Home assignment for 4th sem chemistry (General)

(1) What is ostwald's dilution law? How is it experimentally verified? What are its limitations?

(2) Find α for NH_4OH in 0·1 M NH_4OH when $k = 2 \times 10^{-5}$ and $\sqrt{2} = 1·4$.

(3) What do you understand by the term solubility Product. Give the relation between the solubility and the solubility product of a sparingly soluble salt AgCl.

(4) Calculate the solubility product of silver chromate if the solubility of the salt is $8·0 \times 10^{-5}$ mol per litre. What is the solubility of Ag_2CrO_4 in a solution of K_2CrO_4 containing 0·01 mol L^{-1}?

(5) Explain the following —

a) $MgSO_4$ gives a precipitate with NH_4OH but not with NH_4Cl and NH_4OH.

b) It is essential to add HCl before proceeding to test for metal of II group.

c) The saturated solution of AgCl gives precipitate with the addition of HCl.

(6) Write shorter notes on —

a) pH value b) solution c) Buffer solution

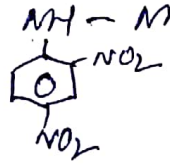
(7) Show that for any aqueous solution $pH + pOH = pK_w$ At 25°C it is $pH + pOH = 14$

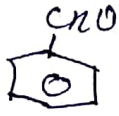
(8) Calculate the pH value of 10^{-7} M HCl solution.

9) complete the following reaction —

a) $HCHO + RMgX \xrightarrow{H_2O/H^+}$?

b) $CH_3COCH_3 + HCN \longrightarrow$?

c) $CH_3CHO +$  ?

d)  $\xrightarrow{OH^-}$?

10) write short notes on —

a) Aldol condensation reaction b) Cannizzaro's reaction

c) Clemmensen Reduction d) Wolf Kishner reduction.

11) Give the distinguishing test of HCHO and CH_3CHO.

12) what happen when —

a) calcium salt of acetic acid is ~~heated~~ dry distillated.

b) ~~acetaldehyde~~ is treated with acidic solution of $K_2Cr_2O_7$.

c) propanol-2 is treated with ~~H_2~~ Cu at 350°C.

13) Identify A, B, C and D of the following reaction:

$CH_3COCH_3 \xrightarrow[\text{Alkali}]{I_2} A \xrightarrow[\Delta]{Ag} B \xrightarrow[HgSO_4]{dil\ H_2SO_4} C \xrightarrow{HCN} D$