

CBSE NCERT Solutions for Class 8 Science Chapter 14

Back of Chapter Questions

1. Fill in the blanks.

- (a) Most liquids that conduct electricity are solutions of _____, _____ and _____.
- (b) The passage of an electric current through a solution causes _____ effects.
- (c) If you pass current through copper sulphate solution, copper gets deposited on the plate connected to the _____ terminal of the battery.
- (d) The process of depositing a layer of any desired metal on another material by means of electricity is called _____.

Solution:

- (a) **acids, bases and salts**

Solutions of acids, bases and salts conduct electricity because when dissolved in water they produce ions. These ions are the reason for the conductivity of the solution.

- (b) **chemical**

The passage of an electric current through a conducting solution causes chemical reactions. As a result, bubbles of a gas may be formed on the electrodes. Deposits of metal may be seen on electrodes. Changes of colour of solutions may occur. These are some example of the chemical effect of electricity.

- (c) **negative**

When an electrical current passes through a copper sulfate solution, the solution breaks down into copper ions charged positively and sulphate ions charged negatively. These copper ions that are positively charged are attracted to the plate connected to the negative terminal of a battery.

- (d) **electroplating**

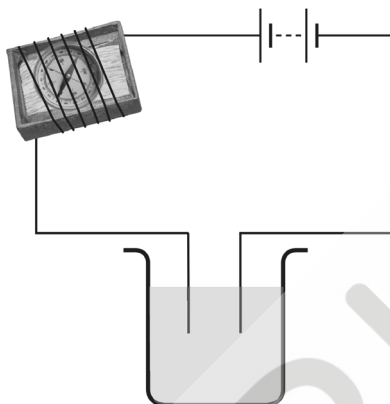
The process of depositing a layer of the desired metal on another material by means of electricity is called electroplating. Electroplating is done to prevents corrosion of metal objects.

2. When the free ends of a tester are dipped into a solution, the magnetic needle shows deflection. Can you explain the reason?

Solution:

The deflection in the needle of the compass shows the current flow through the wounded wire and thus through the circuit. The circuit is complete as the tester's free ends are dipped into a solution. This shows that the solution is a good conductor of electricity.

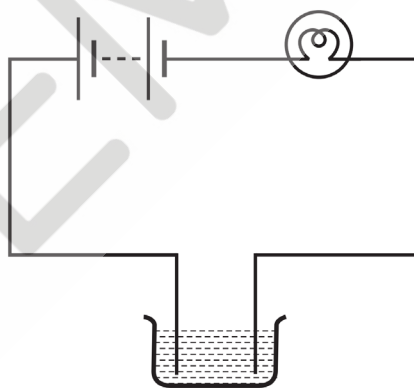
3. Name three liquids, which when tested in the manner shown in figure, may cause the magnetic needle to deflect.



Solution:

The liquids such as lemon juice, tap water and vinegar are the conductor of electricity. Hence, these liquids will cause the magnetic needle to deflect.

4. The bulb does not glow in the setup shown in figure. List the possible reasons. Explain your answer.



Solution:

The bulb does not glow may be due to the following reasons:

- (i) The liquid in the beaker may be non-conductive. In such a case, the electrical current would not be able to pass through the liquid. Therefore, the circuit will not be complete.
- (ii) The liquid's conductivity may be very low, so the current flowing through the circuit may be too weak to produce enough heat in the bulb's filament to make it glow.

- (iii) The battery may be exhausted and has insufficient energy to generate electricity.
- (iv) The bulb may be fused or the connections of wire may be loose.
5. A tester is used to check the conduction of electricity through two liquids, labelled A and B. It is found that the bulb of the tester glows brightly for liquid A while it glows very dimly for liquid B. You would conclude that
- (i) Liquid A is a better conductor than liquid B.
- (ii) Liquid B is a better conductor than liquid A.
- (iii) Both liquids are equally conducting.
- (iv) Conducting properties of liquid cannot be compared in this manner.

Solution:

- (i) Liquid A is a better conductor than liquid B.

The amount of current that flows through a conductive solution depends on the solution's conductivity. More conductivity means more current passes through the solution and vice versa. Therefore, the conductivity of liquid A is more than the conductivity of liquid B.

6. Does pure water conduct electricity? If not, what can we do to make it conducting?

Solution:

No. Pure water is not an electrical conductor. This is because there are no salts in the pure form of water that can provide electricity to the ions.

When a pinch of salt is added to pure water, it can conduct electricity as the salt solution is conductive in nature.

7. In case of a fire, before the firemen use the water hoses, they shut off the main electrical supply for the area. Explain why they do this.

Solution:

Ordinary water is a good electricity conductor because it contains salts. If the electrical supply is not cut off and firemen come into contact with wet electrical switches, electrical wires and other electrical appliances, they may be electrocuted. The electrical supply is therefore cut off to prevent firemen's electrocution.

8. A child staying in a coastal region test the drinking water and also the seawater with his tester. He finds that the compass needle deflects more in the case of seawater. Can you explain the reason?

Solution:

The water we use for drinking purposes has very less amount of salts dissolved in it compare to the sea water. Seawater usually has a very high concentration of salts in it, so it conducts a large amount of electricity. Hence, the compass needle shows more deflection in the case of seawater.

9. Is it safe for the electrician to carry out electrical repairs outdoors during heavy downpour? Explain.

Solution:

No. Repairing electrical appliances outdoors during a heavy downpour is not safe. This is because rainwater contains small amounts of salt and acids in it, making it a good electricity conductor. So, while working outdoors during rain, the electrician may get electrical shocks.

10. Paheli had heard that rain water is as good as distilled water. So, she collected some rain water in a clean glass tumbler and tested it using a tester. To her surprise, she found that the compass needle showed deflection. What could be the reasons?

Solution:

Rainwater contains salts dissolved. This makes it a good electricity conductor. There are no dissolved salts in the distilled water. Therefore, rainwater can allow electricity to pass through it while distilled water can not. This explains Paheli's observation that rainwater can allow electricity to pass through it while distilled water can not.

11. Prepare a list of objects around you that are electroplated.

Solution:

Metal pots, bath taps, ornaments, vehicle rims, cycle and motorcycle handlebars, cooking gas burner, cooking utensils bottom, door handles, tin cans are some of the electroplated objects around us.

12. The process that you saw in Activity 14.7 is used for purification of copper. A thin plate of pure copper and a thick rod of impure copper are used as electrodes. Copper from impure rod is sought to be transferred to the thin copper plate. Which electrode should be attached to the positive terminal of the battery and why?

Solution:

The impure copper must be attached to the positive terminal of the battery.

This is because it positively charged copper ions are attracted to the plate connected to the battery's negative terminal. Hence the pure copper is attached to the negative terminal. Copper ions from the solution are deposited on pure copper rod (attached to negative terminal) and copper ions from impure copper rod (attached to positive terminal) are released into the solution when an electrical current is passed in this arrangement.