CHAPTER 15 PREP-TEST: SOLUTIONS

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Carbon dioxide in water is an example of which solute-solvent combination?
   a. gas-liquid  c. liquid-liquid
   b. liquid-gas  d. cannot be determined

____ 2. A metal solution is a(n)
   a. colloid.  c. suspension.
   b. alloy.  d. electrolyte.

____ 3. Increasing the surface area between solute and solvent
   a. increases the rate of dissolution.
   b. decreases the rate of dissolution.
   c. has no effect on the rate of dissolution.
   d. can increase, decrease, or have no effect on the rate of dissolution.

____ 4. Stirring increases the rate of dissolution because it
   a. raises the temperature.
   b. lowers the temperature.
   c. brings fresh solvent into contact with the solute.
   d. decreases surface area of the solute.

____ 5. If the amount of solute present in a solution at a given temperature is less than the maximum amount that can
dissolve at that temperature, the solution is said to be
   a. saturated.  c. supersaturated.
   b. unsaturated.  d. concentrated.

____ 6. Which of the following is an example of a polar solvent?
   a. carbon tetrachloride  c. water
   b. benzene  d. gasoline

____ 7. Which of the following is soluble in water?
   a. potassium nitrate  c. sodium
   b. silver  d. carbon tetrachloride

____ 8. Sugar is slightly soluble in water because sugar molecules are
   a. massive.  c. nonpolar.
   b. large.  d. polar.

____ 9. Pressure has the greatest effect on the solubility of
   a. solids in liquids.  c. gases in gases.
   b. liquids in liquids.  d. gases in liquids.

____ 10. What is the molarity of a solution that contains 1.5 mol KCl in 3.00 L solution?
    a. 0.5 M  c. 0.4 M
    b. 4.5 M  d. 1.5 M

____ 11. What is the molarity of a solution that contains 20. g NaOH in 4.00 L solution?
    a. 0.13 M  c. 8.0 M
    b. 0.50 M  d. 20 M

____ 12. How many moles of HCl are present in 0.50 L of a 2 M HCl solution?
    a. 1.0 mol  c. 0.5 mol
    b. 2.0 mol  d. 2.0 mol
13. A NaOH solution contains 2 mol of NaOH, and its concentration is 0.5 M. What is its volume?
   a. 0.5 L  
   b. 0.2 L  
   c. 1.05 L  
   d. 4.0 L

14. Which of the following usually makes a substance dissolve faster in a solvent?
   a. agitating the solution  
   b. increasing the particle size of the solute  
   c. lowering the temperature  
   d. decreasing the number of particles

15. What is the molarity of a solution that contains 6 moles of solute in 2 liters of solution?
   a. 6 M  
   b. 12 M  
   c. 7 M  
   d. 3 M

16. What is the molarity of 200 mL of solution in which 2.0 moles of sodium bromide is dissolved?
   a. 2.0 M  
   b. 10 M  
   c. 0.40 M  
   d. 4.0 M

17. A KCl solution contains 149.1 g of KCl (molar mass 74.55 g/mol) in 4000 mL of solution. What units do the amount of solute and the volume of solution need to be in to obtain the molarity of 0.5 M?
   a. mol and L  
   b. grams and mol  
   c. grams and L  
   d. mol and cubic centimeters

18. Which of the following is true about ionic crystals?
   a. They consist of molecules held together by intermolecular forces.  
   b. They are polar.  
   c. Their structure consists of positive and negative ions arranged in a regular pattern.  
   d. They are atomic solids.
19. 40 g of NaCl at 50 °C in 100 g of water would be considered a(n) ________ solution.
   a. saturated 
   b. unsaturated 
   c. supersaturated 
   d. none of these

20. 85 g of NaNO₃ at 15 °C in 100 g of water would be considered a(n) ________ solution.
   a. saturated 
   b. unsaturated 
   c. supersaturated 
   d. none of these