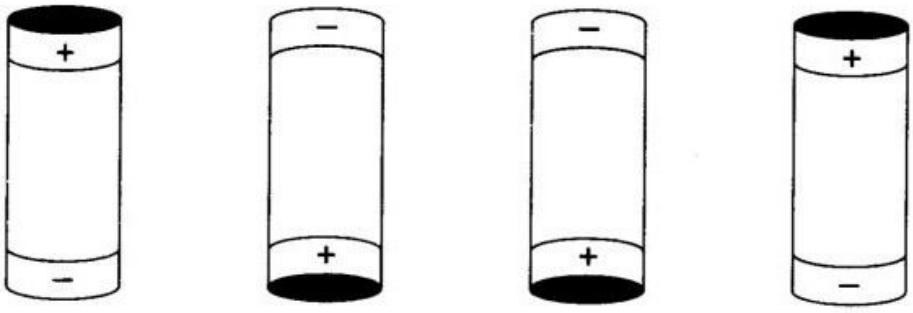
S.No.	Electric component	Symbol
1.	Electric cell 	
2.	Electric bulb 	
3.	Switch in 'ON' position 	
4.	Switch in 'OFF' position 	
5.	Battery 	
6.	Wire 	

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

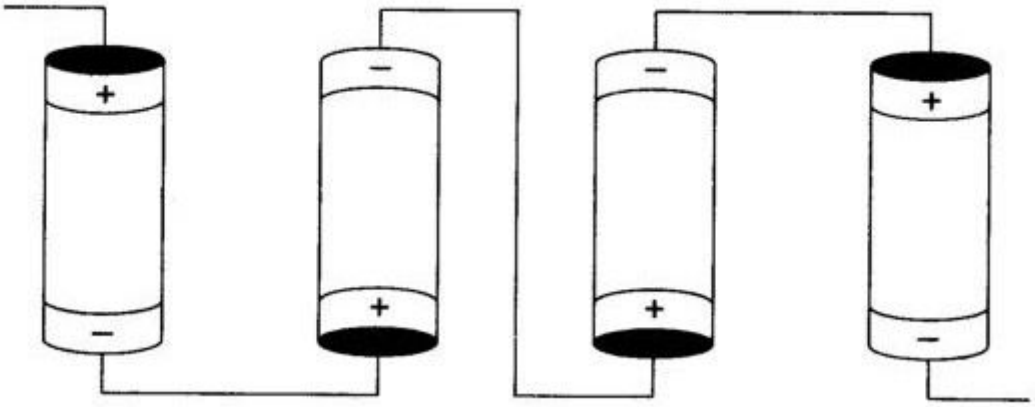
Answer:



Question 3:
Figure 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.

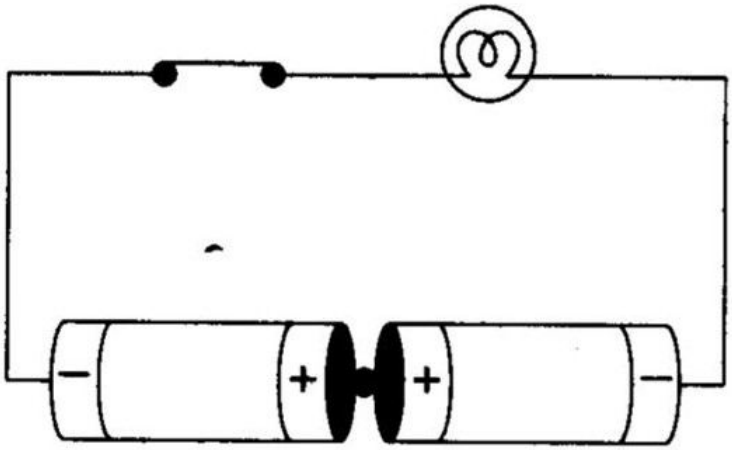


Answer:
To connect all the cells, we should join the negative terminal of one cell to the positive terminal of the other vice-versa.



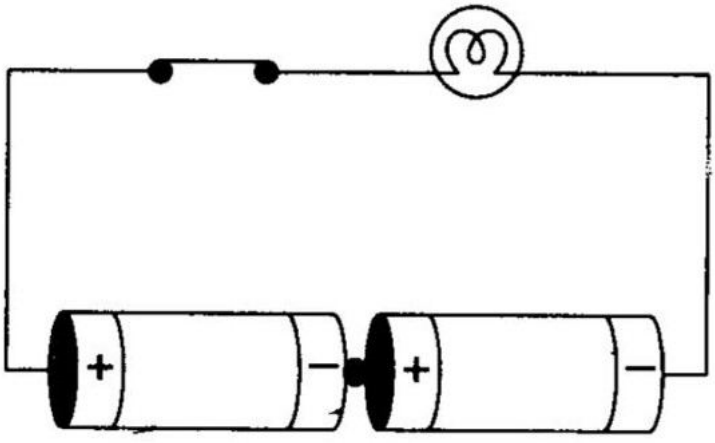
Question 4:

The bulb in the circuit shown in figure does not glow. Can you identify the problem? Make necessary changes in the circuit to make the bulb glow.



Answer:

The two cells are connected with the positive terminal on one side. This can be corrected by joining the negative terminal of one cell to the positive terminal of the other cell as shown in figure.



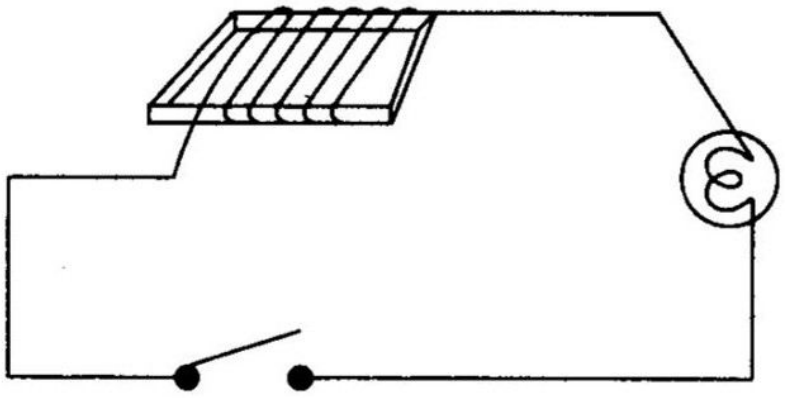
Question 5:
Name any two effects of electric current.

Answer:
The two effects of electric current are
(i) Heating effect
(ii) Magnetic effect

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:
When the current is switched ON through a wire or a coil, there is a magnetic field created around the coil or wire and we can say that the wire or coil gets magnetised. Thus, a compass needle kept nearby gets deflected from its north-south position due to the magnet formed by the current carrying wire or coil.

Question 7:
Will the compass needle show deflection, when the switch in the circuit shown by figure is closed?



Answer:
Yes, the compass needle shows the deflection when the switch is closed or the circuit is complete. On closing the circuit, current flows through the coil and it gets magnetised. Thus, due to this magnetic effect of current, the compass needle shows 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) positive (b) battery (c) gets heated (d) 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. (_____)
(b) When the electric current through the fuse exceeds a certain limit, the fuse wire melts and breaks. (_____)
(c) An electromagnet does not attract a piece of iron. (_____)
(d) An electric bell has an electromagnet. (_____)

Answer:
(a) F (b) T (c) F (d) T

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

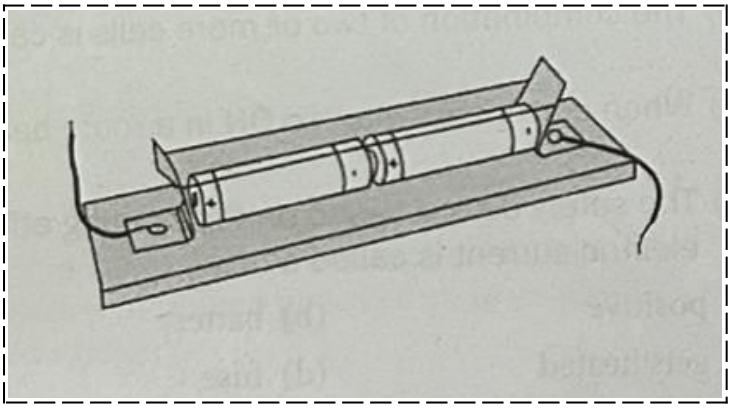
Answer:
No, an electromagnet cannot be used for separating plastic bags from a garbage heap because plastic bags are not magnetic materials. Only magnetic materials can be attracted by the magnet, so plastic bags do not get attracted by the magnet.

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:
No, we should not agree for replacing a fuse by a piece of wire.

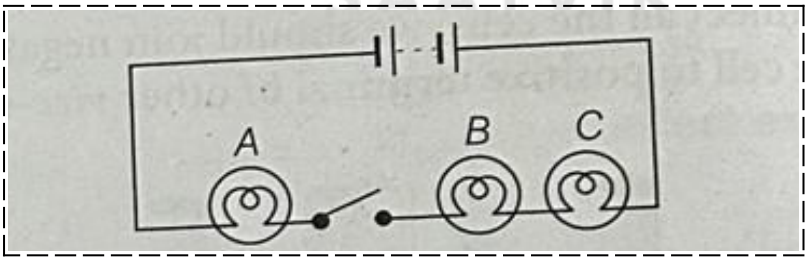
As we know that fuse wire is made up of special material which can be melt on passing high amount of current or during any short circuit. If it is replaced by some other wire, melting of fuse may not take place on short circuiting or excessive current flow and it may cause fire.

Question 12:
Zubeda made an electric circuit using a cell holder shown in figure, 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:
These may be the reasons by which bulb will not glow
(i) Zubeda may not have arranged the cells in a particular manner, i.e. terminals of cell may not be in alternate form.
(ii) The bulb used by Zubeda may be a fused one.
(iii) The connecting wire in cell holder may not be attached properly.

Question 13:
In the circuit shown in figure



(a) Would any of the bulb glow, when the switch is in the OFF position?
(b) 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:
(a) Any of the bulb will not glow when the switch is in the OFF position because circuit is not complete.
(b) All the bulbs will glow simultaneously as the switch is moved to the ON position.