Date Planned : __ / __ / __	Daily Tutorial Sheet-2	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Advanced (Archive)	Exact Duration :_____

16. An element which can exist as a positive ion in acidic solution and also as a negative ion in basic solution is said to be..... **(1984)**

17. The following species are in increasing order of their acidic property: ZnO, Na_2O_2, P_2O_5, MgO. (True/False) **(1985)**

18. The compound that is not a Lewis acid is: **(1985)**

(A) BF_3 **(B)** $AlCl_3$ **(C)** $BaCl_2$ **(D)** $SnCl_4$

19. The conjugate acid of NH_2^- is : **(1985)**

(A) NH_3 **(B)** NH_2OH **(C)** NH_4^+ **(D)** N_2H_4

20. The concentration of hydrogen ions in a 0.20 M solution of formic acid is 6.4×10^{-3} mol/L. To this solution, sodium formate is added so as to adjust the concentration of sodium formate to one mole per litre. What will be the pH of this solution? The dissociation constant of formic acid is 2.4×10^{-4} and the degree of dissociation of sodium formate is 0.75. **(1985)**

21. Solubility of sodium hydroxide increase with increases in temperature. (True/Flase) **(1985)**

22. The solubility of $Mg(OH)_2$ in pure water is $9.57\times10^{-3}\ g/L$. Calculate its solubility (in g/L) in 0.02 M $Mg(NO_3)_2$. **(1986)**

23. What is the pH of the solution when 0.20 mole of HCl is added to one litre of a solution containing **(1987)**
(i) 1 M each of acetic acid and acetate ion, **(ii)** 0.1 M each of acetic acid and acetate ion?
Assume the total volume is one litre K_a for acetic acid = 1.8×10^{-5}

24. Silver chloride is sparingly soluble in water because its lattice energy is greater than....energy. **(1987)**

25. When equal volumes of the following solutions are mixed, precipitation of AgCl $\left(K_{sp}=1.8\times10^{-10}\right)$ will occur only with: **(1988)**

(A) $10^{-4}M(Ag^+)$ and $10^{-4}M(Cl^-)$

(B) $10^{-5}M(Ag^+)$ and $10^{-5}\ M(Cl^-)$

(C) $10^{-6}M(Ag^+)$and $10^{-6}M(Cl^-)$

(D) $10^{-10}M(Ag^+)$ and $10^{-10}\ M(Cl^-)$

26. The pK_a of acetyl salicylic acid (aspirin) is 3.5. The pH of gastric juice in human stomach is about 2-3 and the pH in the small intestine is about 8. Aspirin will be: **(1988)**

(A) unionised in the small intestine and in the stomach

(B) completely ionized in the small intestine and in the stomach

(C) ionized in the stomach and almost unionised in the small intestine

(D) ionized in the small intestine and almost unionised in the stomach

27. How many gram-mole of HCl will be required to prepare one litre of buffer solution (containing NaCN and HCl) of pH 8.5 using 0.01 g formula weight of NaCN? $K_{HCN} = 4.1 \times 10^{-10}$ **(1988)**

28. Which of the following is the strongest acid? **(1989)**

(A) $ClO_3(OH)$ **(B)** $ClO_2(OH)$

(C) $SO(OH)_2$ **(D)** $SO_2(OH)_2$

29. Freshly precipitated aluminium and magnesium hydroxides are stirred vigorously in a buffer solution containing 0.25 mol/L of NH_4Cl and 0.05 M of ammonium hydroxide. Calculate the concentration of aluminium and magnesium ions in solution. **(1989)**

$K_b\left[NH_4OH\right] = 1.8 \times 10^{-5}$;

$K_{sp}\left[Mg(OH)_2\right] = 8.9 \times 10^{-12}$;

$K_{sp}\left[Al(OH)_3\right] = 6 \times 10^{-32}$

30. Amongst the following hydroxides, the one which has the lowest value of K_{sp} at ordinary temperature (about 25°C) is: **(1990)**

(A) $Mg(OH)_2$ **(B)** $Ca(OH)_2$ **(C)** $Ba(OH)_2$ **(D)** $Be(OH)_2$