

Assessment

Acids and Bases**Section Quiz: Acid-Base Reactions**

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 conjugate base of the hydronium ion, H_3O^+ ?
- OH^-
 - H^+
 - H_2O
 - H_3O^{2+}
- _____ 2. The conjugate acid of the chloride ion, Cl^- , is
- Cl_2 .
 - H^+ .
 - HCl .
 - ClO .
- _____ 3. A conjugate acid is an acid that forms when
- the acid gains a proton.
 - a base loses a proton.
 - a base gains a proton.
 - an atom accepts an electron pair.
- _____ 4. Ions that are present before and after a neutralization reaction are
- nonelectrolytes.
 - metal ions.
 - neutral ions.
 - spectator ions.
- _____ 5. In an acid-base reaction, the conjugate base of the weaker acid is the
- stronger acid.
 - stronger base.
 - weaker base.
 - None of the above

Section Quiz, *continued*

- _____ **6.** An amphoteric species is one that reacts at 25°C as a(n)
- acid only.
 - base only.
 - acid or base.
 - None of the above
- _____ **7.** A conjugate base is the species that
- remains after a base has given up a proton.
 - is formed by the addition of a proton.
 - is formed by the addition of a proton to a base.
 - remains after an acid has given up a proton.
- _____ **8.** In the following reaction, which substance is the conjugate base of HClO_4 ?
- $$\text{HClO}_4(aq) + \text{H}_2\text{O}(l) \rightarrow \text{H}_3\text{O}^+(aq) + \text{ClO}_4^-(aq)$$
- $\text{H}_2\text{O}(l)$
 - $\text{H}_3\text{O}^+(aq)$
 - $\text{ClO}_4^-(aq)$
 - Both (a) and (b)
- _____ **9.** Water is amphoteric. If it reacts with a compound that is a stronger acid than itself, water acts as a
- weak base.
 - strong base.
 - weak acid.
 - hydroxide ion.
- _____ **10.** Which of the following is most acidic?
- H_2CrO_4
 - $\text{Cr}(\text{OH})_3$
 - $\text{Cr}(\text{OH})_2$
 - Cr

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 |

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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 |