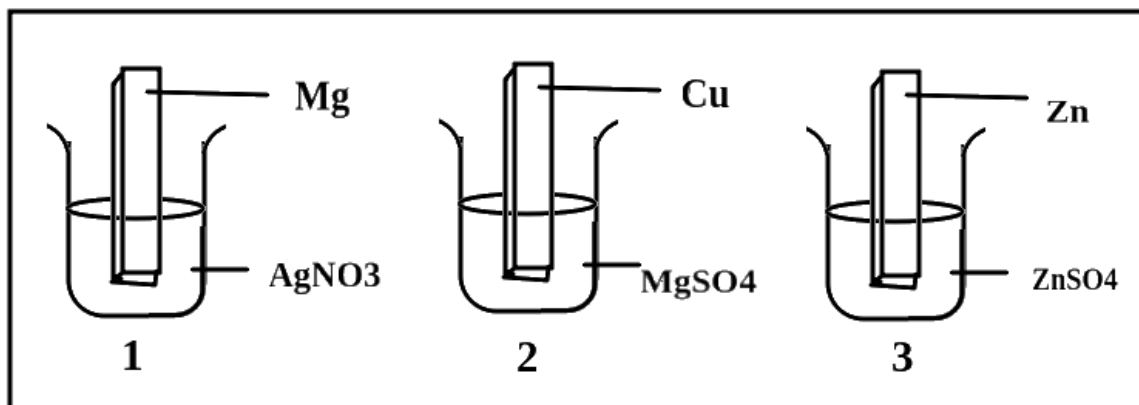


## Chemistry- X- Unit -3. Class - 17

### Reactivity series (contd.....)

Metals having high reactivity displaces the metals having less reactivity from their salt solution.

Let's consider the following three examples.



#### **Example:1**

The displacement happens, because the reactivity of Mg metal is higher than that of Ag. So the silver (Ag) gets deposited at the Mg rod. Moreover, the colour of the solution changes.

#### **Example:2**

There is no displacement, because the reactivity of Cu metal is less than that of Mg.

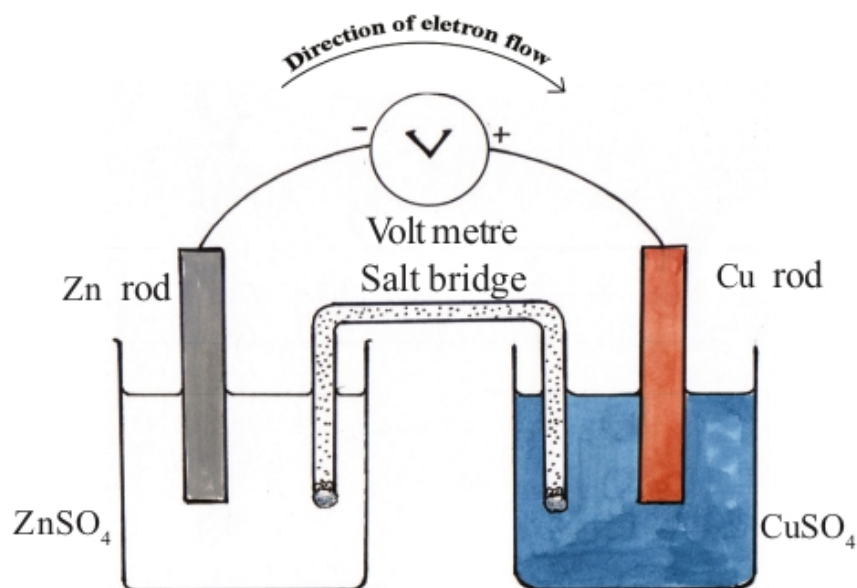
#### **Example:3**

Here also there is no displacement, because the reactivity of Zn metal is same as itself.

### **Galvanic cell**

Galvanic cell is an arrangement in which the difference in reactivity of metals is used to produce electricity.

Galvanic cell or voltaic cell is an arrangement in which chemical energy is converted into electrical energy by means of a redox reaction.

**Zn-Cu cell**

Take two beakers, one containing  $\text{ZnSO}_4$  solution and the second containing the same amount of  $\text{CuSO}_4$  solution with the same concentration.

Dip **Zn** rod in  $\text{ZnSO}_4$  solution and **Cu** rod in  $\text{CuSO}_4$  solution. Connect a voltmeter as shown in the figure. Connect the two solutions using a salt bridge.

A long filter paper which is moistened with  $\text{KCl}$  solution can be used instead of salt bridge.

Zn loses two electrons and becomes  $\text{Zn}^{2+}$  and reaches the solution. The electrons liberated from Zn rod reach the copper electrode through the external circuit and these electrons are received by copper ions in the solution changing them into copper.

**Zn Electrode**

The electrode at which oxidation occurs is the anode. Anode attains negative charge.

#### Cu Electrode



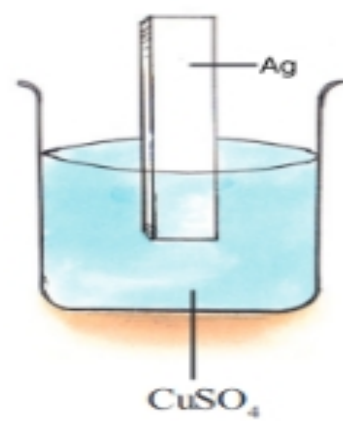
The electrode at which reduction occurs is the cathode . Cathode attains positive charge.

#### Redox reaction



#### Questions

- 1.The electrode at which oxidation occurs is known as.....  
( **Anode** , **Cathode** )
- 2.What is the use of salt bridge which is used in galvanic cell ?
- 3.Draw a **Zn- Cu** cell and mention the important parts such as anode, cathode, direction of electron flow .
- 4 .A small Zinc rod is dipped in copper sulphate solution.
  - a) What happens to the colour of the solution ?
  - b)Write the chemical equation .
- 5.**Ag** rod is dipped in copper sulphate solution as shown in the figure.
  - a) Will there be any displacement ?
  - b) Justify your answer.



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