Date Planned : __ / __ / __	Daily Tutorial Sheet-11	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Numerical Value Type	Exact Duration :_____

126. Equal volume of 2 solution having $pH = 2, pH = 10$ are mixed together at 90°C. The pH of resulting solution is : (Take $K_w = 10^{-12}$ at 90°C)

127. Find ΔpH when 100 ml of 0.01 M HCl is added in a solution containing 0.1 m moles of $NaHCO_3$ solution of negligible volume. ($Ka_1 = 10^{-7}$, $Ka_2 = 10^{-11}$ for H_2CO_3)

128. The ionization constant of benzoic acid is 6.46×10^{-5} and K_{sp} for sliver benzoate is 2.5×10^{-13}. How many times silver benzoate more soluble in a buffer of $pH = 3$ as compared to solubility in pure water ?

129. 30 ml of 0.06 M solution of the protonated form of an anion of acid methonime (H_2A^+) is treated with 0.09 M NaOH. Calculate pH after addition of 20 ml of base. $\left[pKa_1 = 2.28 \text{ and } pKa_2 = 9.2\right]$

130. A certain acid-base indicator is red in acid solution and blue in basic medium. At $pH = 5$; 75% of the indictor is present in the solution in its blue form. Calculate the pH at which indicator shows 90% red form ?

131. Which of the following concentration of NH_4^+ will be sufficient to present the precipitation of $Mg(OH)_2$ form a solution which is 0.01 M $MgCl_2$ and 0.1 M $NH_3(aq)$. Given that $K_{sp}Mg(OH)_2 = 2.5 \times 10^{-11}$ and K_b for $NH_3(g) = 2 \times 10^{-5}$.

132. A certain mixture of HCl and CH_3COOH is 0.1M in each of the acids. 20 ml of this solution is titrated against 0.1 M NaOH. By how many units does the pH change from the start to the stage when HCl is almost completely neutralized ? [K_a of $CH_3COOH = 1.8 \times 10^{-5}$]

133. A buffer solution is made by mixing weak acid HA ($K_a = 10^{-6}$) with its salt NaA in equal amount. What should be the amount of acid or salt that should be added to make 90 ml of buffer solution of buffer capacity 0.1 ?

134. When NaOH solution is gradually added to the solution of weak acid (HA); the pH of the solution is found to be 5.0 at the addition of 10 ml of NaOH and 6.0 at further addition of 10 ml of same NaOH. (Total volume of NaOH $= 20\,ml$). Calculate pK_a for HA. [$\log 2 = 0.3$]

135. What is the ratio of moles of $Mg(OH)_2$ and $Al(OH)_3$, present in 1L saturated solution of $Mg(OH)_2$ and $Al(OH)_3$. K_{sp} of $Mg(OH)_2 = 4 \times 10^{-12}$ and K_{sp} of $Al(OH)_3 = 1 \times 10^{-33}$.

[Report answer by multiplying 10^{-18}]

136. A certain buffer solution contains equal concentration of HX and X^-. K_b for X^- is 10^{-10} then calculate pH of buffer.

137. Solubility of $Pb(OH)_2$ in water $= 6.7 \times 10^{-6}$. Calculate its solubility in a buffer solution of $pH = 8$.

138. Calculate the pH at the equivalence point when a solution of 0.1 M acetic acid is titrated with a solution of 0.1 M NaOH. K_a for acid $= 1.9 \times 10^{-5}$.

139. How many mole of NH_3 must be added to 1.0 litre of 0.750 M $AgNO_3$ is order to reduce the silver in concentration to 5.0×10^{-8}M ? Given K_f of $\left[Ag(NH_3)_2\right]^+ = 1 \times 10^8$.

140. Two buffers (X) and (Y) of pH 4.0 and 6.0 respectively are prepared from acid HA and the salt NaA. Both the buffers are 0.50 M in HA. What would be the pH of the solution obtained by mixing equal volumes of two buffers ? ($K_{HA} = 1.0 \times 10^{-5}$)