

## CHEMISTRY

31. In which of the following pairs both the ions are coloured in aqueous solutions?  
(Atomic numbers Sc = 21, Ti = 22, Ni = 28, Cu = 29, Co = 27)
- (1)  $\text{Sc}^{3+}$ ,  $\text{Ti}^{3+}$                       (2)  $\text{Sc}^{3+}$ ,  $\text{Co}^{2+}$   
(3)  $\text{Ni}^{2+}$ ,  $\text{Cu}^+$                       (4)  $\text{Ni}^{2+}$ ,  $\text{Ti}^{3+}$
32. Which of the following arrangements does not represent the correct order of the property stated against it?
- (1)  $\text{V}^{2+} < \text{Cr}^{2+} < \text{Mn}^{2+} < \text{Fe}^{2+}$  :  
Paramagnetic behaviour  
(2)  $\text{Ni}^{2+} < \text{Co}^{2+} < \text{Fe}^{2+} < \text{Mn}^{2+}$ : Ionic size  
(3)  $\text{Co}^{3+} < \text{Fe}^{3+} < \text{Cr}^{3+} < \text{Sc}^{3+}$ : Stability in aqueous solution  
(4)  $\text{Sc} < \text{Ti} < \text{Cr} < \text{Mn}$ : Number of oxidation states
33. Acidified  $\text{K}_2\text{Cr}_2\text{O}_7$  solution turns green when  $\text{Na}_2\text{SO}_3$  is added to it. This is due to the formation of
- (1)  $\text{Cr}_2(\text{SO}_4)_3$                       (2)  $\text{CrO}_4^{2-}$   
(3)  $\text{Cr}_2(\text{SO}_3)_3$                       (4)  $\text{CrSO}_4$
34. Which of the statements is not true?
- (1) On passing  $\text{H}_2\text{S}$  through acidified  $\text{K}_2\text{Cr}_2\text{O}_7$  solution, a milky colour is observed.  
(2)  $\text{Na}_2\text{Cr}_2\text{O}_7$  is preferred over  $\text{K}_2\text{Cr}_2\text{O}_7$  in volumetric analysis.  
(3)  $\text{K}_2\text{Cr}_2\text{O}_7$  solution in acidic medium is orange.  
(4)  $\text{K}_2\text{Cr}_2\text{O}_7$  solution becomes yellow on increasing the pH beyond 7.
35. When  $\text{KMnO}_4$  solution is added to oxalic acid solution, the decolourisation is slow in the beginning but becomes instantaneous after some time because
- (1)  $\text{CO}_2$  is formed as the product.  
(2) reaction is exothermic.  
(3)  $\text{MnO}_4^-$  catalyses the reaction.  
(4)  $\text{Mn}^{2+}$  acts as autocatalyst.
36. Although +3 is the characteristic oxidation state for lanthanoids but cerium also shows +4 oxidation state because
- (i) it has variable ionisation enthalpy  
(ii) it has a tendency to attain noble gas configuration  
(iii) it has a tendency to attain  $f^0$  configuration  
(iv) it resembles  $\text{Pb}^{4+}$
- (1) (ii) and (iii)  
(2) (i) and (iv)  
(3) (ii) and (iv)  
(4) (i), (ii) and (iii)
37. What is the secondary valence of following compounds  $\text{PtCl}_2 \cdot 2\text{NH}_3$ ,  $\text{CoCl}_3 \cdot 4\text{NH}_3$  and  $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$  if moles of  $\text{AgCl}$  precipitated per mole of the given compounds with excess  $\text{AgNO}_3$  respectively are: 0, 1 and 2
- (1) 6, 4, 4                              (2) 4, 6, 6  
(3) 4, 4, 6                              (4) 2, 4, 6
38.  $\text{C}_{63}\text{H}_{88}\text{CoN}_{14}\text{O}_{14}\text{P}$  is the formulae of the Cyanocobalamin, (vitamin  $\text{B}_{12}$ ) it contain  $\text{CN}^-$  and  $\text{CN}^-$  is very poisonous, than why this compound does not prove to be fatal for us? (it inhibit the electron transport chain)?
- (1)  $\text{CN}^-$  forms covalent bond  
(2)  $\text{CN}^-$  is coordinating to the cobalt as the ligand  
(3)  $\text{CN}^-$  hydrolysis immediately  
(4) All of these

39. Suppose someone made aqueous solution of  $\text{NiCl}_2$  and recrystallized its aqueous solution in excess of water and if two moles of precipitate  $\text{AgCl}$  was formed on treatment with  $\text{AgNO}_3$ , what is the most probable structure of the compound?

- (1)  $[\text{Ni}(\text{Cl})_2(\text{H}_2\text{O})_4]$
- (2)  $[\text{Ni}(\text{H}_2\text{O})_6]\text{Cl}_2$
- (3)  $[\text{Ni}(\text{H}_2\text{O})_5\text{Cl}]$
- (4)  $[\text{Ni}(\text{H}_2\text{O})_4\text{Cl}_2] \cdot 2\text{H}_2\text{O}$

40. Identify the optically active compounds from the following

- (i)  $[\text{Co}(\text{en})_3]^{3+}$
  - (ii) *trans* -  $[\text{Co}(\text{en})_2\text{Cl}_2]^+$
  - (iii) *cis* -  $[\text{Co}(\text{en})_2\text{Cl}_2]^+$
  - (iv)  $[\text{Cr}(\text{NH}_3)\text{Cl}]$
- (1) (i) and (iii)
  - (2) (ii) and (iii)
  - (3) (iii) and (iv)
  - (4) (i), (iii) and (iv)



PARISHRAMA  
NEET ACADEMY