

Assessment

Acid-Base Titration and pH

Section Quiz: Determining pH and Titrations

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

- _____ 1. An acid-base indicator
- is either a weak acid or a weak base.
 - has a different color at a different pH.
 - can be used to find the equivalence point.
 - All of the above
- _____ 2. A pH meter measures the
- color change in solution.
 - voltage difference between two electrodes in solution.
 - concentration of acid-base indicator in solution.
 - All of the above
- _____ 3. When performing the calculation for a titration experiment, you need to have the balanced equation for the neutralization reaction in order to determine
- the volume of acid added to reach the equivalent point.
 - the volume of base added to reach the equivalent point.
 - the chemically equivalent amount of acid and base.
 - Both (a) and (b)
- _____ 4. A titration always involves the
- controlled addition of a standard solution.
 - addition of a strong acid.
 - addition of a strong base.
 - addition of metal ions.
- _____ 5. For any acid titrated with a base, the equivalence point occurs when the
- pH of the mixture of acid and base is 7.0.
 - mass of the acid and mass of the base are equal.
 - acid and base are present in chemically equivalent amounts.
 - volume of the acid and the volume of the base are equal.

Section Quiz, *continued*

- _____ **6.** What is monitored in an acid-base titration?
- temperature
 - pH
 - pressure
 - density
- _____ **7.** During an acid-base titration, a rapid change in pH
- occurs when the first addition of the standard solution is made.
 - occurs when the amounts of H_3O^+ ions and OH^- ions are nearly equal.
 - occurs at several points during the titration.
 - should not occur.
- _____ **8.** An indicator, congo red, has a transition range of pH 3.0–5.0. It would be a good indicator for titrating a
- strong acid and a strong base.
 - strong acid and a weak base.
 - weak acid and a strong base.
 - weak acid and a weak base.
- _____ **9.** Using an indicator to determine pH is preferred over using a pH meter when
- a strong acid is reacted with a strong base.
 - high precision is required.
 - a quick and approximate answer is satisfactory.
 - a weak acid is reacted with a weak base.
- _____ **10.** The neutralization of any strong acid and strong base produces mostly
- H_2O molecules.
 - H_3O^+ ions and OH^- ions.
 - H_3O^+ ions.
 - OH^- ions.

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 |