11. Electric Current

Exercises

1 A. Question

Answer the following questions.

Why is the direction of the current in an electric motor reversed after every half round?

Answer

The direction of the current in an electric motor is reversed after every half round in order to keep it working. Otherwise when North pole of the Magnet comes near the South pole there will be attraction between them and the coil will stop rotating due to which electric motor will not work. Therefore, the commutator helps to change the direction of the coil after every half round.

1 B. Question

Answer the following questions.

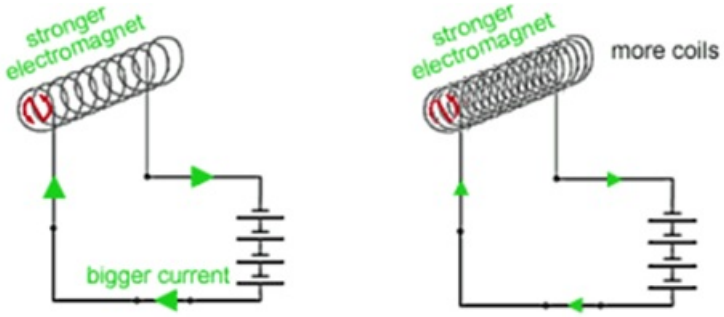
How can the strength of an electro-magnet be increased?

Answer

The strength of electro-magnet can be increased by

1.) Increasing the number of turns in the coil: More number of turns will create a strong magnetic field which in turn will increase the strength of the electro-magnet.

2.) Passing strong current: Increasing the strength of the current helps the create the strong magnetic field.



1 C. Question

Answer the following questions.

What is the principle of the electric motor?

Answer

The electric motor is a device which converts electrical energy into the mechanical energy. It works on the principle that when a rectangular coil is placed in a magnetic field and the current is passed through it, the force acts on a coil (Electromagnetic force) which rotates the coil. Due to the rotation of the coil the shaft associated with the coil also rotates which converts the past electrical energy (electric current) into the mechanical energy(rotation).

1 D. Question

Answer the following questions.

Why is there a key in an electrical circuit?

Answer

The key is there in an electrical circuit due to close or open the circuit. When the key is closed the circuit is completed and current flows through the connecting wires. When the key is open the circuit is not completed and the current does not flow through the connecting wires.

If a circuit is connected without a key, there will be a continuous flow of current and the cell may be discharged soon.

1 E. Question

Answer the following questions.

Is the mechanism of a shirt button like that of the key in an electric circuit ?

Answer

Yes, the mechanism of the shirt button is like that of the key in an electric circuit. The key helps in connecting the conducting wires in the circuit like the shirt button which helps in connecting the two strips of cloth of the shirt.

2 A. Question

Give scientific reasons.

The copper wire used in an electro-magnet is insulated.

Answer

The copper wire used in an electromagnet is insulated with an insulator like plastic in order to prevent the current from passing between the wire turns. If wire is not insulated than electricity will run across the wire turns and will not make loop after loop thus magnetic field will not be created.

If there is no insulation than too much current will be drawn due to less resistance to the flow of electricity.

2 B. Question

Give scientific reasons.

In an electric bell, the electric current stops again and again.

Answer

On pressing the switch the circuit gets completed and the electric current flows through the coil which makes core an electro-magnet. It attracts the flexible iron strip which hits the gong and produces sound. But in this position the contact of the strip with the screw breaks and the current stops flowing. So flexible strip moves back and makes contact with the screw. This causes the current to flow again and iron strip again hits the gong.

Thus, due to this make and break arrangement the current stops again and again.

2 C. Question

Give scientific reasons.

Electrical switches are made of plastic.

Answer

Electrical switches are made of plastic because plastic is an insulator which does not allow current to pass through it. Hence on pressing the switch we will not get the electric shock.

3. Question

Match the following.

Column A	Column B
(a) Carbon, zinc	1. Armature
(b) Copper, Zinc	2. Insulator
(c) Electric motor	3. Dry cell
(d) Protection from the electric current	4. Simple cell

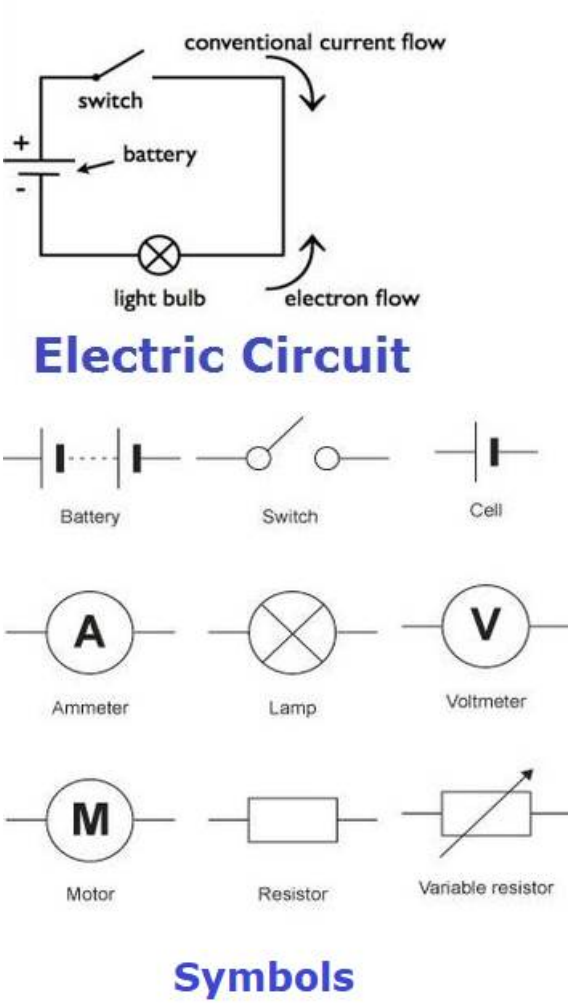
Answer

Column A	Column B	Explanation
(a) Carbon, zinc	3. Dry cell	The dry cell is made up of Zinc which acts as negative pole of cell and Carbon which acts as positive pole of the cell.
(b) Copper, Zinc	4. Simple cell	The Simple cell consists of Zinc(Zn) plate which acts as negative pole and Copper(Cu) plate which acts as positive pole of the cell. These plates are made to stand some distance apart in the glass trough consisting of Dilute sulphuric acid
(c) Electric motor	1. Armature	Electric motor consists of Armature which is set in motion by sending an electric current through it.
(d) Protection from the electric current	2. Insulator	The insulators like plastic, wood etc. does not allow electricity to pass from them hence they protect us from getting the electric shock.

4. Question

Draw a circuit diagram using the symbols for an electric cell, key, electric bulb and conducting wires.

Answer



Activities

1. Question

Find out how the tube lights on a vendor's cart work.

Answer

The Tube lights on a vendor cart works through the battery. There are a small batteries placed in a cart which gives the power to the Tube light and supply the electricity energy through the wires.The electricity supply results in the lighting up of the Tubelights. The batteries used in the vendor cart are mostly small because the need of electricity in them is usually small.