

PYQSide

NEET EQUILIBRIUM — IONISATION OF WEAK ACIDS/WEAK BASES (K_a, K_b) — PYQS

Max. Marks: 36

Questions: 9

Section A (MCQ)

Q.1 Phosphoric acid ionizes in three steps with their ionization constant values K_{a1} , K_{a2} and K_{a3} , respectively, while K is the overall ionization constant. Which of the following statements are true?

- A. $\log K = \log K_{a1} + \log K_{a2} + \log K_{a3}$
 B. H_3PO_4 is a stronger acid than $H_2PO_4^-$ and HPO_4^{2-}
 C. $K_{a1} > K_{a2} > K_{a3}$
 D. $K_{a1} = \frac{K_{a3} + K_{a2}}{2}$

Choose the correct answer from the options given below :

[NEET (UG) 2025]

- (1) B, C and D only (2) A, B and C only
 (3) A and B only (4) A and C only

Scan or tap for the full solution



Q.2 0.01 M acetic acid solution is 1% ionised, then pH of this acetic acid solution is :

[NEET (UG) 2022 (Phase 2)]

- (1) 1 (2) 3 (3) 2 (4) 4

Scan or tap for the full solution



Q.3 The percentage of pyridine (C_5H_5N) that forms pyridinium ion ($C_5H_5N^+H$) in a 0.10 M aqueous pyridine solution (K_b for $C_5H_5N = 1.7 \times 10^{-9}$) is

[NEET 2016 (Phase 2)]

- (1) 0.0060% (2) 0.013%
 (3) 0.77% (4) 1.6%

Scan or tap for the full solution



Q.4 Accumulation of lactic acid ($HC_3H_5O_3$), a monobasic acid in tissues leads to pain and a feeling of fatigue. In a 0.10 M aqueous solution, lactic acid is 3.7% dissociated. The value of dissociation constant, K_a , for this acid will be

[NEET 2013 (Karnataka)]

- (1) 1.4×10^{-5} (2) 1.4×10^{-4}
 (3) 3.7×10^{-4} (4) 2.8×10^{-4}

Scan or tap for the full solution



Q.5 The dissociation constants for acetic acid and HCN at 25°C are 1.5×10^{-5} and 4.5×10^{-10} respectively. The equilibrium constant for the equilibrium $CN^- + CH_3COOH \rightleftharpoons HCN + CH_3COO^-$ would be

[AIPMT 2009]

- (1) 3.3×10^{-5} (2) 3.3×10^{-4}
 (3) 3.3×10^4 (4) 3.3×10^5

Scan or tap for the full solution



Q.6 A weak acid, HA, has a K_a of 1.00×10^{-5} . If 0.100 mol of this acid is dissolved in one litre of water, the percentage of acid dissociated at equilibrium is closest to

[AIPMT 2007]

- (1) 1.00% (2) 99.9% (3) 0.100% (4) 99.0%

Scan or tap for the full solution



Q.7 At 25°C, the dissociation constant of a base, BOH, is 1.0×10^{-12} . The concentration of hydroxyl ions in 0.01 M aqueous solution of the base would be

[AIPMT 2005]

- (1) $1.0 \times 10^{-5} \text{ mol L}^{-1}$ (2) $1.0 \times 10^{-6} \text{ mol L}^{-1}$
 (3) $2.0 \times 10^{-6} \text{ mol L}^{-1}$ (4) $1.0 \times 10^{-7} \text{ mol L}^{-1}$

Scan or tap for the full solution



Q.8 Ionisation constant of CH_3COOH is 1.7×10^{-5} and concentration of H^+ ions is 3.4×10^{-4} . Then find out initial concentration of CH_3COOH molecules.

[AIPMT 2001]

- (1) 3.4×10^{-4} (2) 3.4×10^{-3}
 (3) 6.8×10^{-4} (4) 6.8×10^{-3}

Scan or tap for the full solution



Q.9 Correct relation between dissociation constants of a dibasic acid is

[AIPMT 2001]

- (1) $K_{a1} = K_{a2}$ (2) $K_{a1} > K_{a2}$
 (3) $K_{a1} < K_{a2}$ (4) $K_{a1} = \frac{1}{K_{a2}}$

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9		
Ans.	2	4	2	2	3	1	4	4	2		