

Chapter-14: Chemical effects of electric current

Class-VIII

Ques.1 What are conductors of electricity? Give examples.

Ans. Materials which allow electric current to pass through them are called conductors. Examples are: Tap water, aluminum, copper and gold, etc.

Ques.2 What are insulators? Give examples.

Ans. The materials which do not allow electric current to pass through them are called insulators. Examples are: Wood, plastic, etc.

Ques.3 which of the following liquids conduct electricity and which do not conduct electricity?

Lemon juice, Milk, Vinegar, Salt solution, Distilled water, Honey, Sea water, Rain water.

Ans. **Conducting:** Lemon juice, Vinegar, Salt solution, Sea water, Rain water.

**Non conducting:** Honey, Milk, Distilled water.

Ques.4 which effect of electric current is utilized for detecting the flow of current through a solution: (a) When a torch bulb is used?

(b) When a magnetic compass is used?

Ans. a) Heating effect

b) Magnetic effect

Ques.5 Distilled water does not conduct electricity. What substances can be added to distilled water in small amounts to make it a good conductor of electricity?

Ans. Acid, bases and salts.

Ques.6 in case of fire, before the fire man uses the water hoses to throw water to douse fire, they shut off the electricity supply for the area. Explain why this is done?

Ans. to prevent electrocution of fireman because ordinary water is conductor of electricity.

Ques.7 When electric current is passed through acidified water, then what is produced at

(a) Positive carbon electrode (anode)

(b) Negative carbon electrode (cathode)

Ans. a) Oxygen gas

b) Hydrogen gas

Ques.8 Which effect of electric current is utilized when a thin layer of chromium metal is deposited on an iron tap? What is this process known as?

Ans. Chemical effect of current is utilized. The process is known as electroplating.

Ques.9 What is electroplating? What is the purpose of electroplating?

Ans. The process of depositing a layer of any desired metal on another material, by means of electricity is called electroplating. Electroplating is done

- a) For the protection against corrosion
- b) For decorative purposes

Ques.10 which properties of chromium metal make it suitable for electroplating it on car bumpers, bath taps and bicycle handles ,etc made of iron?

Ans. It has shiny appearance. It does not corrode easily. It resists scratches.

Ques.11 Which metal is electroplated on iron for making 'cans' used for storing food and why?

Ans. Tin metal has shiny appearance, it does not corrode and it is non poisonous. Tin is less reactive than iron. Due to tin plating over the surface of iron, the food does not come in contact with iron and is protected from getting spoilt.

Ques.12 On what factors the chemical effect produced by an electric current depends?

Ans. The chemical effect produced by an electric current depends on the nature of conducting solution through which it is passed and on the nature of electrodes used for passing the electric current.

Ques.13 In the process of purification of copper metal, a thin plate of pure copper and a thick rod of impure copper are used as electrodes and a metal salt solution is used as an electrolyte:

- (a) Which electrode is connected to the positive terminal of the battery?
- (b) Which electrode is connected to the negative terminal of the battery?
- (c) Which metal salt solution is taken as electrolyte?

Ans. a) Thick rod of pure copper

- c) Thin rod of pure copper
- d) Copper sulphate solution.

Ques.14 Write down the important points which should be remembered while electroplating?

Ans. a) The metal on which electroplating is to be done should be cathode that is the negative terminal of the battery.

b) The metal to be deposited should be anode that is the positive electrode.

c) A water soluble salt of the metal to be deposited is taken as the electrolyte.

Ques.15 What is the advantage of using LED over bulb in testing the electrical conductivity of liquids?

Ans. When electric current flows through a bulb then due to heating effect of current, the filament of the bulb gets heated up to a high temperature, it starts glowing. Now for a liquid having low electrical conductivity, the current flowing through the circuits very weak due to which the filament does not get heated sufficiently and hence the bulb does not glow. Therefore LED is used in place of bulb because LED glows even when weak electric current flows in the circuit.

Ques.16 Define:

- a) Electrode
- b) Cathode
- c) Anode

Ans. a) Electrode: A conductor through which electricity enters or leaves an object, substance or region. Electrodes are of two types: cathode and anode.

b) Cathode: The negatively charged electrode by which electrons enter an electrical device is called electrode.

c) Anode: The positively charged electrode by which the electrons leave an electrical device.

Ques.17 During electroplating the copper deposited on the plate connected to negative terminal comes from the solution. How this loss of copper from solution compensated?

Ans. From the other plate an equal amount of copper gets dissolved in the solution. Thus the loss of copper from the solution gets compensated and the process keeps going. This means that copper gets transferred from one plate to another.

Ques.18 How will you identify the positive terminal of a battery if it is hidden in a box and you can only see two of its leads.

Ans. Both the leads of the battery can be dipped into a single piece of potato for long time. After that, it can be observed that there is green coloration near one of the terminals. This is the positive terminal and the other one is the negative terminal.

Ques.19 What is the application of chemical effects of electricity in our daily life? Give examples.

Ans. Carrying chemical reactions by the effect of electricity is called chemical effect of electric current.

Examples of chemical effect:

- a) Electroplating on iron to prevent it from rusting.
- b) Electrolysis: The compound is decomposed into its constituents under the effect of electric current is called electrolysis.

Ques.20 What effect does the current produce when it flows through a conducting solution?

Ans. The passage of an electric current through a conducting solution causes chemical reactions. As a result, bubbles of gas are formed, deposits of metal on electrodes may be seen and changes of color of solution may occur, depending on what solution and electrodes are used. These are some of the chemical effects of the electric current.

Ques.21 How the magnetic effects of current can be used to detect current?

Ans. When current flows in a wire, a compass needle kept nearby gets deflected. Even if the current is small, the deflection of the magnetic needle can be seen. We can use the magnetic effect of current to make another tester. For this, take a cardboard tray from inside a discarded matchbox. Wrap an electric wire a few times around the cardboard tray. Place a small compass needle inside it. Now connect one free end of the wire to a terminal of a two cell battery. From the other terminal of the battery, connect another wire. The tester is ready.

Ques.22 Make a list of materials around you which conduct electricity and a list of those that do not.

Ans. Conductors: Things formed of metals, e.g., copper, iron and aluminum, wet things and solutions of electrolytes in water.

Insulators: wood, rubber and plastic.

Ques.23 How is electroplating used to save metals from corrosion?

Ans.The electroplating involves coating of metal over the desired metal which is to prevent from rusting. This metal coating acts as a barrier that can slow and even prevent corrosion from forming on the underlying material.