Multiple Choice Questions

1. What is the chemical reaction between an acid and a base called?
    - A) Oxidation reaction
    - B) Neutralization reaction
    - C) Synthesis reaction
    - D) Decomposition reaction
2. Which of the following is a characteristic of acids?
    - A) They taste bitter
    - B) They turn red litmus blue
    - C) They turn blue litmus red
    - D) They are slippery to touch
3. What is the pH of a neutral solution?
    - A) 5
    - B) 6
    - C) 7
    - D) 8
4. Which acid is commonly found in tomatoes?
    - A) Citric acid
    - B) Oxalic acid
    - C) Lactic acid
    - D) Hydrochloric acid
5. What type of acid completely dissociates in water?
    - A) Weak acid
    - B) Strong acid
    - C) Base
    - D) Salt
6. Which of the following is a strong acid?
    - A) Acetic acid
    - B) Citric acid
    - C) Hydrochloric acid (HCl)
    - D) Formic acid
7. What is the product of a neutralization reaction between an acid and a base?
    - A) Only salt
    - B) Only water
    - C) Salt and water
    - D) Acid and base
8. Which of the following bases is commonly used in soap?
    - A) Sodium hydroxide (NaOH)
    - B) Potassium hydroxide (KOH)
    - C) Both A and B
    - D) Calcium hydroxide

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9. What is the pH range of the human body?
    - A) 6.0 to 7.0
    - B) 7.0 to 7.8
    - C) 8.0 to 9.0
    - D) 9.0 to 10.0
10. Which salt does not contain water of crystallization?
    - A) Blue vitriol
    - B) Baking soda
    - C) Washing soda
    - D) Gypsum
11. What is the chemical formula for calcium carbonate?
    - A) CaO
    - B) Ca(OH)2
    - C) CaCO3
    - D) CaCl2
12. Which of the following is a weak acid?
    - A) Hydrochloric acid (HCl)
    - B) Nitric acid (HNO3)
    - C) Acetic acid (CH3COOH)
    - D) Sulfuric acid (H2SO4)
13. What happens when zinc metal is treated with a dilute solution of a strong acid?
    - A) A base is formed
    - B) A salt is formed
    - C) Hydrogen gas is evolved
    - D) Oxygen gas is evolved
14. Which of the following is a basic salt?
    - A) Sodium chloride (NaCl)
    - B) Calcium phosphate (Ca3(PO4)2)
    - C) Sodium carbonate (Na2CO3)
    - D) Copper sulfate (CuSO4)

15. What is the Arrhenius definition of an acid?
    - A) A substance that accepts a proton
    - B) A substance that donates a proton
    - C) A substance that releases hydroxide ions
    - D) A substance that absorbs water
16. Which of the following is an example of a non-metallic oxide that forms an acid when dissolved in water?
    - A) Calcium oxide (CaO)
    - B) Sulfur dioxide (SO_2)
    - C) Iron oxide (Fe_2O_3)
    - D) Aluminum oxide (Al_2O_3)

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17. What is the nature of calcium phosphate?
    - A) Acidic
    - B) Basic
    - C) Neutral
    - D) Amphoteric
18. Which of the following substances turns pH paper yellowish-orange?
    - A) Lemon juice
    - B) Vinegar
    - C) Common salt
    - D) Acidic soil solution
19. What would change the color of pH paper from yellowish-orange to greenish-blue?
    - A) Lemon juice
    - B) Vinegar
    - C) Common salt
    - D) An antacid
20. Which of the following is not a characteristic of bases?
    - A) They taste bitter
    - B) They turn red litmus blue
    - C) They are slippery to touch
    - D) They turn blue litmus red

True/False Questions

1. **True or False**: Acids always turn blue litmus red.
    - **Suggestion**: Acids are known for turning blue litmus red.
2. **True or False**: Bases are slippery to touch.
    - **Suggestion**: Bases often feel soapy or slippery.
3. **True or False**: Neutralization reactions always produce heat.
    - **Suggestion**: Neutralization reactions typically release heat.
4. **True or False**: All salts are neutral.
    - **Suggestion**: Salts formed from strong acids and strong bases are neutral.
5. **True or False**: Hydrochloric acid is a weak acid.
    - **Suggestion**: Hydrochloric acid is a strong acid.
6. **True or False**: The pH of a neutral solution is 7.
    - **Suggestion**: A pH of 7 indicates a neutral solution.
7. **True or False**: Oxalic acid is commonly found in tomatoes.

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- **Suggestion**: Citric acid is more commonly associated with tomatoes.

8. **True or False**: Calcium phosphate is an acidic salt.

   - **Suggestion**: Calcium phosphate is a basic salt.

9. **True or False**: Sodium hydroxide is used in soap making.

   - **Suggestion**: Sodium hydroxide is commonly used in soap production.

10. **True or False**: The human body maintains a pH range of 6.0 to 7.0.

    - **Suggestion**: The human body maintains a pH range of 7.0 to 7.8.

11. **True or False**: Washing soda contains water of crystallization.

    - **Suggestion**: Washing soda does not contain water of crystallization.

12. **True or False**: Acetic acid is a strong acid.

    - **Suggestion**: Acetic acid is a weak acid.

13. **True or False**: Zinc reacts with a strong acid to produce oxygen gas.

    - **Suggestion**: Zinc reacts with a strong acid to produce hydrogen gas.

14. **True or False**: Sodium carbonate is a neutral salt.

    - **Suggestion**: Sodium carbonate is a basic salt.

15. **True or False**: Arrhenius defined an acid as a substance that accepts a proton.

    - **Suggestion**: Arrhenius defined an acid as a substance that donates a proton.

Short Answer Questions

1. **Explain the difference between strong and weak acids.**

Answer: Strong acids completely dissociate in water to produce a high concentration of hydrogen ions, while weak acids only partially dissociate, resulting in a lower concentration of hydrogen ions.

2. **Describe the characteristics of bases.**

Answer: Bases are substances that taste bitter, feel slippery, and turn red litmus blue. They neutralize acids to form salts and water.

3. **What is the significance of the pH scale?**

Answer: The pH scale measures the concentration of hydrogen ions in a solution, with a pH of 7 being neutral, below 7 being acidic, and above 7 being basic.

4. **Explain the process of neutralization between an acid and a base.**

Answer: Neutralization occurs when an acid reacts with a base to form a salt and water. This reaction typically releases heat.

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5. **What are the uses of baking soda and washing soda?**

Answer: Baking soda (sodium bicarbonate) is used as a mouthwash and deodorant, while washing soda (sodium carbonate) is used for cleaning and removing stains.

Fill-in-the-Blank Questions

1. Acids are substances that _ a proton in aqueous solutions.

Answer:

2. The reaction between an acid and a base to form salt and water is known as a _ reaction.

Answer:

3. Bases are substances that taste _ and turn red litmus _.

Answer:

4. The pH of a neutral solution is _.

Answer:

5. Hydrochloric acid (HCl) is an example of a _ acid.

Answer:

6. Calcium phosphate is a _ salt because it is formed from a weak acid and a strong base.

Answer:

7. Sodium hydroxide (NaOH) is commonly used in _ making.

Answer:

8. The human body maintains a pH range of _ to _.

Answer:

9. Washing soda does not contain _ of crystallization.

Answer:

10. Acetic acid is an example of a _ acid.

Answer:

11. Zinc reacts with a strong acid to produce _ gas.

Answer:

12. Sodium carbonate is a _ salt.

Answer:

13. Arrhenius defined an acid as a substance that _ a proton.

Answer:

14. The pH scale measures the concentration of _ ions in a solution.

Answer:

15. Neutralization reactions typically _ heat.

Answer:

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