

CLASS VIII



NAME OF THE LESSON

CHEMICAL EFFECTS OF ELECTRIC CURRENT

LEARNING OBJECTIVES



STUDENTS WILL BE ABLE TO



- RECALL ABOUT CONDUCTORS & INSULATORS
- UNDERSTAND THE CAUSE OF CONDUCTIVITY IN LIQUIDS
- DEFINE & DISTINGUISH ABOUT STRONG & WEAK ELECTROLYTES
- UNDERSTAND CHEMICAL EFFECTS OF ELECTRIC CURRENT & ITS APPLICATIONS
- UNDERSTAND THE PHENOMENON OF ELECTROMAGNETIC INDUCTION.

METHODOLOGY



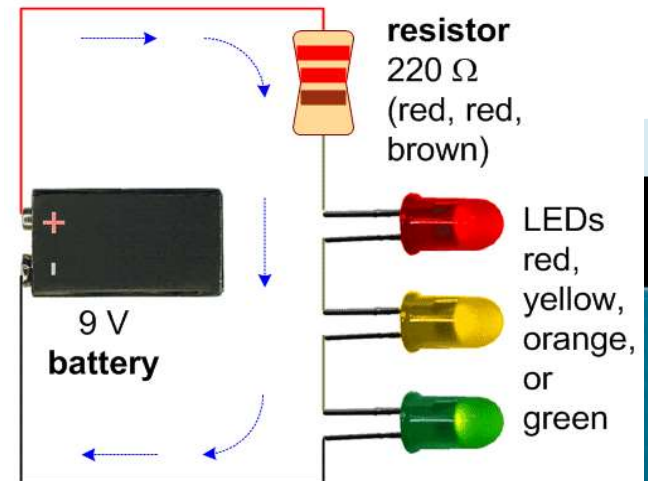
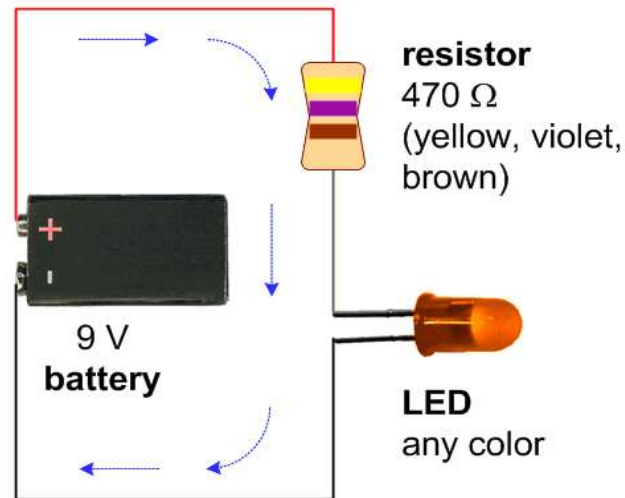
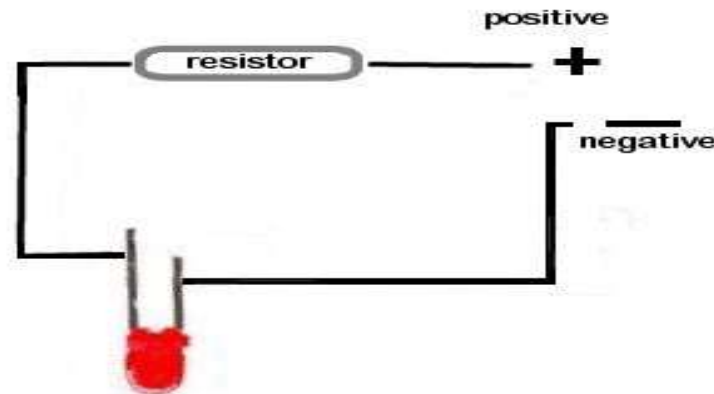
- DISCUSSION THROUGH POWERPOINT PRESENTATION
- ACTIVITY
- VIDEOS

CONTENT ANALYSIS

- Difference between conductors & insulators.
- Knowledge about weak & strong electrolyte
- Chemical effect of electric current .
- Process of electroplating & electromagnetic induction.

Conduction tester using LED :-

Sometimes the current flowing through the circuit may be too weak and the filament of the bulb may not get sufficiently heated to make it glow. Then instead of a torch bulb an LED can be used in the circuit. LED glows even when a weak current flows in the circuit.



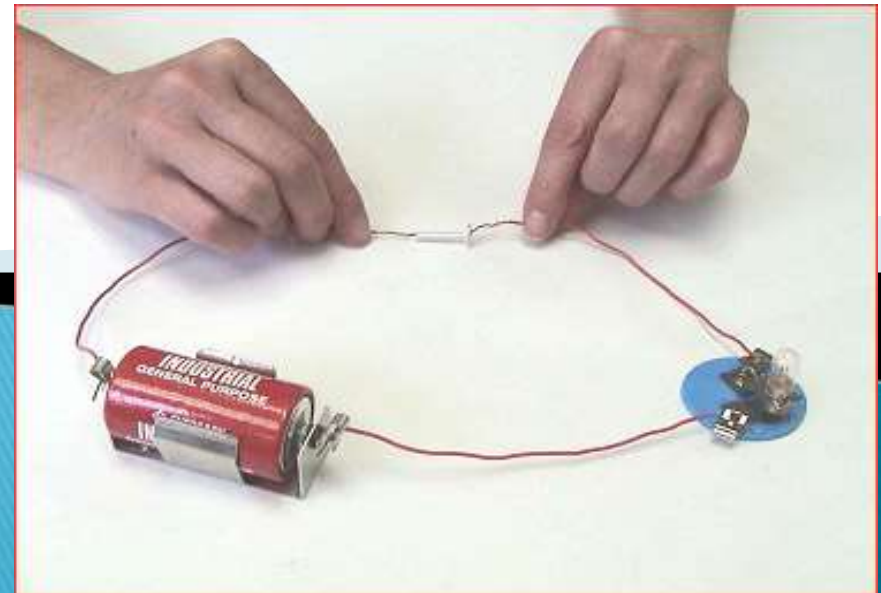
Conduction tester :-

A conduction tester is a device used to determine whether a substance is a good or poor conductor of electricity.

Conduction tester using a torch bulb :-

A simple conduction tester has an electric cell and a torch bulb. One terminal of the cell is connected to one terminal of the bulb by a wire. The other terminal of the cell and bulb have wires which can be brought in contact with materials to test whether they are good or poor conductors of electricity.

If the material is a good conductor, the bulb glows and if it is a poor conductor the bulb does not glow.



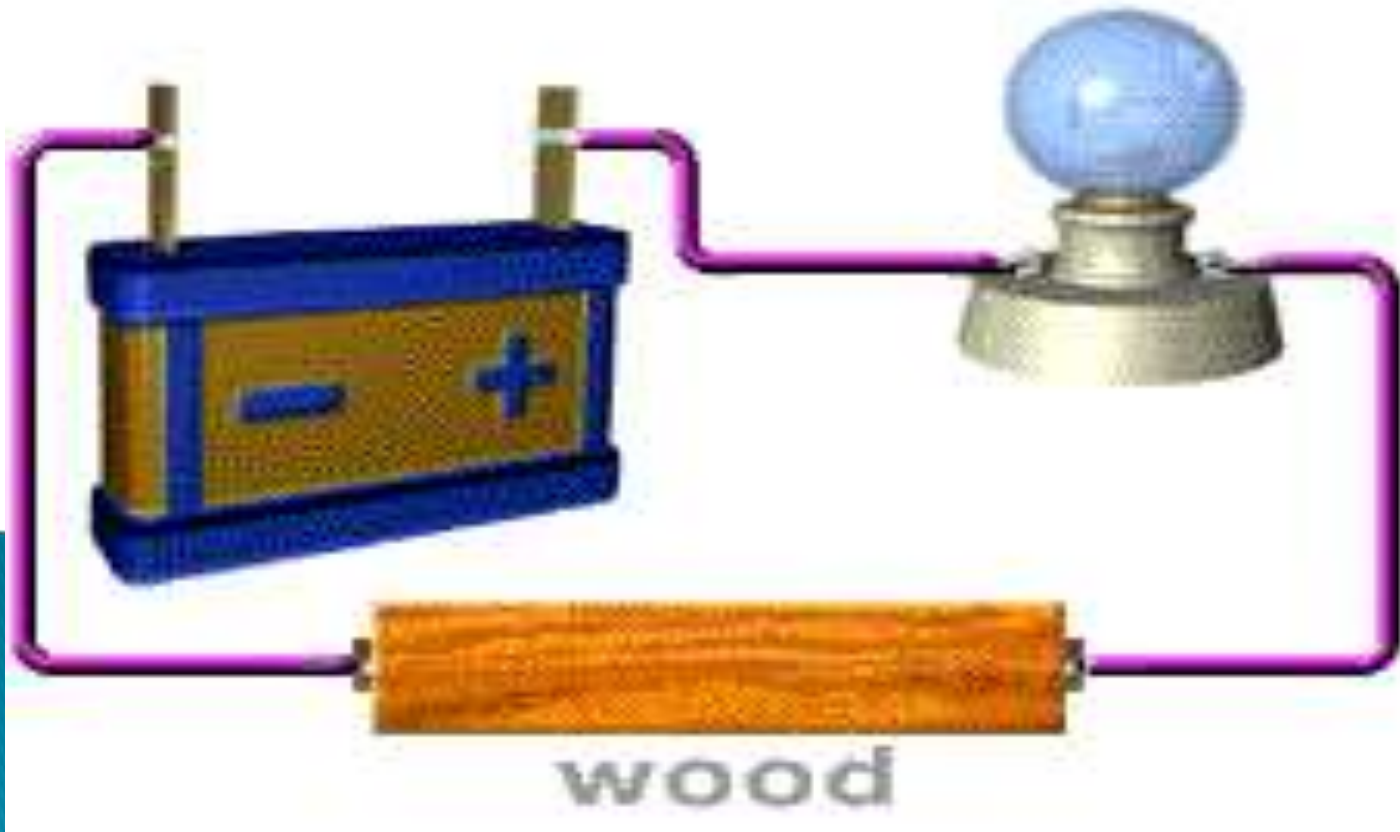
Electrical conductivity of solids :-

Some solids are good conductors of electricity.

Eg :- copper, steel, iron, aluminium etc.

Some solids are poor conductors of electricity.

Eg :- wood, plastic, rubber, glass etc.



Electrical conductivity of liquids :-

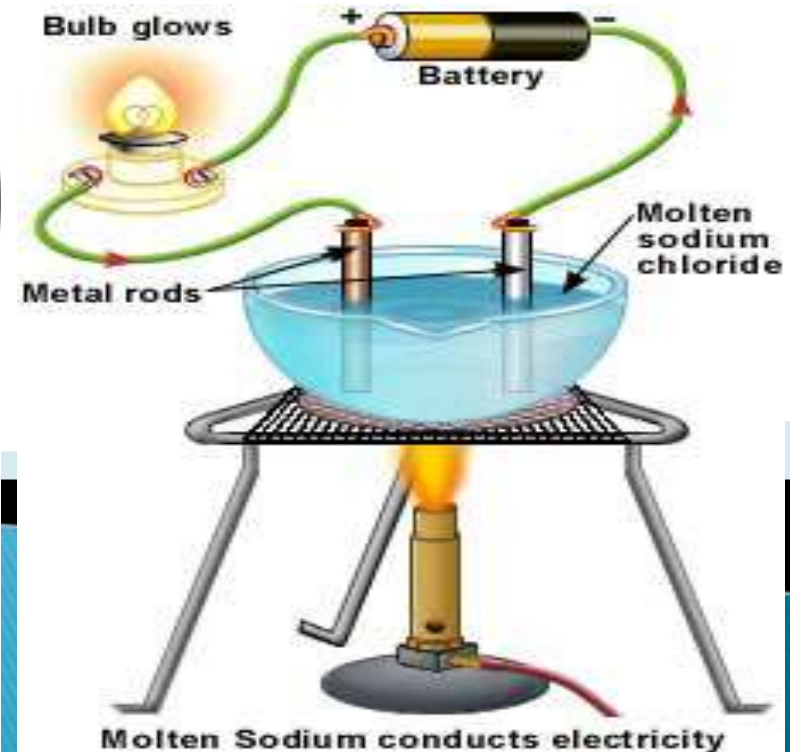
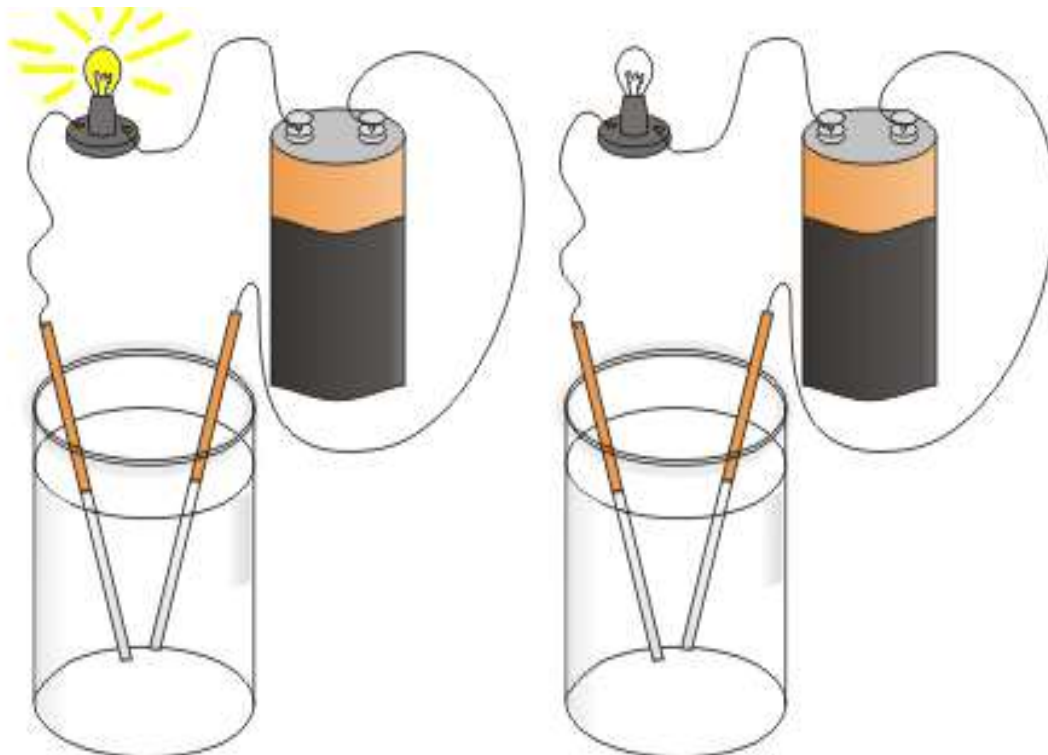
Some liquids are good conductors of electricity.

Eg :- tap water, salt solution, hydrochloric acid, sodium hydroxide etc.

(solutions of acids, bases and salts are conductors of electricity)

Some liquids are poor conductor of electricity .

Eg :- distilled water, sugar solution, kerosene, spirit etc.



WHY MOLTEN SALT CONDUCTS ELECTRICITY?

Conversion of chemical energy to electrical energy

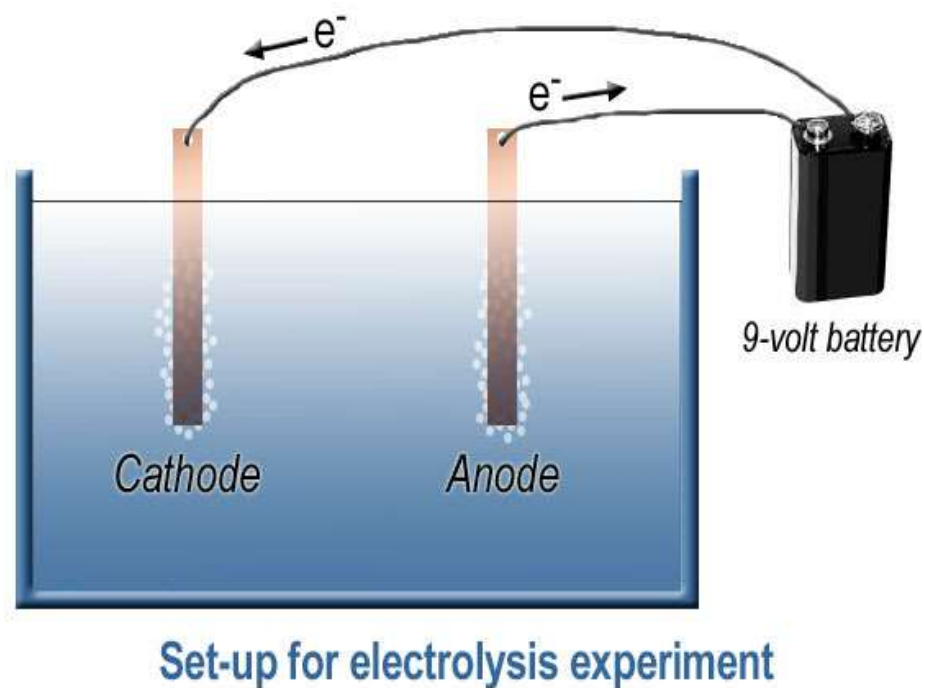
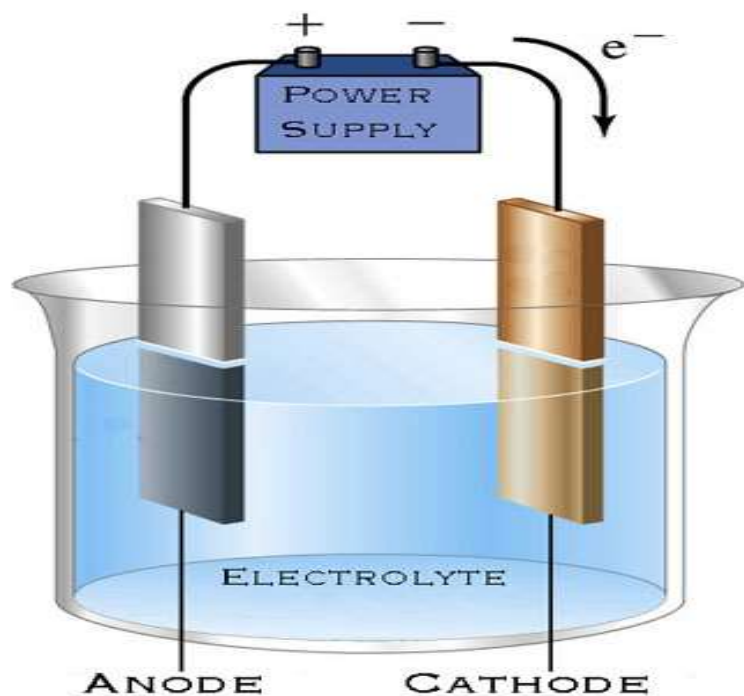
- First practical source of such conversion was given by Sir Alessandro Volta ,in 1770
- This arrangement was known as Voltaic cell.
- This consisted of two rods of Zinc& Copper dipped in solution of dilute sulphuric acid .
- Chemical reactions takes place within the system ,this helps to get electrical energy from chemical energy.

Chemical effects of electric current :-

When electric current passes through a conducting solution, it causes chemical reactions. This is called **chemical effect of electric current**.

Chemical effect of electric current may cause :-

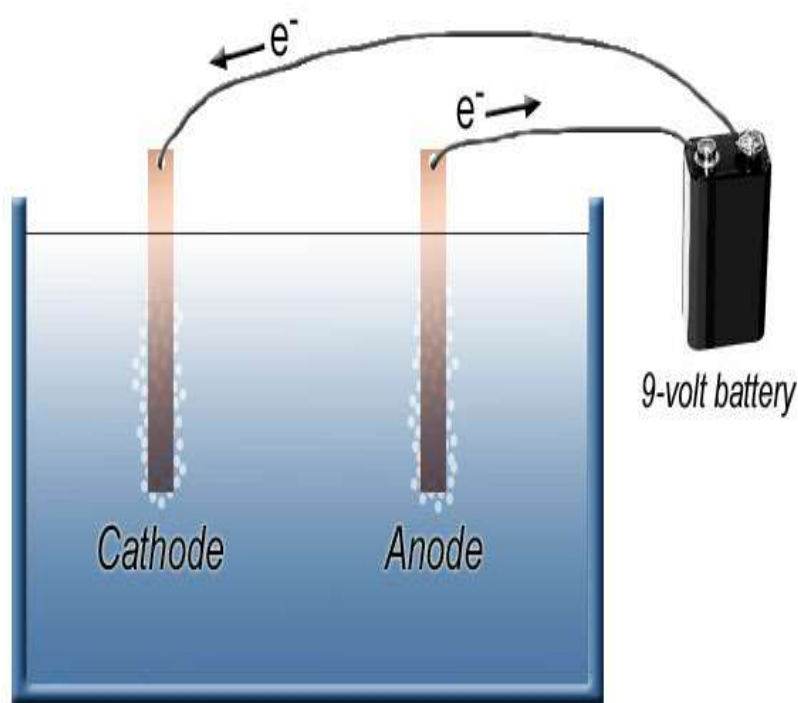
- i) Formation of gas bubbles at the electrodes.
- ii) Deposit of metal on the electrodes.
- iii) Change in colour of the solution.



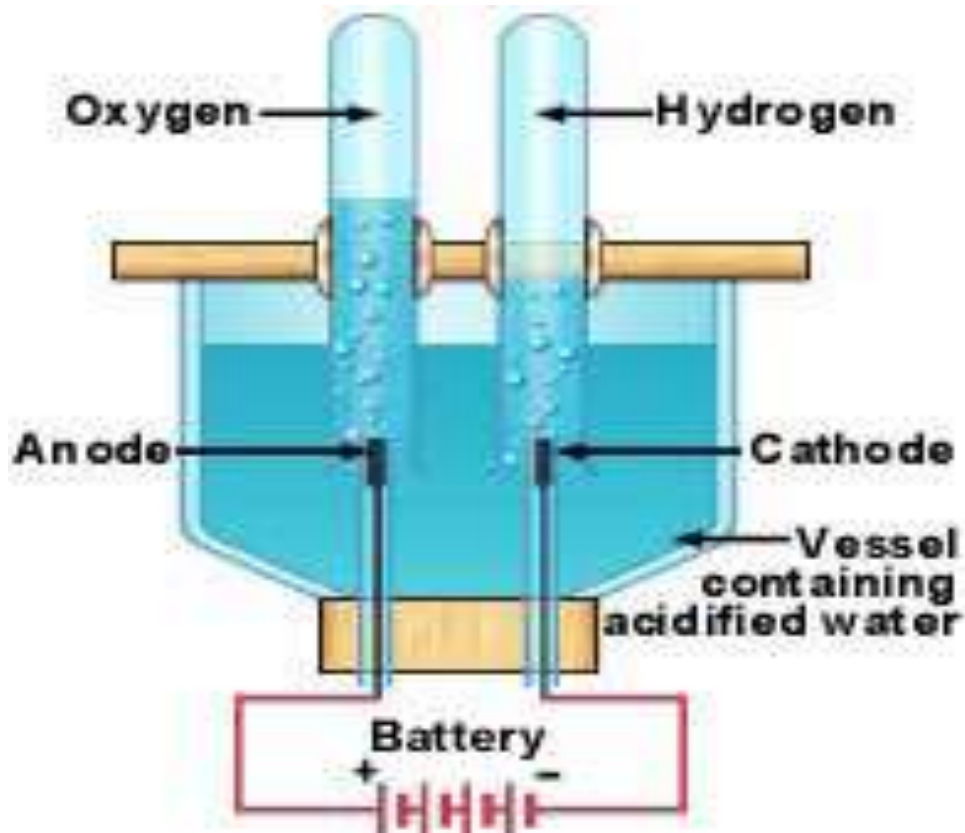
Electrolysis of water :-

When electric current is passed through water, it splits up into hydrogen and oxygen. This is called **electrolysis of water**.

When electric current is passed through water oxygen gas bubbles are produced at the electrode connected to the positive terminal of the battery and hydrogen gas bubbles are produced at the electrode connected to the negative terminal of the battery.



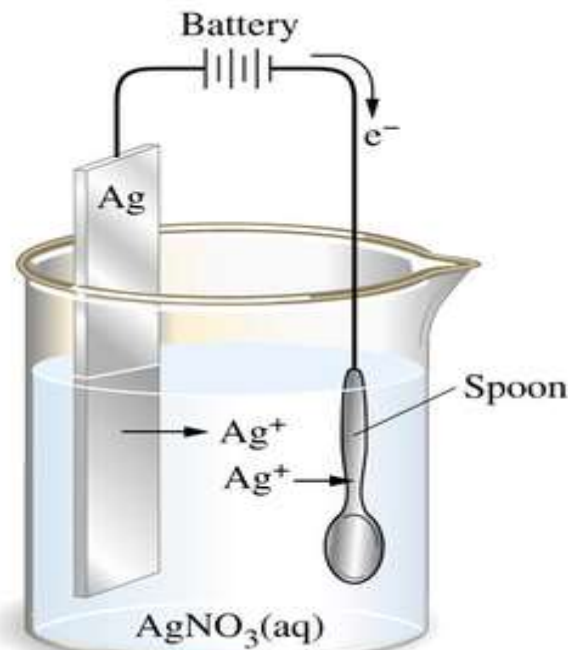
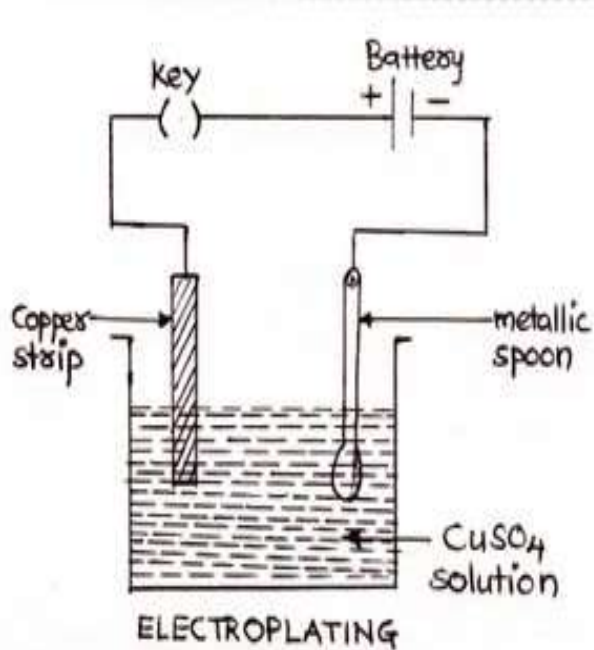
Set-up for electrolysis experiment



Electroplating :-

The process of depositing a layer of any desired metal on another material by means of electricity is called **electroplating**.

Eg:- For electroplating of copper on an object, the object is dipped in acidified copper sulphate solution and connected to the negative terminal of a battery. A copper strip is dipped in the solution and connected to the positive terminal of the battery. When electric current is passed through the solution, copper from the copper strip is deposited on the object.



Uses of electroplating :-

Electroplating is used in industry for coating metal objects with a thin layer of a desired metal.

Chromium has a shiny appearance and it does not corrode. Chromium plating is done on objects like bicycle parts, car parts, taps, gas burners, wheel rims etc.

Jewellery makers electroplate gold and silver on less expensive metals to give an appearance of gold or silver.

Tin cans used for storing food are electroplated with tin over iron because tin is less reactive than iron and protects iron from corrosion.

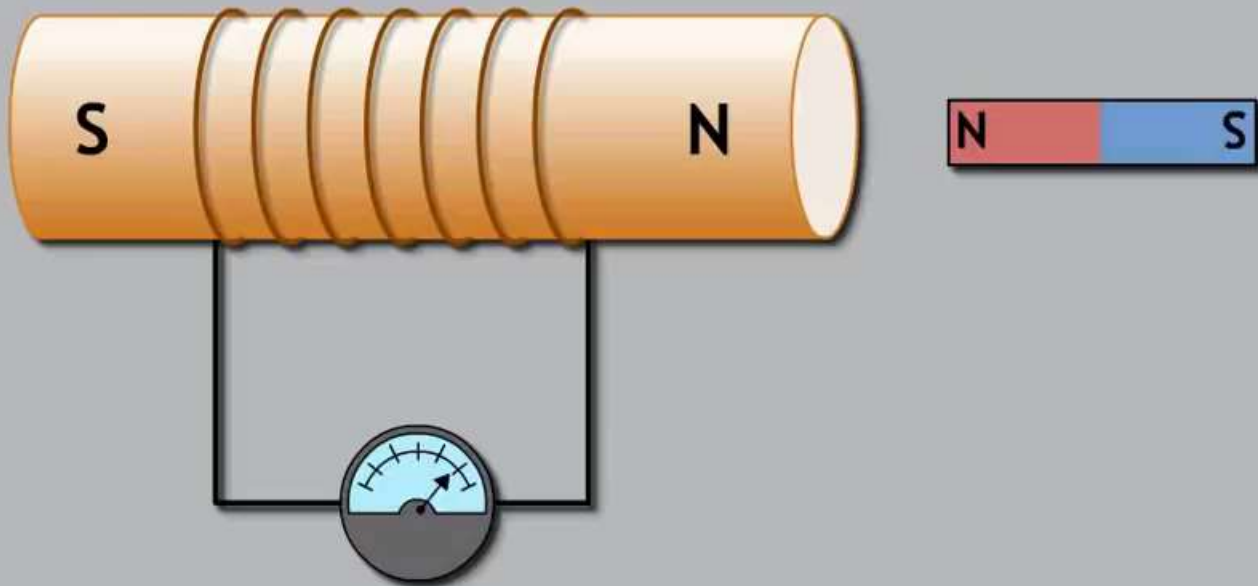
Iron objects are coated with zinc to protect it from corrosion.



ELECTROMAGNETIC INDUCTION

- Michael Faraday discovered the phenomenon of generation of electric current due to relative motion between the coil & the magnet, this phenomenon is known as Electromagnetic induction.
- The phenomena, in which electric current can be generated by a changing magnetic field is known as electro- magnetic induction.

Electromagnetic Induction






Magnetic Field video-

OBSERVATIONS-

1. Whenever there is a relative motion between a magnet and a coil, that is part of an electric circuit, a current flows through the coil.
2. The flow of current stops as soon as the magnet and the coil are at rest.
3. The faster is the relative motion, between the magnet and the coil, the more is the current that flows through the coil.



4. The direction of the current, obtained by moving the magnet away from the coil, is opposite to its direction when the magnet is moved towards the coil.

