

Assessment

Acid-Base Titration and pH

Section Quiz: Aqueous Solutions and the Concept of pH

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- _____ 1. What is the concentration of hydronium ions in pure water?
- $1.0 \times 10^{-7} \text{ M}$
 - $\frac{K_w}{[\text{OH}^-]}$
 - the same as $[\text{OH}^-]$
 - All of the above
- _____ 2. As the $[\text{H}_3\text{O}^+]$ of a solution increases, the value of
- $\log [\text{H}_3\text{O}^+]$ increases.
 - $-\log [\text{H}_3\text{O}^+]$ decreases.
 - the solution's pH decreases.
 - All of the above
- _____ 3. The pH of a solution is defined as
- $\log [\text{H}_3\text{O}^+]$.
 - $-\log [\text{OH}^-]$.
 - $[\text{H}_3\text{O}^+] \times 10^{-7}$.
 - $-\log [\text{H}_3\text{O}^+]$.
- _____ 4. Which of the following is *not* a property of an acidic solution?
- $[\text{H}_3\text{O}^+]$ greater than $1 \times 10^{-7} \text{ M}$
 - $[\text{HO}^-]$ greater than $1 \times 10^{-7} \text{ M}$
 - pH value below 7
 - pOH value greater than 7
- _____ 5. A basic solution
- has a higher concentration of hydronium ions than hydroxide ions.
 - has the same concentration of hydronium and hydroxide ions.
 - has a lower concentration of hydronium ions than hydroxide ions.
 - does not have hydronium ions.

Section Quiz, *continued*

- _____ **6.** If the pH of a solution increases from 2.0 to 4.0, the H_3O^+ ion concentration
- decreases by a factor of 2.
 - decreases by a factor of 100.
 - increases by a factor of 3.
 - increases by a factor of 1000.
- _____ **7.** Which of the following substances is a weak base?
- NH_3
 - KOH
 - K_2O
 - NaOH
- _____ **8.** A solution that has a pH of 13 is a
- strong acid.
 - strong base.
 - weak acid.
 - weak base.
- _____ **9.** What is the pH of household ammonia in which the $[\text{H}_3\text{O}^+]$ is 1.0×10^{-12} M?
- 2
 - 7
 - 10
 - 12
- _____ **10.** What is the $[\text{OH}^-]$ in a sample of lime juice with a pH of 2.0?
- 1.0×10^{-2} M
 - 1.0×10^{-7} M
 - 1.0×10^{-10} M
 - 1.0×10^{-12} M

12 Solutions

Section: Types of Mixtures

- | | |
|------|-------|
| 1. a | 2. b |
| 3. c | 4. b |
| 5. d | 6. c |
| 7. a | 8. a |
| 9. b | 10. c |

Section: The Solution Process

- | | |
|------|-------|
| 1. d | 2. a |
| 3. d | 4. c |
| 5. a | 6. c |
| 7. a | 8. d |
| 9. d | 10. d |

Section: Concentration of Solutions

- | | |
|------|-------|
| 1. c | 2. a |
| 3. a | 4. d |
| 5. c | 6. d |
| 7. a | 8. d |
| 9. b | 10. c |

13 Ions in Aqueous Solutions and Colligative Properties

Section: Compounds in Aqueous Solutions

- | | |
|------|-------|
| 1. d | 2. a |
| 3. a | 4. c |
| 5. a | 6. d |
| 7. c | 8. a |
| 9. b | 10. b |

Section: Colligative Properties of Solutions

- | | |
|------|-------|
| 1. b | 2. b |
| 3. d | 4. b |
| 5. c | 6. a |
| 7. c | 8. b |
| 9. c | 10. b |

14 Acids and Bases

Section: Properties of Acids and Bases

- | | |
|------|-------|
| 1. d | 2. c |
| 3. b | 4. a |
| 5. a | 6. a |
| 7. a | 8. c |
| 9. d | 10. b |

Section: Acid-Base Theories

- | | |
|------|-------|
| 1. c | 2. b |
| 3. a | 4. b |
| 5. b | 6. a |
| 7. d | 8. c |
| 9. b | 10. d |

Section: Acid-Base Reactions

- | | |
|------|-------|
| 1. c | 2. c |
| 3. c | 4. d |
| 5. b | 6. c |
| 7. d | 8. c |
| 9. a | 10. a |

15 Acid-Base Titration and pH

Section: Aqueous Solutions and the Concept of pH

- | | |
|------|-------|
| 1. d | 2. d |
| 3. d | 4. b |
| 5. c | 6. b |
| 7. a | 8. b |
| 9. d | 10. d |

Section: Determining pH and Titrations

- | | |
|------|-------|
| 1. d | 2. b |
| 3. c | 4. a |
| 5. c | 6. b |
| 7. b | 8. b |
| 9. c | 10. a |

16 Reaction Energy

Section: Thermochemistry

- | | |
|------|-------|
| 1. d | 2. a |
| 3. b | 4. a |
| 5. c | 6. c |
| 7. c | 8. b |
| 9. c | 10. b |

Section: Driving Forces of Reactions

- | | |
|------|-------|
| 1. b | 2. a |
| 3. d | 4. a |
| 5. b | 6. a |
| 7. a | 8. b |
| 9. c | 10. d |