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Class 6th

CHAPTER 9

ELECTRICITY AND CIRCUITS

ELECTRICITY

We use electricity for many purposes to make our tasks easier. Electricity has become a part of our life so much so that without it our life becomes miserable.

Electricity makes it possible to light our homes, roads, offices, markets and factories even after sunset. This helps us to continue working at night. A power station provides us with electricity. However, the supply of electricity may fail or it may not be available at some places. In such situations, a torch is sometimes used for providing light. A torch has a bulb that lights up when it is switched on.

Life Link

You might have noticed that the handles on the screw-driver, pliers (plaas), a cable-cutter and the tools used for electrical operations by the electricians are covered with a covering (coating) of plastic or any other insulator. This is for the safety purpose.

1. Electricians generally wear rubber gloves while undertaking electrical repairs on line.

2. All electrical fixtures have two parts: (a) the parts which are to carry electric current are made from a metal, and (b) all coverings on electrical gadgets or cables which are to

come in contact with human or animal body are made from insulators.

Que: Explain why the danger sign displayed on poles, electric substations and many other places.

Ans

It is to warn people that electricity can be dangerous if not handled properly. Carelessness in handling electricity and electric devices can cause severe injuries and sometimes even death. Hence, you should never attempt to experiment with the electric wires and sockets. Also remember that the electricity generated by portable generators is equally dangerous. Use only electric cells for all activities related to electricity.

ELECTRIC CELL

Electricity to the bulb in a torch is provided by the electric cell. Electric cells are also used in alarm clocks, wristwatches, transistor radios, cameras and many other devices. Electric Cell has a small metal cap on one side and a metal disc on the other side A positive (+) sign and a negative (–) sign marked on the electric cell. A metal cap is the positive terminal of the electric cell. The metal disc is the negative terminal. All electric cells have two terminals; a positive terminal and a negative terminal.

An electric cell produces electricity from the chemicals stored inside it. When the chemicals in the electric cell are used up, the electric cell stops producing electricity. The electric cell then has to be replaced with a new one.

ELECTRIC CIRCUIT

While connecting one terminal of the electric cell to the other terminal through wires passing to and from the electric bulb. Such an arrangement is an electric circuit. The electric circuit provides a complete path for electricity to pass (current to flow) between the two terminals of the electric cell. The bulb glows only when current flows through the circuit.

In an electric circuit, the direction of current is taken to be from the positive to the negative terminal of the electric cell. When the terminals of the bulb are connected with that of the electric cell by wires, the current passes through the filament of the bulb. This makes the bulb glow.

Sometimes an electric bulb does not glow even if it is connected to the cell. This may happen if the bulb has fused.

An electric bulb may fuse due to many reasons. One reason for a bulb to fuse is a break in its filament. A break in the filament of an electric bulb means a break in the path of the current between the terminals of the electric cell. Therefore, a fused bulb does not light up as no current passes through its filament.

ELECTRIC SWITCH

We had an arrangement for switching on or off in our home. This was a simple switch. Switch turns ‘on’ or ‘off’ electricity in the circuit.

BULB

Bulb converts electricity into light. The thin wire that gives off light is called the filament of the bulb. The filament is fixed to two thicker wires, which also provide support to it. One of these thick wires is connected to the metal case at the base of the bulb. The other thick wire is connected to the metal tip at the centre of the base. The base of the bulb and the metal tip of the base are the two terminals of the bulb.

WIRES

Wires connect the cell, bulb and switch. Wire is a Conducting path through which current flows.

ELECTRIC CONDUCTORS AND INSULATORS

Materials which allow electric current to pass through them are conductors of electricity.
Insulators do not allow electric current to pass through them.

Conductors and insulators are equally important for us. Switches, electrical plugs and sockets are made of conductors. On the other hand, rubber and plastics are used

for covering electrical wires, plug tops, switches and other parts of electrical appliances, which people might touch.