

HC Review for Acids and Bases Test

- 1) What is the hydronium ion concentration in a solution with a $[\text{OH}^-] = 2.5 \times 10^{-4} \text{ M}$?
- 2) What is the pH of a solution with a $[\text{H}_3\text{O}^+] = 4.5 \times 10^{-8} \text{ M}$?
- 3) What is the pH of a 0.001 M HBr solution?
- 4) What is the K_a for a 0.100 M HCN solution with a $[\text{H}_3\text{O}^+] = 7.85 \times 10^{-6} \text{ M}$?
- 5) What is the $[\text{H}_3\text{O}^+]$ for a 0.225 M chlorous acid solution? ($K_a = 1.1 \times 10^{-2}$)
What is the pH of the solution?
- 6) Write the balanced equation for the reaction which occurs between magnesium metal and sulfuric acid.
- 7) Write the balanced chemical equation for the neutralization of phosphoric acid with barium hydroxide.
- 8) What volume of 0.250 M phosphoric acid is needed to neutralize 30.00 mL of a 0.0500 M barium hydroxide solution?
- 9) What is the molarity of NaOH solution in 25.00 mL is required to completely neutralize 40.00 mL of a 1.5 M H_2SO_4 (aq)?
- 10) Write the correct numerical set up for calculating the concentration of Ag^+ ions in a saturated solution of Ag_2S ? ($K_{sp} = 6.31 \times 10^{-50}$)
- 11) What is the $[\text{Ba}^{2+}]$ in a saturated solution of BaCrO_4 ? ($K_{sp} = 2.00 \times 10^{-10}$)
- 12) The only positive ion found in an aqueous solution of sulfuric acid is the
 - a. Hydroxide ion
 - b. Sulfate ion
 - c. Hydronium ion
 - d. Sulfite ion
- 13) Which substance is an Arrhenius acid?
 - a. $\text{HC}_2\text{H}_3\text{O}_2$
 - b. CH_3OH
 - c. KOH
 - d. NH_3
- 14) Which of the following pH values indicated the highest concentration of hydronium ions in a solution?
 - a. pH = 1
 - b. pH = 2
 - c. pH = 3
 - d. pH = 4
- 15) When the pH of a solution changes from pH of 5 to a pH of 3, the hydronium ion concentration is
 - a. 0.1 of the original content
 - b. 10 times the original content
 - c. 0.01 of the original content
 - d. 100 times the original content
- 16) Compared to a solution with a pH of 8, a solution with a pH of 11 has a hydronium ion concentration that is
 - a. 3x greater
 - b. 3x less
 - c. 1000x greater
 - d. 1000x less
- 17) A solution with an initial pH of 4.00 has a 10000 fold decrease in the $[\text{H}_3\text{O}^+]$. The new pH of the solution is
 - a. 4
 - b. 7
 - c. 1
 - d. 8

- 18) Which indicator is yellow in a solution with a pH of 9.8?
- Thymol blue
 - Bromocresol green
 - Bromthymol blue
 - Methyl orange
- 19) What pH level would both thymol blue and bromthymol blue indicators be blue?
- 8
 - 10
 - 9
 - 7
- 20) What is the pH of a solution that changes both methyl orange and litmus red?
- 6
 - 2
 - 8
 - 4
- 21) In a 0.01 M solution of HCl, litmus will be
- Blue and phenolphthalein will be pink
 - Red and phenolphthalein will be pink
 - Red and phenolphthalein will be colorless
 - Blue and phenolphthalein will be colorless
- 22) Which solution will turn phenolphthalein pink?
- CH₃OH
 - CH₃COOH
 - HCl
 - NaOH
- 23) Which solution will thymol blue appear blue?
- 0.10 M KOH
 - 0.10 M H₂SO₄
 - 0.10 M HCl
 - 0.10 M CH₃COOH
- 24) What is the pH of a solution formed by completely neutralizing 50 mL of a 0.1 M HNO₃ with 50 mL of 0.1 M NaOH?
- 1
 - 7
 - 10
 - 4
- 25) In the reaction: $\text{CO}_3^{2-} + \text{H}_2\text{O} \leftrightarrow \text{HCO}_3^- + \text{OH}^-$ the carbonate ion is acting as a(n):
- Arrhenius base
 - Arrhenius acid
 - Bronsted-Lowry base
 - Bronsted-Lowry acid
- 26) What is the conjugate base of H₂S?
- H₃S⁺
 - OH⁻
 - HS⁻
 - S²⁻
- 27) Which of the following salts when dissolved in water will create an acidic solution?
- NaCl
 - Li₂CO₃
 - NH₄NO₃
 - K₂SO₄
- 28) Which of the following is an acidic anhydride?
- SO₂
 - Na₂O
 - CaO
 - Al₂O₃
- 29) Which of these solutions is most basic?
- [H₃O⁺] = 1 x 10⁻¹¹
 - [OH⁻] = 1 x 10⁻⁴
 - [H₃O⁺] = 1 x 10⁻²
 - [OH⁻] = 1 x 10⁻¹³
- 30) Among the following K_a values, which is the strongest acid?
- K_a = 1.2 x 10⁻³
 - K_a = 3.4 x 10⁻⁵
 - K_a = 8.7 x 10⁻⁸
 - K_a = 5.8 x 10⁻¹⁰