

Acid-Base Reactions Quiz PDF

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Which of the following is an example of a Lewis base?

- HCl
- NH₃
- H₂SO₄
- NaCl

Which of the following are examples of weak acids? (Select all that apply)

- Acetic acid
- Hydrochloric acid
- Citric acid
- Sulfuric acid

Which of the following are characteristics of a neutralization reaction? (Select all that apply)

- Formation of water
- Formation of salt
- Release of hydrogen gas
- Increase in pH

According to the Arrhenius theory, what do acids produce in aqueous solutions?

- OH⁻ ions
- H⁺ ions
- Electrons
- Neutrons

What is the role of a buffer solution?

- To increase the pH of a solution
- To decrease the pH of a solution

- To resist changes in pH
- To neutralize all acids

What are the possible outcomes of an acid-base titration? (Select all that apply)

- Determination of concentration
- Change in color of an indicator
- Formation of a precipitate
- Measurement of pH

Describe the role of an indicator in an acid-base titration and how it helps determine the endpoint.

Discuss the importance of buffer solutions in biological systems, providing an example.

What is the pH of a neutral solution at 25°C?

- 0
- 7
- 14
- 10

Which of the following is a characteristic of a strong acid?

- Partially dissociates in water
- Completely dissociates in water

- Has a high pH
- Accepts protons

Explain how the Brønsted-Lowry theory differs from the Arrhenius theory in defining acids and bases.

Describe the process of calculating the pH of a solution given the concentration of hydrogen ions.

Explain why the pH scale ranges from 0 to 14 and what each end of the scale represents in terms of acidity and basicity.

Explain the difference between a strong acid and a weak acid in terms of dissociation in water.

What is the primary product formed when an acid reacts with a base?

- Hydrogen gas
- Salt and water
- Carbon dioxide
- Oxygen

What is the pH of a solution with a hydrogen ion concentration of $1 \times 10^{-3} \text{ M}$?

- 3
- 7
- 10
- 14

Which of the following is a common indicator used in acid-base titrations?

- Phenolphthalein
- Litmus
- Bromine
- Chlorine

Which of the following substances can act as a buffer? (Select all that apply)

- A mixture of acetic acid and sodium acetate
- Pure water
- A mixture of ammonia and ammonium chloride
- Hydrochloric acid

Which of the following are strong acids? (Select all that apply)

- HCl
- H₂SO₄
- CH₃COOH

HNO₃

Which of the following statements are true about bases? (Select all that apply)

- They accept protons
- They have a pH greater than 7
- They donate electrons
- They produce OH⁻ ions in water