CHAPTER - 24
PRACTICAL CHEMISTRY

1. 3 $KAl(SO_4)_2.12H_2O$ or $K_2SO_4.Al_2(SO_4)_3.24H_2O$
2. 4 Fe^{2+} can undergo hydrolysis. So while preparing aqueous solution of $FeSO_4$, dilute sulphuric acid is added to prevent hydrolysis of $FeSO_4$
3. 1 pH decreases gradually as NH_4OH is a weak base
4. 3 Phenolphthalein dissociates in basic medium to produce pink colour
5. 1 In acidic medium, methyl orange exists in the quinonoid form
6. 1 Flame test for metals
   The colour imparted to the flame are :
   Ba $\rightarrow$ apple green
   Ca $\rightarrow$ brick red
   Sr $\rightarrow$ Crimson red
   Cu $\rightarrow$ Green flame with blue centre
7. 3 $S^- \xrightarrow{dil.H_2SO_4} H_2S\uparrow(\text{rotten egg smell})$
8. 3 Griess-Ilosvay test confirms the presence of NO_2^- by forming a red azo dye
9. 3 In the chromyl chloride test, a little amount of salt is mixed with an equal amount of solid $K_2Cr_2O_7$ and conc.H_2SO_4 is added to it.
10. 3 $SO_3^{2-} \xrightarrow{dil.H_2SO_4} SO_2\uparrow(\text{turns acidified } K_2Cr_2O_7 \text{ green})$
11. 4 $CuSO_4 + \text{borax} \xrightarrow[\text{flame}]{\text{nonluminous}} \underset{\substack{\text{Cupric metaborate}\\ \text{Blue-green}}}{Cu(BO_2)_2} + SO_3$
12. 2 $Cu^{2+} \rightarrow$ Group II A
    $Fe^{3+} \rightarrow$ Group III
    $Zn^{2+} \rightarrow$ Group IV
    $Ba^{2+} \rightarrow$ Group V
13. 2 $K_2HgI_4 \rightarrow$ Nessler's reagent
14. 4 Zn^{2+} belongs to group-IV, thus group reagent is $H_2S + NH_4OH$
15. 2 Group-III cations precipitate as hydroxide ($Al(OH)_3$ and $Fe(OH)_3$)
16. 1 $X = PbCrO_4$ (yellow ppt); $Y = Na_2[Pb(OH)_4]$
17. 1 A is copper sulphide

    $CuS + HNO_3 \longrightarrow Cu(NO_3)_2 + NO + S + H_2O$

    $S + HNO_3 \xrightarrow[\text{long time}]{\text{Heat for}} H_2SO_4 + NO$

    Thus, solution turns blue due to formation of $CuSO_4$

18. 1 $2CuSO_4 + K_2[Fe(CN_6)] \longrightarrow \underset{\text{Chocolate brown ppt}}{Cu_2[Fe(CN)_6]} + 2K_2SO_4$

19. 3 $Ni^{2+} + 2DMG - H \xrightarrow{2NH_4OH} \underset{\text{Brilliant red ppt.(neutral complex)}}{[Ni(DMG)_2]} + 2H_2O^*$

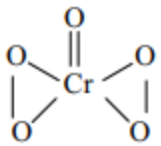
20. 2 $ZnCl_2 + K_2[Fe(CN)_6] \longrightarrow \underset{\text{Bluish white ppt}}{Zn_2[Fe(CN)_6]}$

21. 5 Since the second stage of titration consumed 5 mL of 0.1 N HCl, the original mixture should have contained 0.5 mmol of Na_2CO_3

22. 5 $FeSO_4.(NH_4)_2SO_4.6H_2O \longrightarrow Fe^{2+} + 2NH_4^+ + 2SO_4^{2-} + 6H_2O$

Thus, total no.of ions produced = 5 mol

23. 2 $H_2O_2 + K_2CrO_4 \xrightarrow{H^+} CrO_5\,(\text{Blue})$

Structure of CrO_5 is 

24. 3 Brown ring complex is, $[Fe(H_2O)_5(NO)]^{2+}$

Oxidation state of Fe is +1, thus Fe has three unpaired electrosn (d^7 configuration)

25. 3 Acids 3, 4 and 5 can react with $NaHCO_3$, thus dissolve due to salt formation

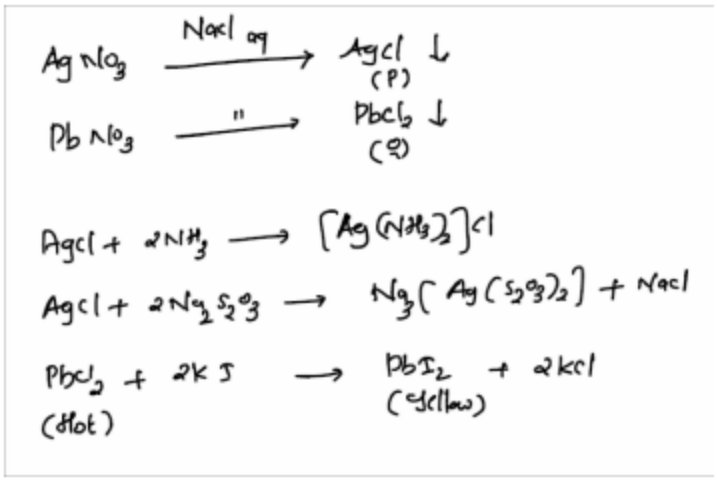
26. B

H^+ ions are replaced by Na^+ ion which decreases the Conductance

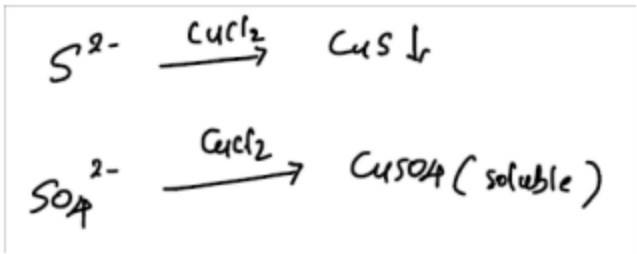
C_6H_5COONa, strong electrolyte increases the Conductance

After equivalent point, Na^+ and OH^- ions increases the Conductance

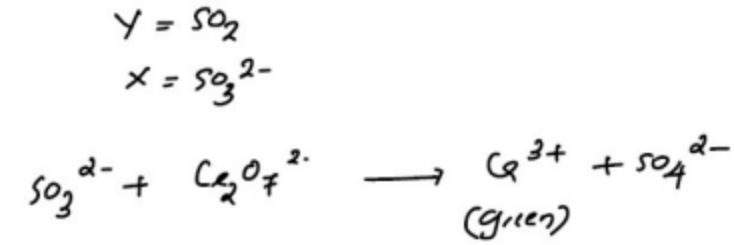
27. A



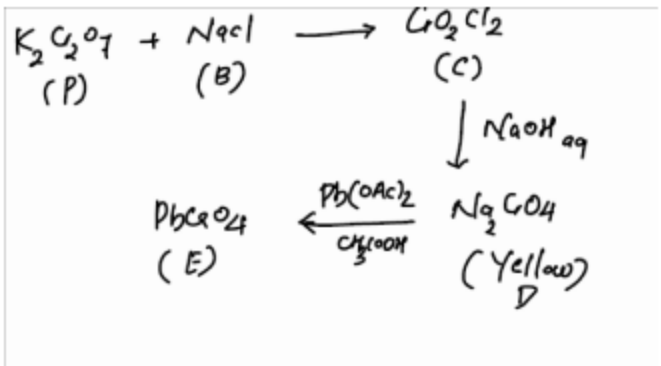
28. A



29. A

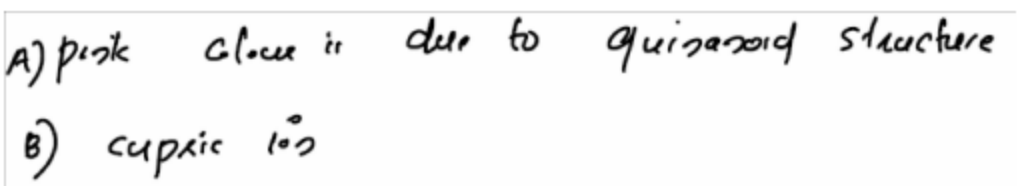


30. C



31. A
32. B
33. C

34. C,D



35. BCD

HgS is soluble in aqua-regia

36. AC

$Mg(NH_4)PO_4$ is a white precipitate

37. A,C

$Zn + H_2SO_4 \longrightarrow ZnSO_4 + SO_2 + H_2O$
(G) (R) (X)

$ZnSO_4 \xrightarrow{H_2S + NH_4OH} ZnS\downarrow + H_2O$
(Z) (X)
(dirty white)

$ZnSO_4 + CaCl_2 \longrightarrow ZnCl_2\downarrow$

38. A