



# Standardized Test Prep

Answer the following items on a separate piece of paper.

## MULTIPLE CHOICE

- Distilled water contains
  - $\text{H}_2\text{O}$ .
  - $\text{H}_3\text{O}^+$ .
  - $\text{OH}^-$ .
  - All of the above
- What is the pH of a 0.0010 M  $\text{HNO}_3$ ?
  - 1.0
  - 3.0
  - 4.0
  - 5.0
- Which of the following solutions would have a pH value greater than 7?
  - $[\text{OH}^-] = 2.4 \times 10^{-2} \text{ M}$
  - $[\text{H}_3\text{O}^+] = 1.53 \times 10^{-2} \text{ M}$
  - 0.0001 M  $\text{HCl}$
  - $[\text{OH}^-] = 4.4 \times 10^{-9} \text{ M}$
- If the pH of a solution of the strong base  $\text{NaOH}$  is known, which property of the solution can be calculated?
  - molar concentration
  - $[\text{OH}^-]$
  - $[\text{H}_3\text{O}^+]$
  - All of the above
- A neutral aqueous solution
  - has a 7.0 M  $\text{H}_3\text{O}^+$  concentration.
  - contains neither hydronium ions nor hydroxide ions.
  - has an equal number of hydronium ions and hydroxide ions.
  - None of the above
- Identify the salt that forms when a solution of  $\text{H}_2\text{SO}_4$  is titrated with a solution of  $\text{Ca}(\text{OH})_2$ .
  - calcium sulfate
  - calcium hydroxide
  - calcium oxide
  - calcium phosphate
- The pH of a solution is 6.32. What is the pOH?
  - 6.32
  - $4.8 \times 10^{-7}$
  - 7.68
  - $2.1 \times 10^{-8}$

- The  $K_w$  value for water can be affected by
  - dissolving a salt in the solution.
  - changes in temperature.
  - changes in the hydroxide ion concentration.
  - the presence of a strong acid.
- Which of the pH levels listed below is the most acidic?
  - pH = 1
  - pH = 5
  - pH = 9
  - pH = 13

## SHORT ANSWER

- A solution has a pH of 4.75. What is the hydronium ion concentration? Is the solution acidic or basic?
- A weak acid that is used as an indicator is added to a strong acid solution before titration of the strong acid with a strong base. Why doesn't the weak acid affect the value calculated for the concentration of the acid?

## EXTENDED RESPONSE

- The hydroxide ion concentration in a solution is  $1.6 \times 10^{-11} \text{ M}$ . What are the  $[\text{H}_3\text{O}^+]$ , the pH, and the pOH of the solution?
- Write the balanced equation and the net ionic equation that represent the reaction that takes place when milk of magnesia (magnesium hydroxide) reacts with hydrochloric acid in your stomach.

### Test TIP

If you do not understand a question, try to reword it. But be careful not to change its meaning.