

Date Planned : __ / __ / __	Daily Tutorial Sheet-1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Advanced (Archive)	Exact Duration : _____

- A white amorphous powder (A) on heating yields a colourless, non-combustible gas (B) and a solid (C). The latter compound assumes a yellow colour on heating and changes to white on cooling. (C) dissolves in dilute acid and the resulting solution gives a white precipitate on adding $K_4[Fe(CN)_6]$ solution.

(A) dissolves in dilute HCl with the evolution of gas, which is identical in all respects with (B). The gas (B) turns lime water milky, but the milkiness disappears with the continuous passage of gas. The solution of (A), as obtained above, gives a white precipitate (D) on the addition of excess of NH_4OH and passing H_2S . Another portion of the solution gives initially a white precipitate (E) on the addition of sodium hydroxide solution, which dissolves on further addition of the base. Identify the compounds (A), (B), (C), (D) and (E).  (1979)
- Which of the following is the weakest base ? (1980)

(A) NaOH (B) $Ca(OH)_2$ (C) KOH (D) $Zn(OH)_2$
- One of the constituent of German silver is: (1980)

(A) Ag (B) Cu (C) Mg (D) Al
- Which of the following dissolve in hot concentrated NaOH solution? (1980)

(A) Fe (B) Zn (C) Cu (D) Ag
- (i) A sample of $MnSO_4 \cdot 4H_2O$ is strongly heated in air. The residue is Mn_3O_4 .  (1980)

(ii) The residue is dissolved in 100 ml of 0.1 N $FeSO_4$ containing dilute H_2SO_4 .

(iii) The solution reacts completely with 50 ml of $KMnO_4$ solution.

(iv) 25 ml of the $KMnO_4$ solution used in step (iii) requires 30 ml of 0.1 N $FeSO_4$ solution for complete reaction.

Find the amount of $MnSO_4 \cdot 4H_2O$ present in the sample.
- Compound A is a light green crystalline solid. It gives the following tests:  (1980)

(i) It dissolves in dilute sulphuric acid. No gas is produced.

(ii) A drop of $KMnO_4$ is added to the above solution. The pink colour disappears.

(iii) Compound A is heated strongly. Gases B and C, with pungent smell, come out. A brown residue D is left behind.

(iv) The gas mixture (B and C) is passed into a dichromate solution. The solution turns green.

(v) The green solution from step (iv) gives a white precipitate E with a solution of barium nitrate.

(vi) Residue D from step (iii) is heated on charcoal in a reducing flame. It gives a magnetic substance E. Name the compounds A, B, C, D and E.
- Sodium thiosulphate is used in photography because of its:  (1981)

(A) reducing behaviour (B) oxidising behaviour

(C) complex forming behaviour (D) reaction with light
- How many unpaired electrons are present in Ni^{2+} ? (1981)

(A) 0 (B) 2 (C) 4 (D) 8

9. An unknown solid mixture contains one or two of the following; CaCO_3 , BaCl_2 , AgNO_3 , Na_2SO_4 , ZnSO_4 and NaOH . The mixture is completely soluble in water and the solution gives pink colour with phenolphthalein. When dilute hydrochloric acid is gradually added to the above solution, a precipitate is produced which dissolves with further addition of the acid. What is/are present in the solution? Give equations to explain the appearance of the precipitate and its dissolution. **(1981)**
10. Complete the following equation (no balancing is needed) : **(1981)**
 $\text{SO}_2 + \text{MnO}_4^- + \dots \longrightarrow \text{SO}_4^{2-} + \text{Mn}^{2+} + \dots$
11. In the metallurgy of iron, when limestone is added to the blast furnace, the calcium ion ends, up in
(A) slag **(B)** gangue **(1982)**
(C) metallic calcium **(D)** calcium carbonate
12. Iron is rendered passive by treatment with concentrated: **(1982)**
(A) H_2SO_4 **(B)** H_3PO_4 **(C)** HCl **(D)** HNO_3
13. State with balanced equations what happens when : **(1982)**
 Sulphur dioxide gas is bubbled through an aqueous solution of copper sulphate in presence of potassium thiocyanate.
14. State the conditions under which the following preparation is carried out. Give the necessary equations which need not be balanced. Potassium permanganate from manganese dioxide. **(1983)**
15. Give reasons for the following : **(1983)**
 Silver bromide is used in photography.