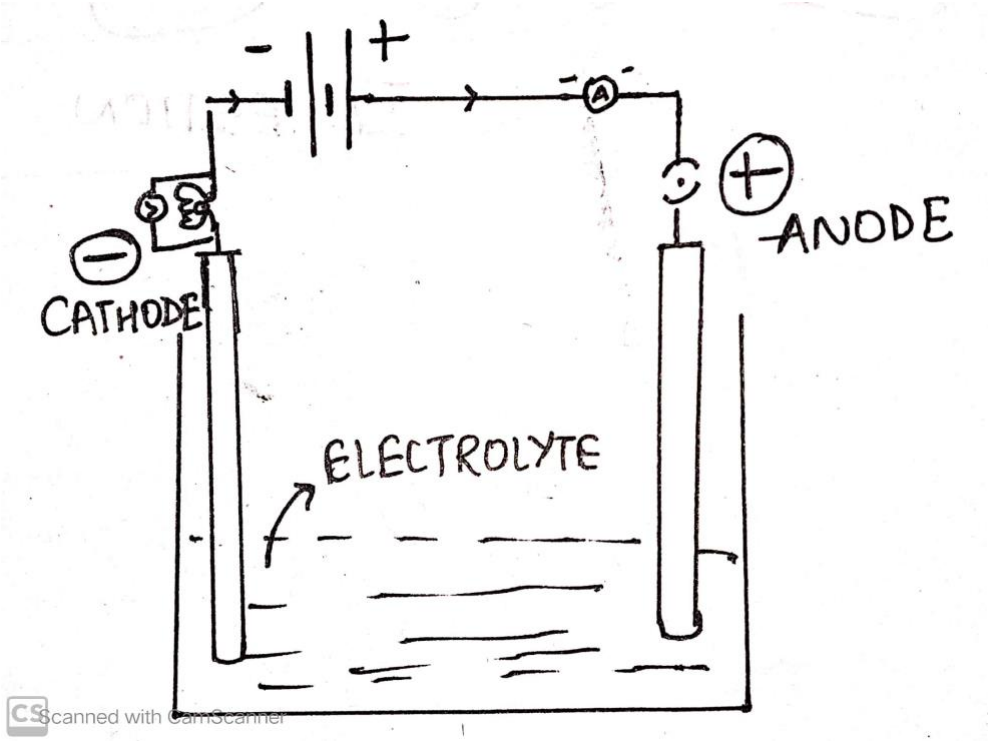
## STD VIII

## CHEMICAL EFFECTS OF ELECTRIC CURRENT.

Q1. What is an electrode?

A1. An electrode is a metallic rod that is connected to a battery.

*If it is connected to positive end ,it is called called anode and when connected to negative end, it is called cathode.



Q2. What is an ion ?

A2. An atom that either loses or gains electrons to get a positive or a negative charge is called an ion.

*If an atom loses an electron,it acquires positive charge and hence is called a cation.For eg. Calcium ion (Ca+2).

*If an atom gains an electron ,it acquires negative charge and hence is called anion. For eg. Oxide ion (O -2).

CaO --> Ca+2 + O-2.

Ca(20) --> 2,8,8,2

O (8) --> 2,6.

Q3. Does Mercury conduct electricity.Give reasons.

A3. Mercury is a liquid that conducts electricity.Loosely held valence electron constitute the current through mercury.

Q4. A metal is released in the electrolysis of a salt.At which electrode would it be deposited?

A 4. The metal would be released at the cathode because metals always lose e-/s to form cations. These cations go to the cathode because opposite charges attract each other.( Cation is a positively charged ion and cathode is negativity charged electrode).

Q5. Why is an acid or ionic salt added to water in the electrolysis of water?

A5. Pure water does not contain ions and so doesn't conduct electricity. However, when we add an acid or a salt to it , it helps water to ionise and thus conduct electricity.

Q6. Why are metals good conductors of electricity ?

A6. Metals have loosely held valence electrons. These electrons form an electron cloud in the metal and when potential difference is applied , these electrons move to the opposite electrode ,constituting the flow of current and thus, metals are good conductors of electricity.

Q7. What are electrolytes ? Give examples.

A7. A liquid or a moist paste that has ions in it, is called an electrolyte. For eg. a solution of common salt.

Q8. What happens when a voltage is applied across electrodes placed in an electrolyte?

A8. When a voltage is applied across electrodes placed in an electrolyte , the electrolyte gets dissociated into ions . The positive ions move to the cathode whereas negative ions move to the anode.

NaCl (aqueous) ---> Na+ + Cl-.

Cathode :

Na+ + e- ---> Na

Anode:

Cl- - e- ---> Cl ,

Cl +Cl --> Cl2 ( ↑ )

*We would see yellowish green coloured gas evolving at the anode.

Q9. Explain electrolysis. What happens in the electrolysis of water ?

A9. Electrolysis is a process in which an electrolyte gets dissociated into its ions on the passage of electricity.

*The cations travel to the cathode and the anions to the anode.

*Electrolysis is possible only in molted state or aqueous solution because in solid state the forces of attraction between the particles are very very strong and so they can't be ionised.

$H_2O \rightarrow H^+ + OH^-$

At Cathode,

$2H^+ + 2e^- \rightarrow H_2(\uparrow)$

At Anode,

$4OH^- - 4e^- \rightarrow O_2(\uparrow) + 2H_2O$.

Overall reaction,

$2H_2O \longrightarrow 2H_2 + O_2$

Q10. Write the uses of electrolysis

A10. 1. It is used in the extraction of meral ores like potassium and aluminium.

2. It is used for manufacturing chlorine.

3. It is used for refining certain metal as Cu and Zn.

4. In submarine, oxygen is produced by the electrolysis of water.

5. It is used for coating metal with precious metal as Au and Ag that makes the object look very attractive.

6. It is used to protect metal from corrosion.

Q11. What is electroplating? How are steel spoons plated with silver?

A11. The process of coating one metal with another by the process of electrolysis is termed as electroplating.

*The plating is long lasting and uniform.

*The metal object that has to be coated is made the cathode because the metal is always deposited on the cathode.

*Electrolyte is the salt of metal with which the coating is to be done.

*If a steel spoon is to be coated with silver , the spoon is made the cathode, and the solution of AgCl is taken as the electrolyte.

* The anode is also normally of silver.

AgCl ----> Ag+ + Cl-

At Cathode,

Ag+ + e- --> Ag.

At Anode,

$Cl^- + e^- \rightarrow Cl$

$Cl + Cl \rightarrow Cl_2($

Overall reaction,

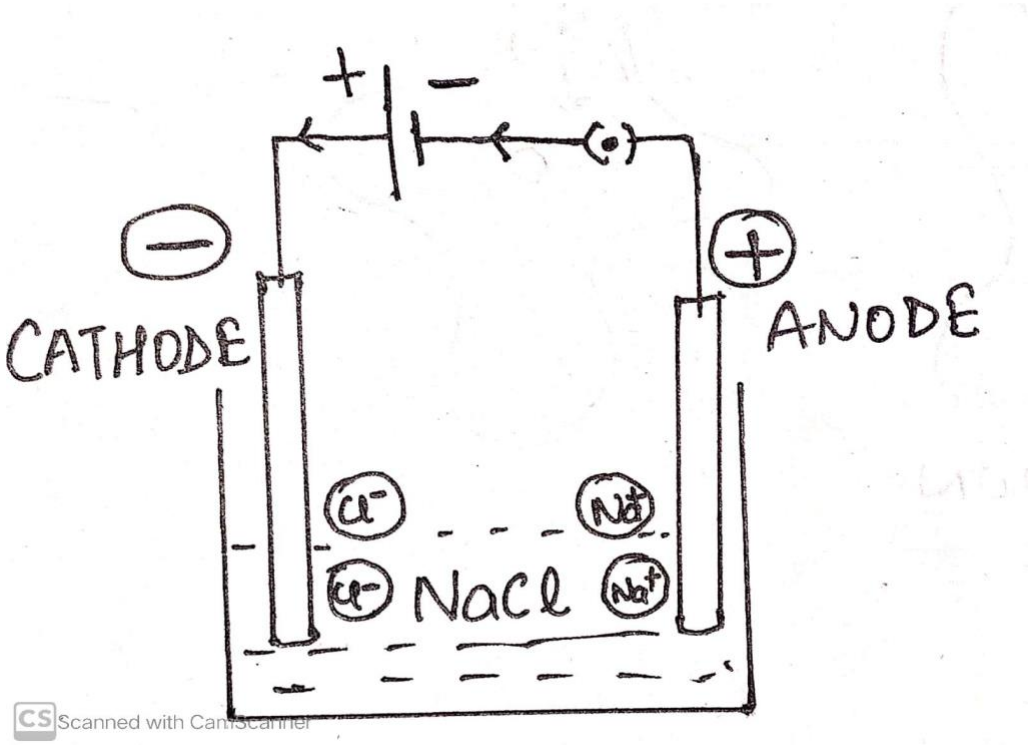
$2AgCl \rightarrow 2Ag + Cl_2.$

Q12. What is galvanisation?

A12. Electroplating iron with zinc to prevent it from rusting , is known as galvanisation.

DO IT YOURSELF.

1. What is wrong in the following diagram? Draw the correct diagram to justify your answer.





2. How would you electroplate a ring with silver?

3. Explain the electrolysis of Calcium Chloride.

4. While handling electrical appliances, why is it suggested to wear rubber slippers?