

Hydrogen ion concentration- pH scale and Buffer solution

101. The pH value of decinormal solution of NH_4OH which is 20% ionised, is
 (a) 13.30 (b) 14.70
 (c) 12.30 (d) 12.95

102. A physician wishes to prepare a buffer solution at $pH = 3.58$ that efficiently resists changes in pH yet contains only small concentration of the buffering agents. Which of the following weak acids together with its sodium salt would be best to use
 (a) m -chlorobenzoic acid ($pK_a = 3.98$)
 (b) p -chlorocinnamic acid ($pK_a = 4.41$)
 (c) 2,5-dihydroxy benzoic acid ($pK_a = 2.97$)
 (d) Acetoacetic acid ($pK_a = 3.58$)

103. In a mixture of a weak acid and its salt, the ratio of concentration of acid to salt is increased ten-fold. The pH of the solution
 (a) Decreases by one
 (b) Increases by one-tenth
 (c) Increases by one
 (d) Increases ten-fold

104. When an acid or alkali is mixed with buffer solution, then pH of buffer solution
 (a) Not changes
 (b) Changes slightly
 (c) Increases

(d) Decreases

105. How much sodium acetate should be added to a $0.1M$ solution of CH_3COOH to give a solution of $pH = 5.5$ (pK_a of $CH_3COOH = 4.5$)
 (a) $0.1M$ (b) $0.2M$
 (c) $1.0M$ (d) $10.0M$

106. The pH of the aqueous solution containing $0.49g$ of H_2SO_4 in one litre is
 (a) 2 (b) 1
 (c) 1.7 (d) 0.3

107. Which of the following solutions can act as buffer
 (a) 0.1 molar aq. $NaCl$
 (b) 0.1 molar aq. $CH_3COOH + 0.1$ molar $NaOH$
 (c) 0.1 molar aq. ammonium acetate
 (d) None of the above

108. The pH of a solution obtained by mixing $50ml$ of $0.4NHCl$ and $50ml$ of $0.2NNaOH$ is
 (a) $-\log 2$ (b) $-\log 0.2$
 (c) 1.0 (d) 2.0

109. Which of the following is a buffer?
 (a) $NaOH + CH_3COONa$
 (b) $NaOH + Na_2SO_4$
 (c) 1×10^{-4}
 (d) $NH_4OH + CH_3COONH_4$



110. If 4.0 gm NaOH is present in 1 litre solution, then its pH will be] (a) 6 (b) 13 (c) 18 (d) 24
111. The pOH of beer is 10.0. The hydrogen ion concentration will be] (a) 10^{-2} (b) 10^{-10} (c) 10^{-8} (d) 10^{-4}
112. When a buffer solution of sodium acetate and acetic acid is diluted with water] (a) Acetate ion concentration increases (b) H^+ ion concentration increases (c) OH^- ion concentration increases (d) H^+ ion concentration remain unaltered
113. What is the pH of $Ba(OH)_2$ if normality is (a) 4 (b) 10 (c) 7 (d) 9
114. What will be the pH of a solution formed by mixing 40ml of 0.10M HCl with 10ml of 0.45M NaOH (a) 12 (b) 10 (c) 8 (d) 6
115. The pH of a solution having $[H^+] = 10 \times 10^{-4}$ moles/litre will be (a) 1 (b) 2 (c) 3 (d) 4
116. If 0.4gm NaOH is present in 1 litre solution, then its pH will be (a) 2 (b) 10 (c) 11 (d) 12
117. Which of the following is not a Bronsted acid (a) $CH_3NH_4^+$ (b) CH_3COO^- (c) H_2O (d) HSO_4^-
118. pH of 0.005 M H_2SO_4 solution will be (a) 0.005 (b) 2 (c) 1 (d) 0.01
119. A buffer solution is a mixture of (a) Strong acid and strong base (b) Weak acid and weak base (c) Weak acid and conjugate acid (d) Weak acid and conjugate base
120. When pH of a solution decreases, its hydrogen ion concentration (a) Decreases (b) Increases (c) Rapidly increases (d) Remains always constant

