

Assessment

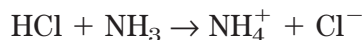
Acids and Bases

Section Quiz: Acid-Base Theories

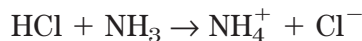
In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- _____ 1. All Brønsted-Lowry acids
- are aqueous solutions.
 - can act as Arrhenius acids.
 - donate protons.
 - All of the above
- _____ 2. Which of the following substances is both a Brønsted-Lowry base and an Arrhenius base?
- $\text{NH}_3(s)$
 - $\text{NH}_3(aq)$
 - $\text{HCl}(g)$
 - $\text{HCl}(aq)$

- _____ 3. In the following reaction, which substance acts as a Brønsted-Lowry acid?



- HCl
 - NH_3
 - NH_4^+
 - Cl^-
- _____ 4. In the following reaction, which substance acts as a Brønsted-Lowry base?



- HCl
 - NH_3
 - NH_4^+
 - Cl^-
- _____ 5. Which of the following is a polyprotic acid?
- HCl
 - H_2SO_4
 - HNO_3
 - HF

Section Quiz, continued

- _____ **6.** Which stage of ionization of H_3PO_4 produces the most ions in solution?
- $\text{H}_3\text{PO}_4(aq) + \text{H}_2\text{O}(l) \rightleftharpoons \text{H}_3\text{O}^+(aq) + \text{H}_2\text{PO}_4^-(aq)$
 - $\text{H}_2\text{PO}_4^-(aq) + \text{H}_2\text{O}(l) \rightleftharpoons \text{H}_3\text{O}^+(aq) + \text{HPO}_4^{2-}(aq)$
 - $\text{HPO}_4^{2-}(aq) + \text{H}_2\text{O}(l) \rightleftharpoons \text{H}_3\text{O}^+(aq) + \text{PO}_4^{3-}(aq)$
 - All stages produce the same number of ions in solution.
- _____ **7.** Which of the following can act as a Lewis acid?
- $\text{NH}_3(aq)$
 - $\text{Cl}^-(aq)$
 - $\text{BF}_4^-(aq)$
 - $\text{Ag}^+(aq)$
- _____ **8.** A Lewis acid
- is an anion.
 - donates an electron pair to form a covalent bond.
 - can be a substance that does not contain a hydrogen atom.
 - All of the above
- _____ **9.** Which of the following substances can act as an Arrhenius base, a Brønsted-Lowry base, and a Lewis base?
- $\text{F}^-(aq)$
 - $\text{NH}_3(aq)$
 - $\text{H}^+(aq)$
 - $\text{NaOH}(aq)$
- _____ **10.** Which of the following will be present in an aqueous solution of H_2SO_4 ?
- $\text{H}_3\text{O}^+(aq)$
 - $\text{HSO}_4^-(aq)$
 - $\text{SO}_4^{2-}(aq)$
 - All of the above

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 |