1. The conjugate base of CH_3COOH is:

   ☐ H^+ (the proton it donates)

   ☐ OH^- (the base it reacts with)

   ☐ $CH_3COOH_2^+$ (the acid plus one H^+)

   ☐ CH_3COO^- (the acid minus one H^+)

2. A buffer solution is made from:

   ☐ pure water

   ☐ a weak acid and its conjugate base

   ☐ a strong base only

   ☐ a strong acid only

3. The solubility product Ksp is:

   ☐ the product of the ion concentrations, each raised to its number in the formula

   ☐ the pH of a saturated solution of the salt

   ☐ the solubility of the salt in grams per 100 g of water

   ☐ the sum of the ion concentrations in a saturated solution

4. The partition coefficient is:

   ☐ the solubility product of the solute in water

   ☐ the pH of the mixture after shaking the two solvents

   ☐ the ratio of the solute's concentrations in the two immiscible solvents

   ☐ the sum of the solute's concentrations in the two solvents

5. pH is defined as:

   ☐ $-\log[H^+]$

   $H^+ \times 14$

   $H^+ - [OH^-]$

   ☐ $\log[OH^-]$

6. A buffer keeps the pH almost constant when a small amount of acid or alkali is added.

   ☐ True ☐ False

exercises.lol exercises.com.cn

_____

8. The value of the partition coefficient depends on the polarity of the solute and solvents.

   ☐ True ☐ False

9. An acid and the base formed when it loses a proton are a conjugate _____.

_____

10. A buffer keeps the pH constant however much acid or base is added.

    ☐ True ☐ False

1. **CH_3COO^- (the acid minus one H^+)**

   Removing one H^+ from the acid leaves its conjugate base; the two differ by a single proton.

2. **a weak acid and its conjugate base**

   A weak acid and its conjugate base (e.g. ethanoic acid + sodium ethanoate) make a buffer.

3. **the product of the ion concentrations, each raised to its number in the formula**

   For a saturated solution, Ksp multiplies the ion concentrations (each to the power of its formula coefficient).

4. **the ratio of the solute's concentrations in the two immiscible solvents**

   Kpc = [solute in solvent 1] / [solute in solvent 2], constant at a fixed temperature.

5. **$-\log[H^+]$**

   pH = $-\log[H^+]$; so $[H^+] = 10^{\wedge}(-\text{pH})$.

6. **True**

   That is exactly what a buffer does – it resists changes in pH.

7. **product**

   Written Ksp.

8. **True**

   Polarity governs how the solute distributes, so it sets the partition coefficient.

9. **pair**

   e.g. HA and A^-.

10. **False**

    False. A buffer resists changes in pH only when small amounts of acid or base are added. Large additions use up the weak acid or its conjugate base.

exercises.lol exercises.com.cn