

## Class 7th Living science solution 2017-18

### Chapter : 17. ELECTRIC CURRENT AND ITS EFFECTS

P. 194 Oral Questions For Formative Assessment 1. No, it can be placed anywhere in the circuit. The function of the switch is to either open or close the circuit, and it has no relation with the cell.

2. air      3. low resistance, high resistance  
 4. positive, so current always flows from positive terminal to negative terminal

P. 198 Oral Questions For Formative Assessment

1. It must have a low melting point.      2. only when a current is flowing in the wire  
 3. to increase the strength of the magnet

P. 199 For Formative and Summative Assessment

- A. 1. a      2.a      3.d      4.c      5.d      6.d  
 B. 1. air      2. true      3. true      4. diagram      5. B --> A      6. false  
 7. heating effect      8. false      9. electromagnet      10. false

C. 1. The arrangement where an electric current flows in a conductor when it is connected to a source of electric current is known as an electric circuit.


2. Electric current always flows from high potential to low potential. This creates the flow of electric current in an electric circuit.

3. Every conductor does not heat up when an electric current is passed through it. The amount of heat depends on the resistance offered by the conductor and also the length and thickness of the conductor. Nichrome and tungsten are conductors normally used in heating appliances.

4. The fuse wire will melt.

5. A miniature circuit breaker is a switch that automatically stops the current in a circuit if the current in it exceeds the specified maximum limit.

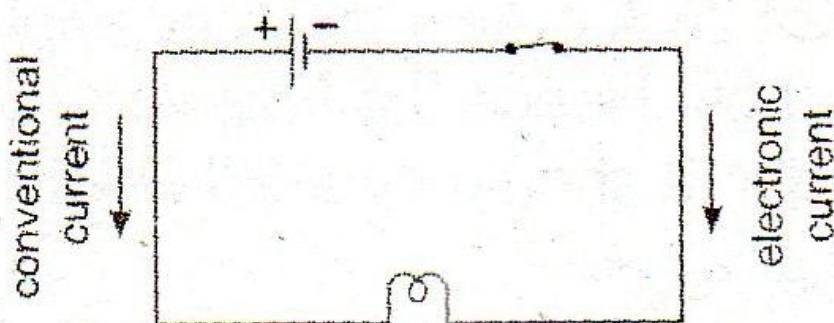
6. Symbols used in the circuit: a battery of four cells

a battery of four cells : 

a switch : 

a lamp : 

D. 1.



2. The magnetic strength of a solenoid can be increased by:

- (i) Increasing the number of turns in the solenoid
- (ii) Increasing the current in the solenoid
- (iii) Winding the solenoid around a magnetic material

3. An electromagnet is a coil of insulated wire wound around a piece of magnetic substance, such as soft iron, which acts as a magnet only as long as the current is flowing in the wire. Three uses of electromagnets are:

- (i) Used in a number of electrical appliances, such as electric bells and electric buzzers
- (ii) Used in electric motors, which find wide application in fans, washing machines, air conditioners and so on
- (iii) Used in factories and cranes for lifting heavy iron pieces

4. An electric bell consists of an electromagnet, an armature, a contact adjusting screw, a gong and a hammer. The armature consists of a soft iron rod mounted on a spring. One end of the iron rod presses against the top of the contact adjusting screw.

When the switch is pressed on, current flows in the electromagnet. It then attracts the iron rod towards itself, causing the hammer to strike the gong.

At the same time, the armature loses contact with the screw and the current is switched off. This causes the electromagnet to lose its magnetism and the armature springs back to its original position to close the circuit once again. Current flows again and the cycle repeats itself till the current is switched off.

HOTS Questions

1. An electric cell gives a very low voltage as compared to the mains. Therefore, there is no danger of high current flow in a circuit containing electric cells. Hence fuse wires and circuit breakers, which are safety devices to prevent accidents, are not required.
2. Copper wire cannot be used in electric bulbs as it will offer very little resistance to the flow of current and will therefore not get heated up.
3. The fuse wire will melt when the AC is switched on, as the normal current that the AC will draw (10 A) is greater than the rating of the fuse wire (5 A). Mohit should use a fuse wire of specification greater than 10 A, e.g. 15 A.
4. 100 A is much higher than the total maximum current of 20 A drawn when all appliances are switched on. Hence the fuse wire specification is not right. It should be a little higher than 20 A, e.g. 25 A.
5. Heating up of fans, air conditioners, refrigerators, computers etc., when current is passed through them are examples of wastage of energy.
6. If a current is passed through the coil, the freely suspended coil will deflect towards north–south direction because the current carrying coil acts as a magnet.