Class 7 Ch – 13 - Electric Current and its effects

Very Short Answer Type Questions

Q.1 Two or more cells joined together. Ans: **Battery**

Q.2 Thin wire that glows in an incandescent light bulb Ans: **Filament**

Q.3 A device that limits the amount of current flowing in a circuit. Ans: **Fuse**

Q.4 A long wire that has been wound many times into a tightly packed coil. Ans: **Solenoid or Coil**

Q.5 The part of an electric bell that is attracted to the electromagnet, when switched on.

Ans: **Armature or Soft iron strip**

Short Answer Type Questions

1. Name any four components of an electric circuit with their symbols:

a) Cell: −||+

b) Wire: –

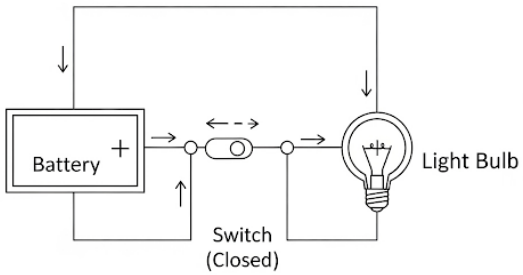
c) Switch (open): −∘/∘−

d) Bulb: ⊙

Q.2 Draw a circuit diagram where an electric current will flow. Add a component that will help open and close the circuit and label it.

Ans: An electric circuit where current flows requires a **closed loop**. The diagram below shows a simple circuit with a power source (battery), a consuming device (bulb), and a **switch** to open and close the circuit. To ensure the current flows, the switch must be in the **closed** or **ON** position. When the switch is open, the flow of electricity is interrupted.

Diagram of a Closed Circuit



Q.3 Explain 'heating effect of electric current':

Ans: The heating effect of electric current is when a wire or any conductor gets hot as electricity passes through it. This happens because the tiny particles that carry electricity (electrons) bump into the atoms of the wire. These collisions make the atoms vibrate faster, which produces heat.

This effect is used in many things you use every day, like:

Electric Fuses: A fuse contains a wire that melts and breaks the circuit if too much electricity flows through it. This protects your appliances from damage. Discover more **Electric Heaters and Toasters:** These have a special wire inside that gets very hot when electricity flows through it, which is used to heat air or toast bread.

Electric Bulbs: The very thin wire inside a light bulb, called the filament, gets so hot that it glows and produces light.

Q.4 What is 'magnetic effect of electric current'?

Ans: The **magnetic effect of electric current** is the phenomenon where a **magnetic field** is produced around a wire or a conductor when an electric current flows through it.
This effect was discovered in 1820 by a Danish scientist named **Hans Christian Oersted**. He observed that a compass needle would deflect (move) when it was placed near a wire carrying an electric current. This showed a direct connection between electricity and magnetism.
eg, **Loudspeakers:** They use electromagnets to create sound vibrations.

Q.5 What is the purpose of an electromagnet in an electric bell?

Ans: It attracts and releases a soft iron strip (armature) repeatedly. When the circuit is closed, it magnetizes and pulls the hammer to strike the gong, then demagnetizes when the circuit opens. This cycle produces continuous ringing.

Class 7 Ch – 13 - Electric Current and its effects

Long Answer Type Question

Q.1 Draw two electric circuits showing two situations when current will not flow. Explain.

a) Situation 1: Open Circuit
b) Drawing: Cell, bulb, switch in 'off' position.
c) Explanation: Switch is open, creating a break. Current cannot flow; bulb does not glow.
d) Situation 2: Broken Component
e) Drawing: Cell, bulb with broken filament or cut wire.
f) Explanation: Broken component creates discontinuity. No current flows; bulb does not glow.

For diagram: refer to Fig no – 13.1 page 197

Q.2 Explain the working of an electric fuse.

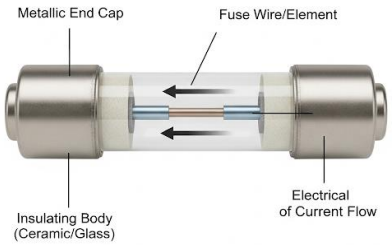
Ans: An **electric fuse** is a safety device used in electrical circuits to protect appliances and wiring from damage caused by too much electric current. It works based on the **heating effect of electric current**.

How an Electric Fuse Works

A fuse contains a short, thin wire made of a special material, usually an alloy of tin and lead. This material has two important properties:

a) High Resistance: This means it heats up quickly when a current flows through it.
b) Low Melting Point: This allows it to melt easily when it gets too hot.

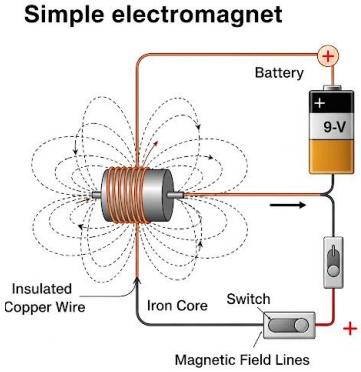
If there is a sudden **overload** (too many devices running at once) or a **short circuit** (a fault that allows a very large current to flow), the current increases dramatically. This causes the fuse wire to heat up very rapidly due to its high resistance. Because of its low melting point, the wire quickly melts and breaks the circuit. This stops the flow of electricity to the device, preventing it from being damaged or causing an electrical fire.



Q.3 Draw a rough figure of a simple electromagnet. How can we find we find out if it is magnetic or not?

Ans: A simple electromagnet consists of a soft iron core with an insulated copper wire wrapped around it, and the ends of the wire are connected to a power source, like a cell.

To check if the electromagnet is magnetic, you can do the following:



a) **Connect the circuit:** Ensure the wire is connected to the cell to allow current to flow.
b) **Bring a magnetic object near it:** Place a small object made of a magnetic material, such as a paper clip or a pin, near the soft iron core.

Observe: If the iron core has become magnetic, it will attract and pick up the paper clip. You can also use a compass; the needle will deflect when brought near the electromagnet.

When the power is switched off, the electromagnet will lose its magnetism, and the paper clip will fall off, proving that its magnetism is dependent on the flow of electric current.