

Chapter 14 Practice Questions

- 1) The Arrhenius definition of an acid is:
- A) produces H^+ in solution.
 - B) a proton donor.
 - C) produces OH^- in solution.
 - D) a proton acceptor.
 - E) none of the above
- 2) The Bronsted-Lowry definition of a base is:
- A) a proton acceptor.
 - B) a proton donor.
 - C) produces OH^- in solution.
 - D) produces H^+ in solution.
 - E) none of the above
- 3) What is the conjugate acid of OH^- ?
- A) NaOH
 - B) OH^-
 - C) O^{2-}
 - D) H_2O
 - E) none of the above
- 4) Which of the following is NOT an acid-base conjugate pair?
- A) H_2S and OH^-
 - B) H_2CO_3 and HCO_3^-
 - C) NH_4^+ and NH_3
 - D) H_2O and OH^-
 - E) none of the above
- 5) In the following reaction:
- $$\text{HCO}_3^- (aq) + \text{H}_2\text{O} (aq) \rightarrow \text{H}_2\text{CO}_3 (aq) + \text{OH}^- (aq)$$
- A) H_2O is an acid and OH^- is its conjugate base.
 - B) H_2O is an acid and H_2CO_3 is its conjugate base.
 - C) HCO_3^- is an acid and H_2CO_3 is its conjugate base.
 - D) HCO_3^- is an acid and OH^- is its conjugate base.
 - E) H_2O is an acid and HCO_3^- is its conjugate base.
- 6) A substance that acts as an acid OR a base is called:
- A) isoprotic.
 - B) a salt.
 - C) hydrophillic.
 - D) amphoteric.
 - E) none of the above

- 7) A neutralization reaction between an acid and sodium hydroxide formed water and the salt named sodium sulfate. What was the formula of the acid that was neutralized?
- A) Na_2SO_4
 - B) H_2S
 - C) HCl
 - D) H_2SO_4
 - E) none of the above
- 8) A 25.0 mL sample of 0.105 M HCl was titrated with 31.5 mL of NaOH . What is the concentration of the NaOH ?
- A) 0.075 M
 - B) 0.132 M
 - C) 0.0833 M
 - D) 0.105 M
 - E) none of the above
- 9) Exactly 17.0 mL of a H_2SO_4 solution was required to neutralize 45.0 mL of 0.235 M NaOH . What was the concentration of the H_2SO_4 solution?
- Given: $\text{H}_2\text{SO}_4 (\text{aq}) + 2\text{NaOH} (\text{aq}) \rightarrow 2\text{H}_2\text{O} (\text{l}) + \text{Na}_2\text{SO}_4 (\text{aq})$
- A) 0.622 M
 - B) 5.63 M
 - C) 0.311 M
 - D) 0.00529 M
 - E) none of the above
- 10) Which of the following acids is a diprotic, weak acid?
- A) sulfuric acid
 - B) carbonic acid
 - C) hydrobromic acid
 - D) phosphoric acid
 - E) none of the above
- 11) What is the concentration of H^+ in 0.50 M hydroiodic acid?
- A) 1.0 M
 - B) 0.50 M
 - C) 1.50 M
 - D) <0.50 M
 - E) none of the above
- 12) Ammonia (NH_3) ionizes in water to form a basic solution. What is the concentration of OH^- ions in a 0.75 M NH_3 solution?
- A) 0.75 M
 - B) No OH^- ions exist in a solution of NH_3 .
 - C) >0.75 M
 - D) <0.75 M
 - E) none of the above

- 13) What is the concentration of the hydroxide ion given that the concentration of the hydronium ion is $1.5 \times 10^{-5} \text{ M}$?
- A) $1.5 \times 10^9 \text{ M}$
 - B) $1.0 \times 10^{-19} \text{ M}$
 - C) $6.7 \times 10^{-10} \text{ M}$
 - D) $1.0 \times 10^{-14} \text{ M}$
 - E) none of the above
- 14) The pH of a solution is 5.00. Which of the following is TRUE about the solution?
- A) Its $[\text{H}_3\text{O}^+]$ is $1.0 \times 10^{-9} \text{ M}$
 - B) Its $[\text{H}_3\text{O}^+]$ is $1.0 \times 10^5 \text{ M}$
 - C) Its $[\text{H}_3\text{O}^+]$ is $1.0 \times 10^{-5} \text{ M}$
 - D) It is more acidic than a solution whose pH is 4.00.
 - E) none of the above
- 15) Which solution below has the highest concentration of hydroxide ions?
- A) pH = 7.00
 - B) pH = 12.49
 - C) pH = 7.93
 - D) pH = 3.21
 - E) pH = 10.12
- 16) What is the $[\text{H}^+]$ in a solution that has a pH of 3.35?
- A) $4.5 \times 10^{-4} \text{ M}$
 - B) $1 \times 10^{3.35} \text{ M}$
 - C) $2.2 \times 10^3 \text{ M}$
 - D) $3.35 \times 10^{-14} \text{ M}$
 - E) none of the above
- 17) What is the pOH of a solution that has a OH^- concentration equal to $1.3 \times 10^{-10} \text{ M}$?
- A) 4.29
 - B) 9.89
 - C) 4.12
 - D) -4.3
 - E) none of the above
- 18) What is the $[\text{OH}^-]$ in a solution that has a pOH of 9.65?
- A) $4.5 \times 10^{-9} \text{ M}$
 - B) $2.2 \times 10^{-10} \text{ M}$
 - C) $9.8 \times 10^{-1} \text{ M}$
 - D) $4.5 \times 10^5 \text{ M}$
 - E) none of the above
- 19) Which combination below will be a buffer solution?
- A) HNO_3 and NaNO_3
 - B) NaBr and NaOH
 - C) HCl and Cl^-
 - D) $\text{H}_2\text{C}_2\text{O}_4$ and $(\text{NH}_4)_2\text{C}_2\text{O}_4$
 - E) NaOH and NH_3

Answer Key

Testname: PRACTICEQ_CH14

- 1) A
- 2) A
- 3) D
- 4) A
- 5) A
- 6) D
- 7) D
- 8) C
- 9) C
- 10) B
- 11) B
- 12) D
- 13) C
- 14) C
- 15) B
- 16) A
- 17) B
- 18) B
- 19) D