

## 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***

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- \_\_\_\_\_ 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  $\text{H}_3\text{O}^+$  ions and  $\text{OH}^-$  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
- $\text{H}_2\text{O}$  molecules.
  - $\text{H}_3\text{O}^+$  ions and  $\text{OH}^-$  ions.
  - $\text{H}_3\text{O}^+$  ions.
  - $\text{OH}^-$  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 |