Board –CBSE	Class –8th	Topic – Chemical effects of electric

1. What are conductors?

Ans. Materials that allow an electric current to flow through them are called conductors.

2. What are insulators?

Ans. Materials that do not allow an electric current to flow through them are called insulators.

3. Is distilled water a conductor of an insulator?

Ans. Distilled water is an insulator because there are no salts dissolved in it.

4. Classify the following liquids into conductors and insulators: lemon juice, distilled water, tap water, milk.

Ans. Conductors: lemon juice, tap water. Insulators: distilled water, milk

5. Define electroplating?

Ans. Electroplating is the process of depositing a layer of any desired metal on another metallic object using electricity.

6. Is air an insulator or conductor of electricity?

Ans. Air is an insulator of electricity.

7. What is LED?

Ans. LED is a light-emitting diode.

8. Name the gases formed when an electric current is passed in water containing a few drops of acid?

Ans. Hydrogen and Oxygen

9. What is CFL?

Ans. Compact Fluorescent lamps.

10. What is an electric pen?

Ans. It is a device for writing on the surface with special compounds and materials using the electrical property of ions.

EACH QUESTION 2 MARKS

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

Ans. Yes, the solution does conduct electricity. The compass needle shows deflection due to the magnetic effect of the electric current.

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

Ans. The compass needle will show deflection with tap water, lemon juice and sodium chloride solution.

3. 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 liquids A while it glows very dimly for liquids 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 liquids cannot be compared in this manner.

Ans. (i) Liquid A is a better conductor of electricity because the bulb glows more in it.

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

Ans. As pure water is free of salts and thus it is an insulator, we can add some salts or acid to it to make pure water-conducting.

5. 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.

Ans. Firefighters shut off the main electrical supply for the area because water is a good conductor of electricity, and the firemen can get electrocuted.

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

Ans. Wiremen shouldn't carry out electrical repairs during heavy downpours because water is a good conductor of electricity and shock the person.

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

Ans. The seawater contains more salts dissolved in it as compared to the tap water. So, the deflection of the compass needle is more.

8. Paheli had heard that rainwater is as good as distilled water. So they collected some rainwater 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?

Ans. The rainwater showed deflection with tester because it is not as pure as distilled water. Distilled water does not have any salts dissolved, but rain water may have some impurities.

9. Why the iron cans are electroplated with tin?

Ans. Tin is less reactive than iron. Thus, food stored in iron cans is prevented from spoiling the iron by electroplating it with tin.

10. What is the disadvantage of electroplating done in the factories?

Ans. The disposal of the used conducting solution is hazardous and can cause environmental pollution. There are specific disposal guidelines for environmental protection.

EACH QUESTION 2 MARKS

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

Ans. It cannot be said for sure that liquid does not conduct electricity because :

(a) maybe the cells are weak

(b) Maybe the current is so weak that it does not heat the bulb's filament so that it can glow.

2. How can you make a tester for testing whether a given material is a conductor or an insulator?

Ans. A tester can be made by attaching one free end of the wire to a battery terminal and another wire from the other terminal of the battery to a bulb. The two free ends of the wire are connected to the material to be tested.

3. The bulb in the tester does not glow when current is passed through it. What can be the possible reasons for this?

Ans. The possible reasons for this are :

(a) the connections may be loose

(b) the bulb may be defective.

(c) the cells may be defective

4. The liquid is a conductor, and the circuit is also complete, but the bulb does not glow. Why?

Ans. The bulb does not glow even though the circuit is complete because the current is too small. Instead, the filament of the bulb is heated due to current, and then it glows.

5. If the current in the circuit is small, how can we test its presence?

Ans. We can test the presence of the small current by using a LED instead of the bulb.

6. Give three applications of the chemical effect of current.

Ans. (a) Electroplating (b) Refining of impure metals. (c) Refining of metal is for obtaining pure metal.

7. What is the objective of electroplating?

Ans. (a) Decoration of articles by giving them a layer, e.g., silver plating on cutlery.

(b) Protection of the surface of bases metals that corrode, e.g., iron is plated with chromium.

(c) Artificial jewellery is plated with silver or gold.

8. Iron is a strong metal used for making bridges. Can we do electroplating on it to protect it from corrosion? Why?

Ans. We prefer not to do electroplating on iron used for bridges because it is very costly. Instead, the iron can be galvanised or painted.

9. Which properties of chromium make it useful for electroplating on iron? Why can we not make the whole article with chromium?

Ans. Chromium has a good shine, resists scratches and is corrosion resistant.

Unfortunately, we cannot make the whole article from it because it is a very costly metal.

ANSWER THE FOLLOWING

1. What is the basic principle of an electric pen? Explain how it can be used for writing.

Ans. The electric charge on ions is used for writing with an electric pen.

Method :

(i) Take a filter paper soaked in potassium iodide solution to which a pinch of starch is added.

(ii) Place the filter paper on a metal sheet.

(iii) Connect the negative terminal of the battery to the metal sheet.

(iv) Write on the paper with the end of the wire connected to the positive terminal.

(v) The writing appears on the paper. This happens because the when current is passed, the K+

ions are attracted to the metal sheet. The iodide ions (I–) react with starch to turn blue-black.

2. Dinesh wants to study the chemical effect of current at home. How can he do it?

Ans. Dinesh can study the chemical effect of current at home very easily. Take two pieces of copper wire and iron wire. Place them in fresh lemon fruit. Attach the free ends of the wires to a LED. LED glows showing the flow of current.

3. Give some use of LED. How should LED be connected?

Ans. (a) as indicators in electrical appliances.

(b) as a point source of light in laser beam torches.

(c) LEDs emitting white light can be used instead of bulbs.

4. What is the difference between current flowing through metals and the current flowing through liquids?

Ans. In metals, electric current is conducted by a flow of electrons. In liquids, the movement of charged particles (ions) carries current from anode to cathode terminals. Electrolytes conduct current at a slow rate than metals.