

Hydrogen ion concentration- pH scale and Buffer solution

61. The pH of a 0.02 M solution of hydrochloric acid is
 (a) 2.0 (b) 1.7
 (c) 0.3 (d) 2.2
62. A sample of $Na_2CO_3 \cdot H_2O$ weighing 0.62 g is added to 100 ml of 0.1 N $(NH_4)_2SO_4$ solution. What will be the resulting solution
 (a) Acidic
 (b) Neutral
 (c) Basic
 (d) None of these
63. The pH of the solution is 4. The hydrogen ion concentration of the solution in mol/litre is
 (a) 9.5 (b) 10^{-4}
 (c) 10^4 (d) 10^{-2}
64. $NaOH_{(aq)}$, $HCl_{(aq)}$ and $NaCl_{(aq)}$ concentration of each is 10^{-3} M . Their pH will be respectively
 (a) 10, 6, 2 (b) 11, 3, 7
 (c) 10, 2, 6 (d) 3, 4, 7
65. The pH of 10^{-5} M aqueous solution of $NaOH$ is
 (a) 5 (b) 7
 (c) 9 (d) 11
66. The pH of 0.05 M solution of dibasic acid is
 (a) +1 (b) -1
 (c) +2 (d) -2
67. A buffer solution contains 6.4×10^{-5} of acetic acid and 0.1 M of sodium acetate. What will be its pH , if pK_a of acetic acid is 4.75
 (a) 4.00 (b) 4.75
 (c) 5.00 (d) 5.25
68. To obtain a buffer which should be suitable for maintaining a pH of about 4 – 5, we need to have in solution, a mixture of
 (a) A strong base + its salt with a weak acid
 (b) A weak base + its salt with a strong acid
 (c) A strong acid + its salt with a weak base
 (d) A weak acid + its salt with a strong base
69. The concentration of $NaOH$ solution is 10^{-8} M . Find out the (OH^-) concentration
 (a) 10^{-8}
 (b) Greater than 10^{-6}
 (c) 10^{-6}
 (d) Lies between 10^{-6} and 10^{-7}



70. The pH of $0.0001N$ solution of KOH will be
(a) 4 (b) 6 (c) 10 (d) 12
71. Given that the dissociation constant for H_2O is $K_w = 1 \times 10^{-14} \text{ mole}^2 \text{ litre}^{-2}$, what is the pH of a $0.001 \text{ molar } KOH$ solution
(a) 10^{-11} (b) 3 (c) 14 (d) 11
72. An acidic buffer solution can be prepared by mixing solution of
(a) Ammonium acetate and acetic acid
(b) Ammonium chloride and hydrochloric acid
(c) Sulphuric acid and sodium sulphate
(d) Acetic acid and sulphuric acid
(e) $NaCl$ and $NaOH$
73. Which of the following mixtures forms an acid buffer
(a) $NaOH + HCl$
(b) $CH_3COOH + CH_3COONa$
(c) $NH_4OH + NH_4Cl$
(d) $H_2CO_3 + (NH_4)_2CO_3$
74. A buffer solution has equal volumes of $0.2M NH_4OH$ and $0.02M NH_4Cl$. The pK_b of the base is 5. The pH is
(a) 10 (b) 9 (c) 4 (d) 7
75. The pH of a simple sodium acetate buffer is given by $pH = pK_a + \log \frac{[Salt]}{[Acid]}$
 K_a of acetic acid $= 1.8 \times 10^{-5}$
If $[Salt] = [Acid] = 0.1 M$, the pH of the solution would be about
(a) 7 (b) 4.7 (c) 5.3 (d) 1.4
76. Amongst the following solutions, the buffer solution is
(a) $NH_4Cl + NH_4OH$ solution
(b) $NH_4Cl + NaOH$ solution
(c) $NH_4OH + HCl$ solution
(d) $NaOH + HCl$ solution
77. The pH of solution having $[OH^-] = 10^{-7}$ is
(a) 7 (b) 14 (c) Zero (d) -7
78. 50 ml water is added to a 50 ml solution of $Ba(OH)_2$ of strength $0.01M$. The pH value of the resulting solution will be
(a) 8 (b) 10 (c) 12 (d) 6
79. pH of a solution can be expressed as
(a) $-\log_e(H^+)$
(b) $-\log_{10}(H^+)$





(c) $\log_e(H^+)$

(d) $\log_{10}(H^+)$

80. The solution of sodium carbonate has pH

(a) Greater than 7

(b) Less than 7

(c) Equal to 7

(d) Equal to zero

81.

