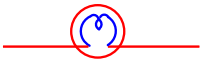
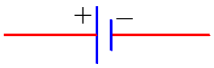
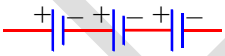
ELECTRIC CURRENT & ITS EFFECTS

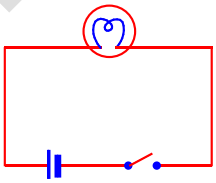
1. Draw in your note book the symbols to represent the following components of electrical circuits connecting wires, switch in the "OFF" position, bulb, cell, switch in the "ON" position and battery.

A.

Connecting wire	
Switch in "OFF" position	
Electric bulb	
Electric cell	
Switch in "ON" position	
Battery	

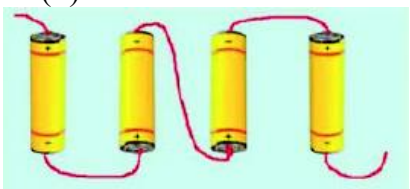
2. Draw the circuit diagram to represent the circuit shown below.

A. The circuit diagram is showing the switch in "OFF" position.

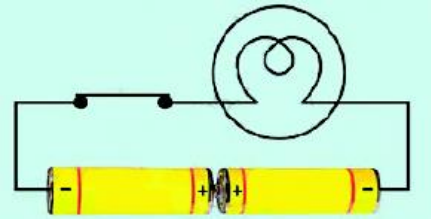


3. The following figure shows four cells fixed on a board. Draw lines to indicate how you will connect their terminals with wires to make a battery of four cells.

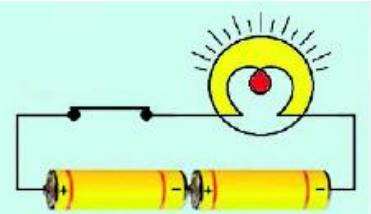
A. To obtain a maximum voltage, cells are connected in series i.e negative (–) end of one cell is connected to positive (+) end of another cell so on.



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 bulb glow.



A. In the given circuit electric cells are not connected properly. The positive terminal of one cell is connected to positive terminal of second cell, so the circuit is open. To make the circuit closed, connect the positive terminal of one cell to negative terminal of second cell. Now the bulb will glow.



5. Name any two effects of electric curent ?

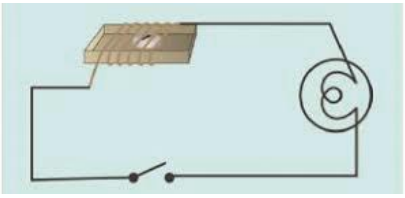
A. **Heating effect of current:** When an electric current passes through a wire, the wire gets heated up this is known as heating effect of current. It is used in many appliances like electric heater, electric iron box, light bulb etc.

Magnetic effect of current: When an electric current pass through a wire it behaves like a magnet. This effect is called magnetic effect of current. If the current carrying wire is wrapped around an iron piece acts as an electro magnet. Magnetic effect of electric current has many appliances like power lift, electric bell, electric fan etc.

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

A. The current carrying wire produces magnetic field around it. It causes deflection of 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.

7. Will the compass needle show deflection when the switch in the circuit shown in figure is closed?



A. No the compass needle should not show any deflection even though the switch is closed, because in the given circuit there is no source of electric current. The source of electric current like cell (or) battery is necessary to pass electric current through circuit. If electric current is pass through wire around the compass then due to the magnetic field compass needle will deflect.

8. 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 becomes hot due to heating effect of electric current.

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

9. Make '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]

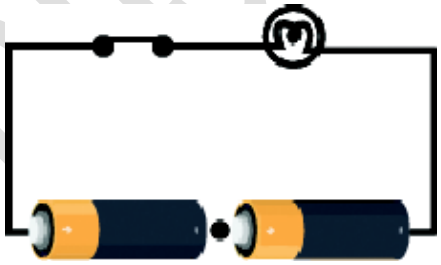
10. Do you think an electromagnet can be used for separating plastic bags from a garbage heap? explain?

A. No, electromagnet cannot be used to separate plastic bags from garbage heap because it can attract only magnetic materials like iron, steel etc., plastic is non magnetic material, so it is not attracted by electro- magnet.

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?

A. No, A fuse is a safety device which prevents damages to electrical circuit and possible fires. They are made of special material which melt quickly and break when large electric currents are passed through them. If the electrician uses any ordinary electric wire as fuse, it increases the risk of overheating of wires due to the flow of excessive current. It may lead to short circuit in electric equipment's and these appliances may catch fire. So it is advised to use standard fuse wire of MCBs carrying ISI mark.

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 circuit.



A. Following can be possible reasons

1) The bulb may be fused due to broken element (or) filament

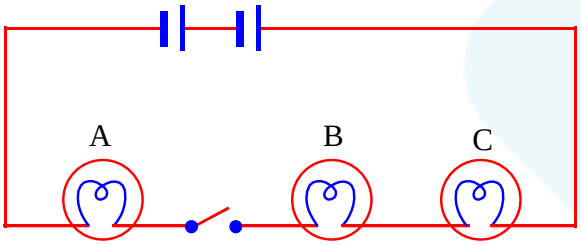
2) Cells are not connected properly i.e + ve terminal of first cell should be connected to – ve terminal

3) There may be loose connections i.e., wire is not connected properly to switch or to the bulb

4) The switch is not functioning well

5) The cells are dried up

13. In the circuit shown in figure.



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

A. i) None of the bulb will glow when the switch is in the 'OFF' position, since the electric circuit is not closed

ii) When the switch is moved to "ON" position, circuit is complete and electric current will flow immediately. All of the bulbs will glow instantly.