

25. Equilibria

Starter Quiz · 课前小测

A-Level Chemistry

Name: _____ Score: _____

1. The conjugate base of CH_3COOH is:

- ☐ CH_3COO^- (the acid minus one H^+)
- ☐ $\text{CH}_3\text{COOH}_2^+$
- ☐ H^+
- ☐ OH^-

2. A buffer solution is made from:

- ☐ a weak acid and its conjugate base
- ☐ a strong acid only
- ☐ a strong base only
- ☐ pure water

3. The solubility product K_{sp} is:

- ☐ the product of the ion concentrations, each raised to its number in the formula
- ☐ the sum of the ion concentrations
- ☐ the solubility in grams
- ☐ the pH of the solution

4. The partition coefficient is:

- ☐ the ratio of the solute's concentrations in the two immiscible solvents
- ☐ the sum of the concentrations
- ☐ the pH of the mixture
- ☐ the solubility product

5. pH is defined as:

- ☐ $-\log[\text{H}^+]$

$$\text{H}^+ \times 14$$

- ☐ $\log[\text{OH}^-]$

$$\text{H}^+ - [\text{OH}^-]$$

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

- ☐ True
- ☐ False

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

- ☐ True
- ☐ False

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

9. A buffer resists changes in pH when small amounts of acid or base are added.

- ☐ True
- ☐ False

10. The equilibrium constant for a sparingly soluble salt dissolving is the solubility _____.

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, K_{sp} 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**

$K_{\text{pc}} = [\text{solute in solvent 1}] / [\text{solute in solvent 2}]$, constant at a fixed temperature.

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

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

6. **True**

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

7. **True**

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

8. **pair**

e.g. HA and A^- .

9. **True**

It contains a weak acid and its conjugate base.

10. **product**

Written K_{sp} .