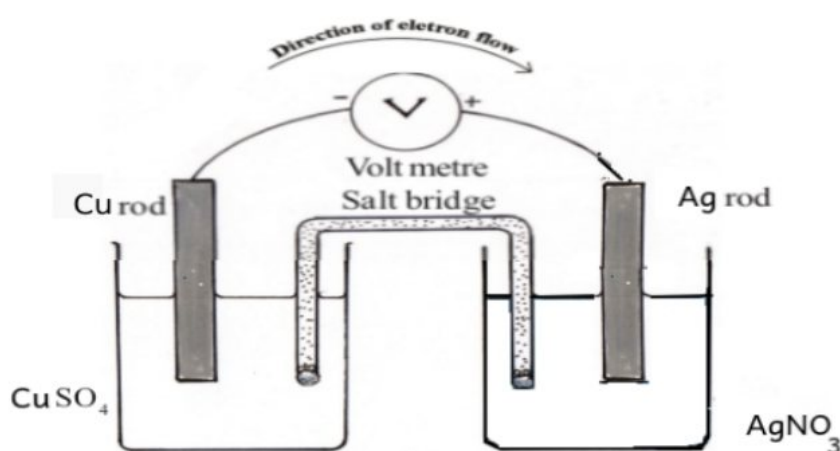


Unit 3: Reactivity series and Electrochemistry

Galvanic cell

Cu-Ag cell



Take two beakers, one containing CuSO_4 solution and the second containing the same amount of AgNO_3 solution with the same concentration.

Dip Cu rod in CuSO_4 solution and Ag rod in AgNO_3 solution.

Connect a voltmeter as shown in the figure . Connect the two solutions using a salt bridge.

Cu loses two electrons and becomes Cu^{2+} and reaches the solution. The electrons liberated from Cu rod reaches the silver electrode through the external circuit and these

electrons are received by silver ions in the solution changing them into silver.

Cu Electrode



The electrode at which oxidation occurs is the anode.

Anode attains negative charge.

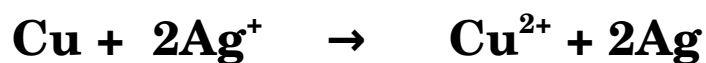
Ag Electrode



The electrode at which reduction occurs is the cathode .

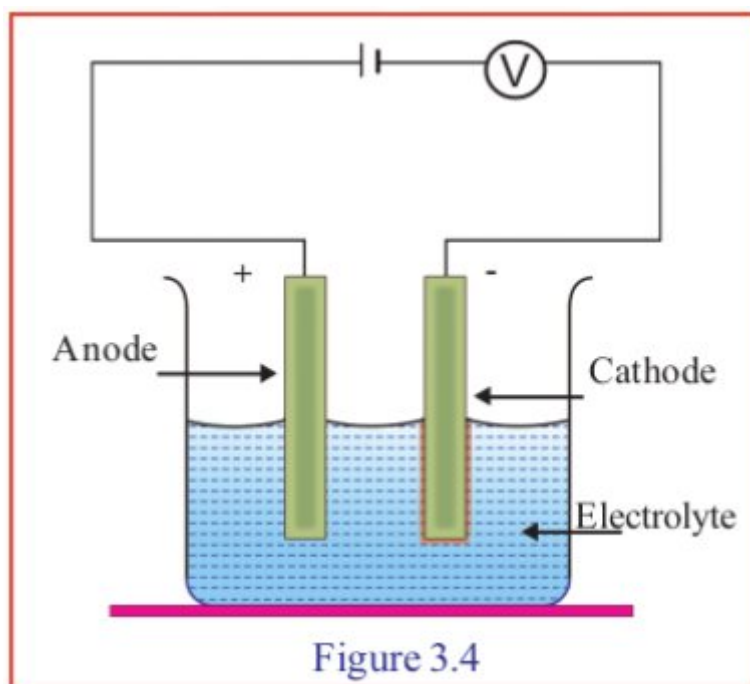
Cathode attains positive charge.

Redox reaction



Electrolytic cells

Here electric energy is converted in to chemical energy.
An approximate figure showing electrolysis is given below.



Electrolytes are substances which conduct electricity in molten states or in aqueous solutions and undergo chemical change.

The process of chemical change taking place in an electrolyte by passing electricity is known as electrolysis.

The electrode which is connected to the negative terminal is the cathode.

The electrode at which oxidation takes place is anode and electrode at which reduction take place is cathode.

Electrolysis of molten sodium chloride

In molten sodium chloride , Na^+ as well as Cl^- ions are present.

When we pass electricity through it, the positively charged Na^+ ions moves towards negatively charged cathode and negatively charged Cl^- ions moves towards positively charged anode.

Anode



Chlorine gas is liberated from anode

Cathode



Sodium gets deposited at cathode

Questions

1. Electrode at which reduction take place is.....

(Anode ,Cathode)

2. What are the difference between galvanic cell and electrolytic cells ?

3. How many cells can be produced by using Cu, Ag, and Zn. Complete the Table by writing anode and cathode in each.

Cell	Anode	Cathode
• Zn - Cu		
•		
•		

4. Draw a Cu- Ag cell and mention the important parts such as anode, cathode, direction of electron flow.
