Practical No. 11

Aim : To study the reactions of the metals Zn, Fe, Cu and Al with the solutions of salts $ZnSO_4$, $FeSO_4$, $CuSO_4$, $Al_2(SO_4)_3$ and to arrange these metals in the decreasing order of their reactivity.

Apparatus : Test tubes, test tube stand, distilled water, sand paper, etc.

Chemicals : The metals Zn, Fe, Cu and Al; solutions of the salts $ZnSO_4$, $FeSO_4$, $CuSO_4$, $Al_2(SO_4)_3$

Figure : (Draw figure)

Procedure :

1. Clean all the metals with sand paper and cut them into small pieces.
2. Take 10ml of samples of each of the solutions of $ZnSO_4$, $FeSO_4$, $CuSO_4$, $Al_2(SO_4)_3$ in separate test tubes.
3. Put one or two pieces of aluminium metal in each test tube. See what happens and note the observations.
4. Repeat the same procedure for the remaining three metals.

Observations :

	Solution			
Metal	$Al_2(SO_4)_3$	$ZnSO_4$	$FeSO_4$	$CuSO_4$
Aluminium	--	Zinc is displaced	Iron is displaced	Copper is displaced
Zinc	No Reaction	--	Iron is displaced	Copper is displaced
Iron	No Reaction	No Reaction	--	Copper is displaced
Copper	No Reaction	No Reaction	No Reaction	--

Inference / Conclusion :

The decreasing order of reactivity of the metal is ~~Al < Zn < fe < Cu~~

Al > Zn > fe > Cu

Aluminium is more reactive than other metals.

as, $2Al + ZnSO_4 \longrightarrow 2Al_2(SO_4)_3 + Zn$

Multiple Choice Questions

1. The proper procedure of the experiment to show that zinc is more reactive than copper is .....

   a. Prepare a copper sulphate solution and immerse a copper plate in it.

   b. Prepare zinc sulphate solution and immerse a copper plate in it.

   c. Heat zinc and copper plate.

   d. Add dilute nitric acid to both the plates.

2. The solution of $Al_2(SO_4)_3$ in water is not clear, because of .....

   a. impurity in the salt.

   b. decomposition of $Al_2(SO_4)_3$.

   c. white Gelatinous ppt of $Al(OH)_3$ is formed.

   d. none of these.

3. Iron is .....

   a. more reactive than zinc.

   b. more reactive than aluminium

   c. less reactive than copper

   d. less reactive than aluminium

4. The solution of $Al_2(SO_4)_3$ in water is .....

   a. blue in colour

   b. pink in colour

   c. green in colour

   d. colourless

5. Which of the following substances is blue in colour?

   a. $CuSO_4$

   b. $FeSO_4$

   c. $ZnSO_4$

   d. $Al_2(SO_4)_3$

: Exercise :

1. Why do all the metal pieces get polished before the experiment?

   All metal pieces should get polished before the experiment because The impurities on the surface of metals and other chemicals can cleaned by polishing. so other chemical reaction completed by no other restriction and safly.

2. Why can not each metal react to its own salt (Eg. Cu and $CuSO_4$)?

   Sodium ions is already stable soil wan't reaction Sodium atoms is unstable and reaction and lose of electron substance sodium and ions sodium is stable and it is solved hence it does not react to its own salt.

3. Arrange the non metals iodine, fluorine, bromine, chlorine in decreasing order of their reactivity?

   reactivity of metals are,

   fl < Cl < Br < Iodine

Remark and Signature .....