

Very Short Answer Questions

Q.1. Which property of a conducting wire is utilised in making electric fuse?

[NCERT Exemplar]

Ans. Low melting point.

Q.2. Name the device used these days in place of electric fuses in electrical circuits.

[NCERT Exemplar]

Ans. Miniature Circuit Breaker (MCB).

Q.3. Why is a good fuse wire made of tin?

Ans. A good fuse wire is made of tin as it has a low melting point.

Q.4. Paheli does not have a night lamp in her room. She covered the bulb of her room with a towel in the night to get dim light. Has she taken the right step? Give one reason to justify your answer.

[NCERT Exemplar]

Ans. No. The towel may burn due to the heat produced by the bulb. Besides, it will also result in wastage of electric energy.

Q.5. Why are compact fluorescent lamps (CFLs) preferred over electric bulbs?

[NCERT Exemplar]

Ans. CFLs do not waste electricity as heat.

Q.6. Why is an electric fuse required in all electrical appliances?

[NCERT Exemplar]

Ans. To check the excessive flow of electric current.

Q.7. What is an electromagnet?

Ans. An electromagnet is a coil of wire wound on a soft iron core which acts as a magnet due to the magnetic field of electric current.

Q.8. What is the fuse rating in the lighting and fans circuit of a small house?

Ans. The fuse rating is the maximum current that the fuse can carry without melting.

Short Answer Questions

Q.1. What are electric fuses? Why are they important?

Ans. A fuse is a safety device in an electric circuit. It is made by inserting a short wire into an insulating material. Fuses are used so that if a fault occurs and too much current flows, the fuse wire melts before anything else is damaged.

Q.2. On what factors does the heat produced in a wire depend?

Ans. The heat produced in a wire depends on the current flowing in the wire and the resistance of the wire.

Q.3. On what factors does the strength of an electromagnet depend?

Ans. The strength of an electromagnet depends on the current passing through the coil and the number of coils around the core.

Q.4. Write four uses of electromagnets.

Ans. (a) Used in cranes in steelworks and scrapyards.

(b) Used to remove foreign bodies like iron filings from a patient's body.

(c) Used in electric bells, loudspeakers, etc.

(d) Used in modern trams and trains.

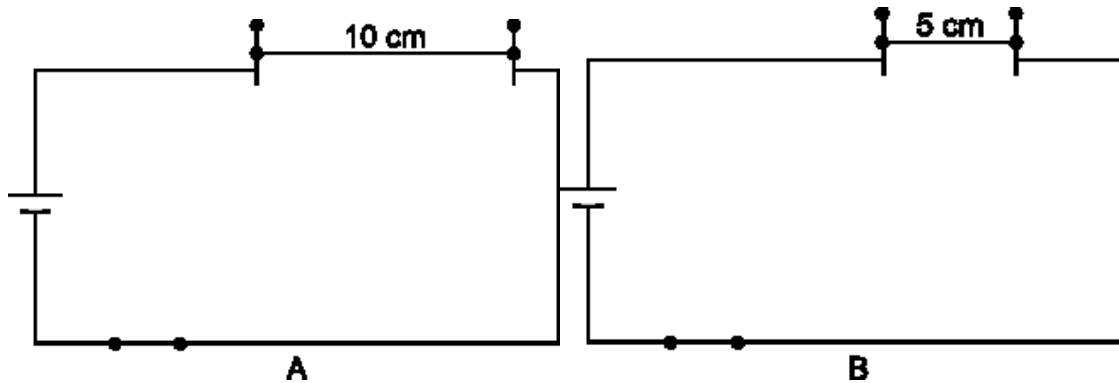
Q.5. How do short circuits occur?

Ans. Short circuits occur when the positive and negative terminals of a battery are connected by a low resistance wire, leading to the flow of large amount of current and in turn larger energy which the wire cannot carry and result in an explosion.

Long Answer Questions

Q.1. Paheli took a wire of length 10 cm. Boojho took a wire of 5 cm of the same material and thickness. Both of them connected the wires as shown in the circuit given in figure. The current flowing in both the circuits is the same.

- Will the heat produced in both the cases be equal? Explain.
- Will the heat produced be the same if the wires taken by them are of equal lengths but of different thickness? Explain.



[NCERT Exemplar]

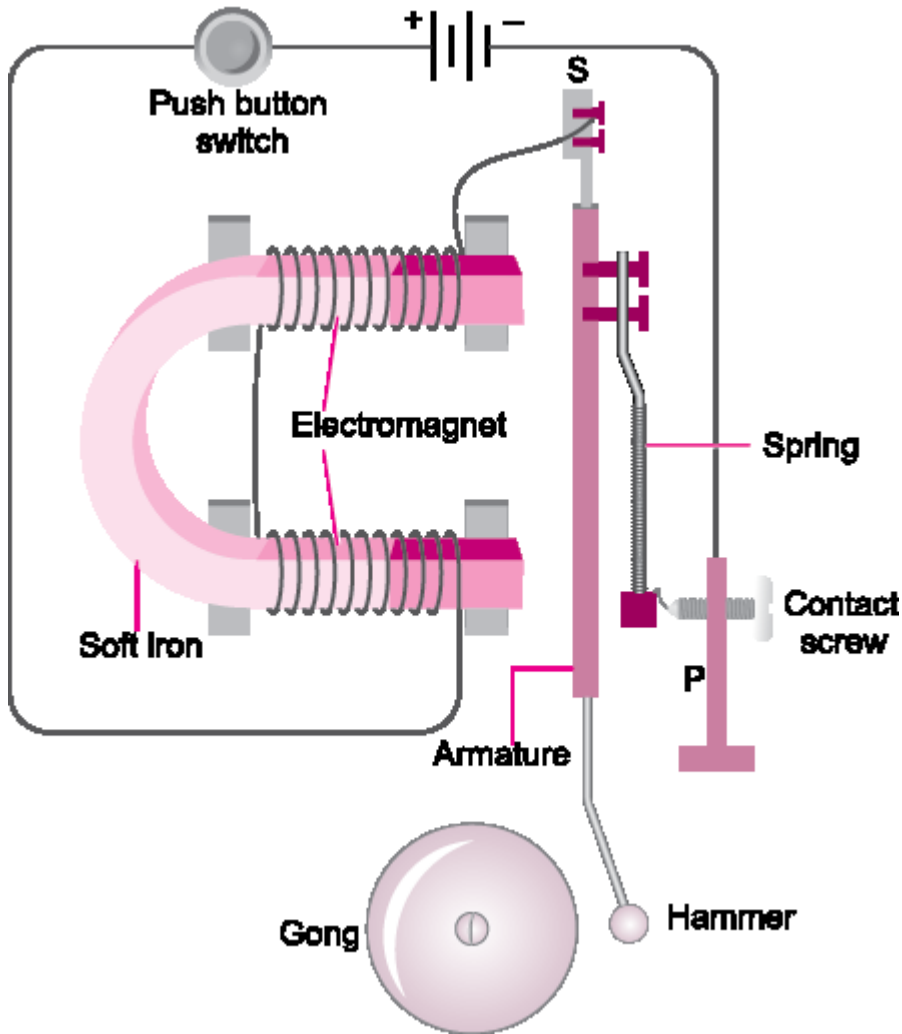
Ans. (a) No, the amount of heat produced in both the cases will not be equal. Amount of heat produced in a wire depends upon the length of the wire.

(b) No, the amount of heat produced in the wire depends upon the thickness of the wire.

Q.2. How does the magnetic effect of electric current help in the working of an electric bell? Explain with the help of a diagram.

[NCERT Exemplar]

Ans.



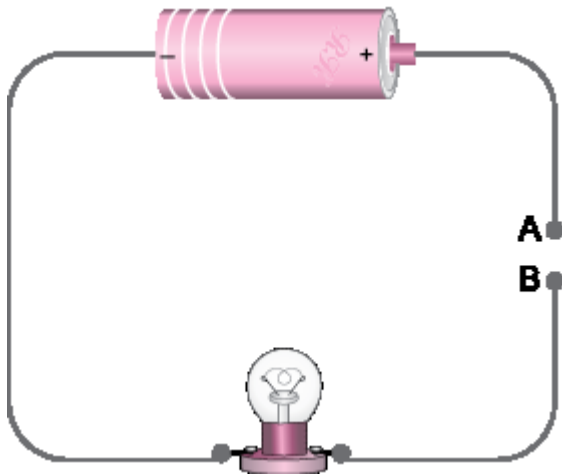
Working of an electric bell:

- When the bell is pressed, the contact screw touches the iron strip and the circuit is completed.
- The current starts flowing through the coil.
- The electromagnet becomes magnetised and the soft iron armature is attracted towards the electromagnet. The movement of the iron causes the hammer to hit the gong.
- This movement breaks the circuit at point P, so that the current stops flowing and switches off the electromagnet.
- The spring pulls the armature back to its original position, the circuit is remade and the process starts over again. This is how the bell rings.

Q.3. Describe a simple experiment to show that the bulb lights up when an electric circuit is complete and vice-versa.

Ans.

- Take a dry cell, a small torch bulb (fitted with a holder) and a copper connecting wire.
- Connect the dry cell, the bulb and the copper wire as shown below.
- Leave a gap in this connection and mark it as AB.
- Due to the gap AB the electric circuit is not complete and therefore the bulb does not glow.
- Take a pencil and fit it in the gap AB. You will find that the bulb glows as the circuit is complete.



Q.4. Distinguish between the following.

Q. Cell and Battery



Ans.

| S. No. | Cell | Battery |
|--------|---|--------------------------------------|
| (i) | A cell is a singular unit that produces electric current. | A battery is composed of many cells. |
| (ii) | A cell can be a battery. | A battery cannot be a cell. |
| (iii) | The symbol of a cell is. $\text{---} \begin{array}{c} + \\ \\ - \end{array} \text{---}$. | The symbol of a battery is . |

Q. An Open Switch and A Close Switch

Ans.

| S. No. | Cell | Battery |
|--------|---|--|
| (i) | An open switch does not allow current to pass through the circuit | A close switch allows current to pass through the circuit. |
| (ii) | The bulb does not glow when switch is open. | The bulb glows when the switch is closed. |

| | | |
|--------------|---|---|
| (iii) | It is represented as.  | It is represented as.  |
|--------------|---|---|

HOTS (Higher Order Thinking Skills)

Q.1. Why is air not filled in electric bulbs?

Ans. Air is not filled in electric bulbs because on lighting, the filament of the bulb becomes hot and this heat will result in burning in presence of air.