

PARAGON CONVENT SCHOOL

SECTOR : 24 B, CHANDIGARH

LESSON - 13

ELECTRICITY AND CIRCUITS

Summary:

- Most of the devices we use in our daily life require electricity to work.
- Most of the electricity provided to us is produced from water or coal.
- Small amount of electric current can be generated by an electric cell.
- An electric cell is a device in which current is generated from chemical substances.
- The most common cell that we use is the dry cell. Every electric cell has a positive and a negative terminal.
- A battery is a combination of more than one cell to generate more current.
- An electric cell that can be used only once is called a primary cell.
- An electric cell that can be used repeatedly by charging, it is called a secondary cell.
- A bulb contains a tungsten filament supported by two thick wires which are connected to the terminals of the bulb.
- A circuit is a closed path through which current can pass. It is made by connecting an electric cell and a device that runs on the current.
- Current in a circuit flows from the positive terminal to the negative terminal.
- The flow of current can be controlled by an electric switch which can close or open a circuit.
- A substance that allows electric current to pass through it is called a conductor.
- A substance that does not allow the current to pass through, it is called an insulator.

Multiple Choice Questions (Page No. 150)

1. (a) 2. (d) 3. (c) 4. (b) 5. (d)

Multiple Choice Questions (Page No. 162)

1. (b) 2. (c) 3. (c) 4. (c) 5. (a)

SECTION A

Oral Questions

Q1.- Name any five appliances used at home that work with electricity.

Ans.- Microwave oven, refrigerator, television, washing machine, computer geysers / juicer / grinder / air conditioners / electric fans / bulbs.

Q2.- What are insulators? Give two examples.

Ans.- The materials that do not allow electric current to pass through them are called insulators. Wood, glass, rubber and plastic are examples of insulators.

Q3.- How does a bulb get fused?

Ans.- If the filament is broken, the bulb is said to be fused and it no longer glows as there is a break in the path of the electric current.

Q4.- Why should we wear rubber soled shoes or chappals while operating electrical appliances?

Ans.- We should wear rubber-soled shoes or chappals while operating the electrical appliances because rubber is a good insulator and protect us from electric shocks.

Science Quiz

Q1.- What is the source of electricity in an electric torch?

Ans.- Electrical cells

Q2.- Name the device used for completing and breaking the circuit.

Ans.- An electric switch

Q3.- Does the current flow in the circuit, if the key is closed?

Ans.- Yes, the current flows, if the key is closed.

Q4.- Name a non-metal which is a good conductor of electricity.

Ans.- Graphite

Tick (√) the correct options.

1. (a) 2. (c) 3. (b) 4. (d) 5. (a)

State whether the following statements are true (T) or false (F)

1. True 2. False 3. True

Fill in the blanks

1. An electric cell 2. current 3. two

4. a fused 5. tungsten

SECTION B

Multiple Choice Questions

1 (c) 2. (b) 3. (b)

Very Short Answer Questions

Q1.- Name any two gadgets that use electric cell for their working.

Ans.- Watch and calculator / transistors / remotes / toys / clocks / cameras / video games.

Q2.- What is an electric circuit?

Ans.- The path along which an electric current can flow is called an electric circuit.

Q3.- In which direction does the electric current flow?

Ans.- Electric current flows from the positive terminal towards the negative terminal of a cell.

Short Answer Questions

Q1- Why should we not operate electrical switches with wet hands?

Ans.- We should not operate electrical switches with wet hands because water is a good conductor of electricity. If a person operates an electric switch with wet hands, he/she can get electric shock because water present on the wet hand can conduct some electricity from the switch into his/her body.

Q2.- What is meant by an open circuit?

Ans.- The circuit in which the path from one terminal of cell to another terminal of cell is incomplete and electric current does not flow through the circuit, as a result the bulb cannot glow, is called an incomplete or open circuit.

Q3.- Define insulators.

Ans.- The materials that do not allow electric current to pass through them are called insulators. Eg. Rubber, plastic, wood and glass are the examples of insulators.

Q4.- Sahil's hands are wet, but still he goes to switch on the fan. Monika immediately stops him from doing so.

A) Why does Monika stop Sahil?

B) What value do you learn from Monika?

Ans.- a) Monika stops Sahil because it is not safe to touch an electric switch with wet hands, he may get an electric shock.

(b) From Monika we learn to care for others

Q5.- What happens when the switch is in the a) 'on' position b) 'off' position?

Ans.- a) When the switch is in the 'ON' position, the circuit is complete or closed and current will flow through it.

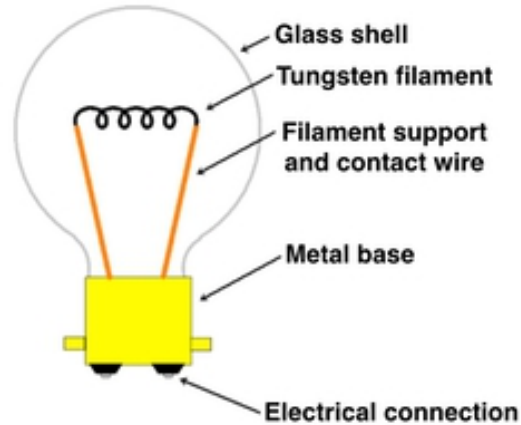
(b) When the switch is in 'OFF' position the circuit is incomplete or open and current will not flow through it.

Long Answer Questions

Q1.- Draw a labelled diagram of an electric bulb. Explain its parts.

Ans.-

An Electric bulb



A bulb consists of a tiny thin wire called a filament. The filament is made up of tungsten and is fixed to two thick wires that 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 metal tip at the centre of the base and the metal casing at its lower end acts as terminals of the bulb. These two terminals of bulb are fixed in such a way that they do not touch each other. When electric current is passed through the filament, the bulb glows.

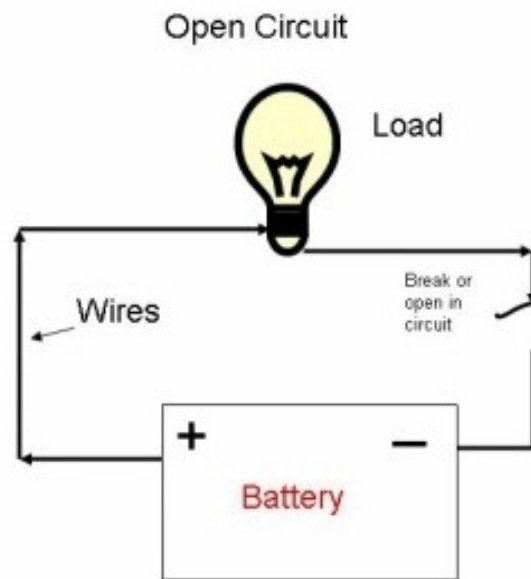
Q2.- Differentiate between conductors and insulators. Give one example of each.

Ans.-

<u>CONDUCTORS</u>	<u>INSULATORS</u>
1. The materials that allow electric current to pass through them are called conductors (of electricity).	1. The materials which do not allow electric current to pass through them are called insulators.
2. All the metals are good conductors of electricity.	2. Plastic, wood, glass and rubber are all insulators.

Q3.- How does electricity flow in a circuit? Draw an open circuit.

Ans.- An electric circuit is a path along which electricity can flow. Electric current flows when one or more electric cells are connected to other components such as a bulb by electric wires in an unbroken closed loop. Such an unbroken loop is called electric circuit. Thus, the electric circuit provides a complete path for electricity to pass between the two terminals of an electric cell. In an electric circuit, the direction of flow of electricity is taken to be from the positive terminal of the cell to the negative terminal of the cell. A simple device that is used to open or close an electric circuit is called an electric switch. When the key is closed, the electric circuit is complete and the current is allowed to flow through the circuit. The appliance which is the part of circuit, works. When the key is open, circuit is incomplete no current flows and the appliance does not work.



Q4.- a) Name the source of electricity in a torch.

b) Draw a labelled diagram of its inner view.

Ans.- (a) In the torch, two or three cells are placed in series (it means the positive end of one cell touches the negative end of other cell). These cells are the source of electric current.

b)

Inside view of an Electric torch

