CLASS XI PRE CT-4 ASSIGNMENT

HYDROGEN

1. Hydrogen is the most abundant element in the universe , still its position is not justified in the periodic table?
2. Name the isotope of Hydrogen which finds use in nuclear reactor?
3. What is the importance of heavy water with regard to nuclear power generation?
4. Why does water have a high boiling point as compared to H_2S?
5. What is the use of Hydrogen in manufacture of Vanaspati Ghee?
6. What is source of Sun's energy?
7. What is 'Syn' Gas, how it is produced, name the process of production of 'syngas'.
8. Name the catalyst used in manufacture of Methanol. give equation?
9. Which isotope of hydrogen has no neutron?
10. Can we store H_2O_2 in ordinary glass bottle?
11. What is the structure of H_2O_2 in solid phase and vapour phase?
12. H_2O_2 is used to restore the colour of old paintings containing lead sulphide? Write a balanced equation for the reaction.
13. Name some negative and positive catalysts that which retard the decomposition of H_2O_2?
14. Discuss any two methods of preparation of hydrogen peroxide.

EQUILIBRIUM (II)

Q1. What are the limitations of Arrhenius Concept of Acids and Bases?
Q2. Explain Bronsted and Laury Concept. How it is better then Arrhenius?
Q3. (a) State the conjugate base of each of the following acids :-(i) H3O+ (ii) HSO 4-(iii) H3PO4 (iv) CH3NH3+
   (b) State the formula of conjugate acid of the following :- (i) OH- (ii) $C\,O32-$ (iii) (CH3)2NH (iv) HPO42-
   (c) Arrange the following in increasing order of basicity: - Cl-, Br -, F -, I -
Q4. (a) Acetic acid has a dissociation constant of 1.8 x 10-5, calculate the pH value of the decinormal solution of acetic acid.
   (b) The following can act as both Bronsted acid an Bronsted base, write the formula of Bronsted acid and Bronsted base of the following: - (i) HCO3$^-$ (ii) H2PO$_4^-$ (iii) NH3
Q5. (a) Define solubility Product, write solubility product expression of Zr3(PO4)4. Explain why NaCl is participated when HCl (g) is passed through the saturated solu. of NaCl.
Q6. Which concept can explain the acidic character of CO2?
Q7. A solution has been prepared by dissolving 0.063g of HNO3 in 1000ml of it. Calculate [H+] & [OH-] of solution.
Q8. At 298K, the pH of a lemon price is 2.32. Calculate its (H3o+] + [OH-].
Q9. Justify the statement, "All Arrhenius acids are also Bronsted acids but Arrhenius bases are not Bronsted Bases?
Q10.   (i) Why H2S gas is passed in 2nd gp in presence of HCl and H2S is passed in fourth gp in +se of NH4OH ?
       (ii) Why is MH4Cl added before the addition of NH4OH in qualitative analysis of 3rd group?
       (iii) Which will be added to precipitate soap (RCOONa) ? NaCl or KCl and why?
Q11. Find the pH of a solution of 0.01m acetic acid which is only 20 % ionised.
Q12. The solubility of AgCl in water 298 k is 1.06 x 10-5 mole per litre. Calculate its solubility product.
Q13. What is the solubility of Ag2CrO4 in water if the value of the solubility product (ksp) = 1.3x10-11 (mol/L) 3?
Q14. How solubility product is different from Ionic Product?
Q15. How are Ka and Kb related? Explain?
Q16. When 0.40 moles of PCl5 is heated in a 10.0 L container, an equilibrium is established is which 0.25 moles of Cl2 is present. PCl5(g) <===> PCl3(g) + Cl2(g)
       a) What is the number of moles of PCl_5 and PCl_3 at equilibrium?
       b) What are the equilibrium concentration of all three components?
Q16. When 3.0 moles of HI, 20 moles of H_2, and 1.5 moles of I_2 are placed in a 1.0 L container at 448°C, will a reaction occur?   If so, which reaction will take place? (Kc = 50)
Q17. A 0.15 M solution of butanoic acid (HC4H7O2) has [H3O] = 1.51 x 10^{-3} M. Calculate Ka for this acid.
Q18. What is the pH of a buffer solution consisting of 0.55 M acetic acid and 0.68 M sodium acetate?
       (Ka for acetic acid = 1.8 x 10^{-5}).