

Ch.15-16 Review

Multiple Choice

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

Name:

Date: CALVIN

Hour:

B 1. A substance that does NOT conduct an electric current when it forms a solution is a(n) \_\_\_\_.

- a. electrolyte  
 b. nonelectrolyte  
 c. liquid  
 d. solid

B 2. A solution that contains all of the solute it can hold at a given temperature is \_\_\_\_.

- a. diluted  
 b. saturated  
 c. supersaturated  
 d. unsaturated

A 3. The process by which the positive and negative ions of a crystalline solid separate in water is called \_\_\_\_.

- a. dissociation  
 b. ionization  
 c. solution  
 d. saturation

C 4. Adding more solute to a solvent \_\_\_\_.

- a. decreases its boiling point  
 b. does not affect its boiling point  
 c. increases its boiling point  
 d. increases its freezing point

A 5. Surface tension \_\_\_\_.

- a. is the inward force which tends to minimize the surface area of a liquid  
 b. may be increased by detergents  
 c. is decreased by hydrogen bonding  
 d. causes beads of water to spread out

A 6. What is the term for the dissolving medium in a solution?

- a. solvent  
 b. solute  
 c. solvator  
 d. emulsifier

A 7. Which of the following substances is the most soluble in water?

- a. sodium chloride  
 b. methane  
 c. bromine  
 d. carbon

A 8. Which of the following substances dissolves most readily in gasoline?

- a. CH<sub>4</sub>  
 b. HCl  
 c. NH<sub>3</sub>  
 d. NaBr

A 9. Which of the following are weak electrolytes in water?

- a. ionic compounds that partially dissociate in water  
 b. ionic compounds that are soluble  
 c. polar compounds that ionize  
 d. nonpolar compounds that do not ionize

B 10. Which of the following mixture types is characterized by the settling of particles?

- a. solution  
 b. suspension  
 c. colloid  
 d. hydrate

A 11. Which of the following mixture types can be filtered to remove solute?

- a. suspensions only  
 b. colloids only  
 c. suspensions and colloids  
 d. suspensions and solutions

D 12. Which of the following mixtures is NOT a colloid?

- a. fog  
 b. milk  
 c. paint  
 d. sugar water

A 13. 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

C 14. What is the maximum amount of KCl that can dissolve in 200 g of water?

- (The solubility of KCl is 34 g/100 g H<sub>2</sub>O at 20°C.)  
 a. 17 g  
 b. 34 g  
 c. 68 g  
 d. 6800 g

- D 15. If a crystal added to an aqueous solution causes many particles to come out of the solution, the original solution was \_\_\_\_.
- a. unsaturated  
b. saturated  
c. an emulsion  
d. supersaturated
- B 16. In a concentrated solution there is \_\_\_\_.
- a. no solvent  
b. a large amount of solute  
c. a small amount of solute  
d. no solute
- D 17. What is the molarity of a solution that contains 6 moles of solute in 2 liters of solution?
- a.  $6M$   
b.  $12M$   
c.  $7M$   
d.  $3M$
- C 18. What does NOT change when a solution is diluted by the addition of solvent?
- a. volume of solvent  
b. mass of solvent  
c. number of moles of solute  
d. molarity of solution
- C 19. Colligative properties depend upon the \_\_\_\_.
- a. nature of the solute  
b. nature of the solvent  
c. number of solute particles in a solution  
d. freezing point of a solute
- B 20. A solute depresses the freezing point because the solute \_\_\_\_.
- a. is colder than the solvent  
b. disrupts crystal formation of the solvent  
c. tends to sink to the bottom of the solution  
d. has bigger molecules than the solvent

#### Completion

Complete each statement.

21. When a liquid is insoluble in another liquid, the liquids are said to be immiscible.
22. A substance that does not dissolve in a solvent is said to be insoluble in that solvent.
23. A measure of the amount of solute dissolved in a specific amount of solvent or solution is called the concentration of the solution.
24. The type of solution formed by creek water after heavy rain is called suspension.
25. Air contains oxygen as the solute and nitrogen as the solvent.

#### Matching

Match each item with the correct statement below.

- |                     |                |
|---------------------|----------------|
| a. solvation        | e. electrolyte |
| b. weak electrolyte | f. colloid     |
| c. aqueous solution | g. surfactant  |
| d. solvent          |                |

- G 26. interferes with hydrogen bonding between water molecules
- D 27. dissolving medium
- C 28. homogeneous mixture of water and dissolved substances
- A 29. Solute ions or molecules are surrounded by solvent molecules.
- E 30. compound that will conduct current in the liquid state or in aqueous solution
- B 31. compound that ionizes incompletely in aqueous solution
- F 32. mixture in which particle size averages between 1 nm and 1000 nm

Match each item with the correct statement below.

- |                      |                   |
|----------------------|-------------------|
| a. dispersed phase   | e. Tyndall effect |
| b. surface tension   | f. suspension     |
| c. Brownian motion   | g. solute         |
| d. dispersion medium | h. emulsion       |

- B 33. inward force tending to minimize surface area of a liquid  
G 34. dissolved particle  
F 35. mixture in which particle size averages greater than 1000 nm in diameter  
A 36. Colloidal particles spread throughout a suspension.  
E 37. phenomenon observed when beam of light passes through a colloid  
C 38. chaotic movement of colloidal particles  
H 39. colloid of a liquid in a liquid

Match each item with the correct statement below.

- |                       |                            |
|-----------------------|----------------------------|
| a. Henry's law        | d. supersaturated solution |
| b. immiscible         | e. concentration           |
| c. saturated solution |                            |

- B 40. describes liquids that are insoluble in one another  
C 41. solution containing maximum amount of solute  
D 42. solution containing more solute than can theoretically dissolve at a given temperature  
A 43. At a given temperature, the solubility of a gas in a liquid is directly proportional to the pressure of the gas above the liquid.  
E 44. measure of the amount of solute dissolved in a specified quantity of solvent

Match each item with the correct statement below.

- |                            |                              |
|----------------------------|------------------------------|
| a. boiling point elevation | d. molarity                  |
| b. molality                | e. freezing point depression |
| c. mole fraction           |                              |

- D 45. number of moles of solute dissolved in 1 L of solution  
E 46. a colligative property related to the fact that ice will form at higher temperatures in the Great Lakes than in the ocean  
A 47. a colligative property related to a decrease in the vapor pressure of a solution  
B 48. number of moles of solute dissolved in 1 kg of solvent  
C 49. ratio of moles of solute in solution to total number of moles of both solvent and solute

#### Short Answer

50. Explain why a soft drink loses its fizz after it has been open and left without a lid on its container.

#### Essay

Less pressure allows  $\text{CO}_2(\text{g})$  to escape

51. Explain what a saturated solution is. Give a specific example.

→ No more solute can be dissolved

Ex. / Sugar at the bottom of cereal milk