

**An Introduction to General Organic and Biological Chemistry: 12th Edition  
Test Bank – Timberlake**

**9.1 Multiple-Choice Questions**

- 1) The O-H bond in water is polar because \_\_\_\_\_.
- A) it is an ionic bond
  - B) oxygen is much more electronegative than hydrogen
  - C) oxygen occupies more space than hydrogen
  - D) hydrogen is much more electronegative than oxygen
  - E) it is a hydrogen bond

Answer: B

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

- 2) A hydrogen bond is \_\_\_\_\_.
- A) an attractive force between molecules where partially positive hydrogen atoms are attracted to partially negative atoms of F, O, or N
  - B) a covalent bond between H and O
  - C) an ionic bond between H and another atom
  - D) a bond that is stronger than a covalent bond

E) the polar O-H bond in water

Answer: A

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

- 3) In a solution, the solvent \_\_\_\_\_.
- A) is a liquid.
  - B) can be a liquid or gas.
  - C) can be a solid, liquid, or gas.
  - D) is never a solid.

E) is the substance present in the smallest concentration. Answer: C

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) Which of the following molecules can form hydrogen bonds?

B) NaH

C)

D)

E) HI

Answer: C

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

5) A mixture is prepared by dissolving 2 g of KCl in 100 g of O. In this mixture, O is the \_\_\_\_\_.

A) solute

B) solvent

C) solution

D) solid

E) ionic compound

Answer: B

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

6) Oil does not dissolve in water because \_\_\_\_\_.

A) oil is polar

B) oil is nonpolar

C) water is nonpolar

D) water is saturated

E) oil is hydrated

Answer: B

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

7) When KCl dissolves in water \_\_\_\_\_.

A) the ions are attracted to dissolved ions

B) the ions are attracted to the partial negative charge on the oxygen atom of the water molecule

C) the ions are attracted to ions on the KCl crystal

D) the ions are attracted to the partial negative charge on the oxygen atom of the water molecule

E) the ions are attracted to the partial positive charge on the hydrogen atoms of the water molecule

Answer: D

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

8) Water is a polar solvent and hexane ( ) is a nonpolar solvent. Which of the following correctly describes the solubility of the solute in the given solvent?

A) mineral oil, soluble in water

B) Ca , soluble in hexane

C) , soluble in water

D) , soluble in water

E) octane, soluble in water

Answer: C

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

9) In water, a substance that ionizes completely in solution is called a \_\_\_\_\_.

A) weak electrolyt                      e

B) nonelectrolyte

- C) semiconductor
- D) nonconductor
- E) strong electrolyte

Answer: E

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

10) An equivalent is \_\_\_\_\_.

- A) the amount of ion that has a 1+ charge
- B) the amount of ion that has a 1- charge
- C) the amount of ion that carries 1 mole of electrical charge
- D) 1 mole of any ion
- E) 1 mole of an ionic compound

Answer: C

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

11) How many equivalents are in 0.60 mole of ?

- A) 0.60 Eq
- B) 0.30 Eq
- C) 1.2 Eq
- D) 2.0 Eq
- E) 1.0 Eq

Answer: C

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

12) How many equivalents are in 0.40 mole of ?

- A) 0.40 Eq

- B) 0.80 Eq
- C) 0.20 Eq
- D) 2.0 Eq
- E) 1.0 Eq

Answer: A Page

Ref: 9.2 Learning

Obj.: 9.2

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

13) A solution contains 43 mEq/L of  $\text{Ca}^{2+}$  and 11 mEq/L of  $\text{Mg}^{2+}$ . If the only cation in the solution is  $\text{Ca}^{2+}$ , what is the concentration in mEq/L?

- A) 43 mEq/L
- B) 11 mEq/L
- C) 54 mEq/L
- D) 32 mEq/L
- E) 2.0 mEq/L

Answer: C Page

Ref: 9.2 Learning

Obj.: 9.2

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

14) When some of the sugar added to iced tea remains undissolved at the bottom of the glass, the solution is \_\_\_\_\_.

- A) dilute
- B) polar
- C) nonpolar
- D) saturated
- E) unsaturated

Answer: D Page

Ref: 9.3 Learning

Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

15) The solubility of KI is 50 g in 100 g of  $\text{H}_2\text{O}$  at 20 °C. If 110 grams of KI are added to 200 grams of  $\text{H}_2\text{O}$ , \_\_\_\_\_.

- A) all of the KI will dissolve

- B) the solution will freeze
- C) the solution will start boiling
- D) a saturated solution will form
- E) the solution will be unsaturated

Answer: D

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

16) The compound KOH is \_\_\_\_\_.

- A) soluble, because all compounds containing are soluble
- B) insoluble, because all compounds containing are in soluble
- C) soluble, because all compounds containing are soluble
- D) insoluble, because all compounds containing are insoluble
- E) insoluble, because KOH is insoluble

Answer: C

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

17) An increase in the temperature of a solution usually \_\_\_\_\_.

- A) increases the boiling point
- B) increases the solubility of a gas in the solution
- C) increases the solubility of a solid solute in the solution
- D) decreases the solubility of a solid solute in the solution
- E) decreases the solubility of a liquid solute in the solution

Answer: C

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

18) According to Henry's law, the solubility of a gas in a liquid \_\_\_\_\_.

- A) decreases as the gas pressure above the liquid increases
- B) increases as the gas pressure above the liquid increases
- C) remains the same as the temperature increases
- D) depends on the liquid polarity
- E) depends on the liquid density

Answer: B

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

19) The mass percent concentration refers to \_\_\_\_\_.

- A) grams of solute in 1 kg of solvent
- B) grams of solute in 1 kg of solution
- C) grams of solute in 100 g of solvent
- D) grams of solute in 100 g of solution
- E) grams of solvent in 100 g of solution

Answer: D

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

20) What is the concentration, in mass percent (m/m), of a solution prepared from 50.0 g NaCl and 150.0 g of water?

- A) 0.250% (m/m)
- B) 33.3% (m/m)
- C) 40.0% (m/m)
- D) 25.0% (m/m)
- E) 3.00% (m/m)

Answer: D

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

21) Rubbing alcohol is 70.% (m/v) isopropyl alcohol by volume. How many mL of isopropyl alcohol are in a 1 pint (473 mL) container?

- A) 70. mL

- B) 0.15 mL
- C) 680 mL
- D) 470 mL
- E) 330 mL

Answer: E Page

Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

22) What is the concentration, mass/volume percent (m/v), of a solution prepared from 50. g NaCl and 2.5 L of water?

- A) 5.0% (m/v)
- B) 2.0% (m/v)
- C) 0.020% (m/v)
- D) 0.050% (m/v)
- E) 20.% (m/v)

Answer: B Page

Ref: 9.4 Learning

Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

23) How many grams of glucose are needed to prepare 400. mL of a 2.0% (m/v) glucose solution?

- A) 800. g
- B) 0.0050 g
- C) 8.0 g
- D) 2.0 g
- E) 200. g

Answer: C Page

Ref: 9.4 Learning

Obj.: 9.4



Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

24) What volume (mL) of a 15% (m/v) NaOH solution contains 120 g NaOH?

- A) 18 mL
- B) 0.13 mL
- C) 13 mL
- D) 120 mL
- E)  $8.0 \times$  mL

Answer: E Page

Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

25) How many milliliters of a 25% (m/v) NaOH solution would contain 75 g of NaOH?

- A) 25 mL
- B) 75 mL
- C) 33 mL
- D) 19 mL
- E)  $3.0 \times$  mL

Answer: E Page

Ref: 9.4 Learning

Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

26) What is the molarity of a solution that contains 17 g of in 0.50 L of solution?

- A) 34 M
- B) 2.0 M
- C) 0.50 M
- D) 0.029 M

E) 1.0 M

Answer: B

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

27) The molarity (M) of a solution refers to \_\_\_\_\_.

A) moles of solute/L of solution

B) moles of solute/ L of solvent

C) moles of solute/100 mL of solution

D) grams of solute/100 mL of solution

E) grams of solute/L of solution

Answer: A Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

28) What is the molarity of a solution containing 5.0 moles of KCl in 2.0 L of solution?

A) 2.5 M

B) 1.0 M

C) 5.0 M

D) 10. M

E) 2.0 M

Answer: A

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

29) What is the molarity of a solution which contains 58.5 g of sodium chloride dissolved in 0.500 L of solution?

A) 0.500 M

B) 1.00 M

C) 1.50 M

D) 2.00 M

E) 4.00 M

Answer: D

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

30) How many moles of are in 250 mL of a 3.0 M of solution?

A) 750 moles

B) 1.3 moles

C) 83 moles

D) 0.75 mole E) 3.0 moles

Answer: D Page

Ref: 9.4 Learning

Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

31) What volume of a 1.5 M KOH solution is needed to provide 3.0 moles of KOH?

A) 3.0 L

B) 0.50 L

C) 2.0 L

D) 4.5 L

E) 0.22 L

Answer: C Page

Ref: 9.4 Learning

Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

32) What mass of KCl is in 350 mL of 0.24 M KCl?

- A) 0.84 g
- B) 1.1.g
- C) 84 g
- D) 18 g
- E) 6.3 g

Answer: E Page

Ref: 9.4 Learning

Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

33) During the process of diluting a solution to a lower concentration,

\_\_\_\_\_.

- A) the amount of solute does not change
- B) the amount of solvent does not change
- C) there is more solute in the concentrated solution
- D) the volume of the solution does not change
- E) water is removed from the concentrated solution

Answer: A Page Ref: 9.5

Learning Obj.: 9.5

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

34) What is the molarity of a KCl solution made by diluting 75.0 mL of a 0.200 M solution to a final volume of 100. mL?

- A) 0.267 M
- B) 0.150 M
- C) 0.200 M
- D) 6.67 M
- E) 0.100 M

Answer: B Page Ref: 9.5

Learning Obj.: 9.5

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

35) What volume of 2.5% (m/v) KOH can be prepared from 125 mL of a 5.0% (m/v) KOH solution?

- A) 0.0040 mL
- B) 63 mL
- C) 0.10 mL
- D) 125 mL
- E) 250 mL

Answer: E

Page Ref: 9.5

Learning Obj.: 9.5

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

36) What volume of 0.10 M NaOH can be prepared from 250. mL of 0.30 M NaOH?

- A) 0.075 L
- B) 0.25 L
- C) 0.75 L
- D) 0.083 L
- E) 750 L

Answer: C Page

Ref: 9.5 Learning

Obj.: 9.5

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

37) What volume of a 2.00 M KCl solution is required to prepare 500. mL of a 0.100 M KCl solution?

- A) 0.0400 mL

- B) 25.0 mL
- C) 2.00 mL
- D)  $1.00 \times$  mL
- E)  $5.00 \times$  mL

Answer: B Page

Ref: 9.5 Learning

Obj.: 9.5

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

38) What is the new mass/volume percent (m/v) of a KOH solution that is prepared by diluting 110 mL of a 6.0% (m/v) KOH solution to 330 mL?

- A) 2.0% (m/v)
- B) 1.0% (m/v)
- C) 6.0% (m/v)
- D) 12% (m/v)
- E) 18% (m/v)

Answer: A Page

Ref: 9.5 Learning

Obj.: 9.5

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

39) A homogeneous mixture that does not settle out upon standing is \_\_\_\_\_.

- A) an element
- B) a colloid
- C) a suspension
- D) solid
- E) hydrated

Answer: B Page

Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

40) In the process known as osmosis, \_\_\_\_\_ moves through a semi permeable membrane into an area of \_\_\_\_\_ concentration.

- A) solute, lower solute
- B) solute, higher solute
- C) solvent, lower solute
- D) solvent, lower solvent
- E) solvent, higher solvent

Answer: D

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

For the following question(s), consider a 4% starch solution and a 10% starch solution separated by a semipermeable membrane.

41) Which starch solution will decrease in volume as osmosis occurs?

- A) 4%
- B) 10%
- C) Neither exerts osmotic pressure.
- D) They exert equal osmotic pressures.
- E) They exert opposite osmotic pressures.

Answer: A

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

42) The process that occurs in this system is

\_\_\_\_\_.

- A) filtration
- B) hydration
- C) neutralization
- D) dialysis
- E) osmosis

Answer: E Page

Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

- 43) Which of the following also occurs in this system?
- A) Water flows equally in both directions.
  - B) There is a net flow of water from the 4% starch solution into the 10% starch solution.
  - C) There is a net flow of water from the 10% starch solution into the 4% starch solution.
  - D) Water does not cross the membrane at all.
  - E) Starch moves out of the 10% starch solution into the 4% starch solution.

Answer: B      Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

- 44) A solution with the same osmotic pressure as the blood is

\_\_\_\_\_.

- A) isotonic to the blood
- B) hypotonic to the blood
- C) hypertonic to the blood
- D) nontonic to the blood
- E) molar to the blood

Answer: A

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

- 45) A 10% starch solution is separated from a 2% starch solution by a semipermeable membrane. Starch is a colloid. Which of the following is correct?

- A) The 10% solution has the higher osmotic pressure.
- B) The 2% solution has the higher osmotic pressure.
- C) Neither solution has osmotic pressure.
- D) The solutions have the same osmotic pressure.
- E) The solutions have opposite osmotic pressures.

Answer: A      Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.



46) A solution that has an osmotic pressure less than that of red blood cells is called \_\_\_\_\_.

- A) saturated
- B) hypertonic
- C) isotonic
- D) hypotonic
- E) unsaturated

Answer: D Page

Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

47) A red blood cell will undergo crenation in \_\_\_\_\_.

- A) water
- B) 0.5% NaCl
- C) 3% glucose
- D) 5% glucose
- E) 7% NaCl

Answer: E Page

Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

48) Which solution is isotonic to a red blood cell?

- A) water
- B) 0.5% NaCl
- C) 2% glucose
- D) 0.9% NaCl
- E) 10% glucose

Answer: D Page

Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

49) A red blood cell will undergo hemolysis in \_\_\_\_\_.

- A) water
- B) 0.9% NaCl
- C) 5% glucose
- D) 5% NaCl
- E) 10% glucose

Answer: A Page

Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

50) The process by which a semipermeable membrane allows water molecules, small molecules, and ions to pass through while retaining large particles is called

\_\_\_\_\_.

- A) osmotic pressure
- B) dialysis
- C) solvation
- D) dilution
- E) hydration

Answer: B Page

Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

51) An aqueous mixture containing starch (a colloid), NaCl, glucose, and albumin (a colloid) is placed in a dialysis bag and immersed in distilled water. Which of the following correctly describes the location of the indicated substance after dialysis?

- A) albumin inside
- B) starch outside
- C) albumin inside and outside
- D) water inside only
- E) starch inside and outside

Answer: A

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

## 9.2 Bimodal Questions

1) Acetic acid can be classified as a

\_\_\_\_\_.

- A) gas
- B) solid
- C) weak electrolyte
- D) strong electrolyte
- E) ionic compound

Answer: C

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

2) The molarity of a solution of 5.0 g of KCl in 100. mL of solution is

\_\_\_\_\_.

- A) 0.038 M
- B) 0.067 M
- C) 0.67 M
- D) 0.13 M
- E) 1.3 M

Answer: C Page

Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

3) Using a kidney machine to remove waste products from the blood is known as

\_\_\_\_\_.

- A) osmosis
- B) osmolysis
- C) autolysis

D) hemolysis  
E) hemodialysis  
Answer: E Page  
Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) A \_\_\_\_\_ will pass through a filter but not a semipermeable membrane.

- A) solid
- B) precipitate
- C) solution
- D) suspension
- E) colloid

Answer: E Page  
Ref: 9.6 Learning

Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

### 9.3 Short Answer Questions

1) Polar solutes are soluble in \_\_\_\_\_ solvents. Answer: polar

Page Ref: 9.1

Learning Obj. : 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

2) A substance that carries an electric current when dissolved in water is called a(n) \_\_\_\_\_.

Answer: electrolyte

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) A substance that produces only a small number of ions in solution is known as a

\_\_\_\_\_ electrolyte.

Answer: weak

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) A substance that completely ionizes in water is a \_\_\_\_\_ electrolyte.

Answer: strong

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

5) How many equivalents are in 0.036 mole of  $\text{Ca}^{2+}$ ?

Answer: 0.072 equivalents

Page Ref: 9.2

Learning Obj.: 9.2

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

6) When KCl is added to water, the salt will be

\_\_\_\_\_. Answer: soluble

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

7) When MgO is added to water, the salt will be \_\_\_\_\_.

Answer: insoluble

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

8) When  $\text{NH}_4\text{Cl}$  is added to water, the salt will be

\_\_\_\_\_. Answer: soluble

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

9) A 2.0% (m/v) NaCl solution contains \_\_\_\_\_ g NaCl in 300. mL of solution. Answer: 6.0 g

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

10) 200. mL of a 12.0% (m/v) NaCl solution is diluted to 600. mL. The new concentration is \_\_\_\_\_ %.

Answer: 4.00 % (m/v)

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

11) A solution which has 12 g of solute dissolved in 200.mL of solution has a m/v concentration of \_\_\_\_\_.

Answer: 6.0% (m/v)

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

12) The number of moles of a compound dissolved in one liter of a solution is called the \_\_\_\_\_.

Answer: molarity

Page Ref: 9.4

Learning Obj.: 9.4

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

13) When 50. mL of 10.% (m/v) NaCl is diluted to 500. mL, the NaCl concentration is \_\_\_\_\_%.

Answer: 1.0% (m/v)

Page Ref: 9.5

Learning Obj.: 9.5

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

14) If 450. mL of 6.0 M KBr solution is diluted to 900. mL, the concentration of the KBr solution is \_\_\_\_\_M.

Answer: 3.0 M KBr

Page Ref: 9.5

Learning Obj.: 9.5

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

15) Which has a higher osmotic pressure 1.0 M sucrose or water?

Answer: 1.0 M sucrose

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

16) \_\_\_\_\_ can pass through filters but cannot pass through semipermeable membranes.

Answer: Colloids

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

17) If a red blood cell is placed in 5% NaCl solution, the red blood cell will\_\_\_\_\_. Answer: crenate

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

18) If a red blood cell is placed in 1% glucose solution, the red blood cell will\_\_\_\_\_. Answer: hemolyze

Page Ref: 9.6

Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

#### 9.4 Matching Questions

Identify the term defined in each description.

- A) hydration
- B) unsaturated
- C) saturated
- D) hypertonic
- E) hypotonic
- F) hydrogen bonding

1) the major attractive forces between water molecules

Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

2) the association of several water molecules with ions produced in a solution Page Ref: 9.1

Learning Obj.: 9.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) a solution that contains the highest amount of solute that dissolves at a given temperature Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) a solution in which more solute can be dissolved

Page Ref: 9.3

Learning Obj.: 9.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

5) a solution that has a higher osmotic pressure than the red blood cells of the body Page Ref: 9.6



Learning Obj.: 9.6

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

Answers: 1) F 2) A 3) C 4) B 5) D

Indicate whether each of the following compounds dissolves in water to give ions, molecules, or both.

A) molecules

B) both

C) ions

6) NaCl, a strong electrolyte Page Ref: 9.2

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7) urea, a nonelectrolyte

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8) HF, a weak electrolyte

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9) OH, a nonelectrolyte

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10) , a soluble salt

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11) glucose, a nonelectrolyte

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12) , a weak electrolyte

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Answers: 6) C 7) A 8) B 9) A 10) C 11) A 12) B

Match the type of mixture with the appropriate characteristics.

A) solution

B) colloid

C) suspension

13) a mixture of sodium chloride in water

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14) a mixture whose particles settle on standing

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15) a homogeneous mixture in which suspended particles cannot pass through a semipermeable membrane

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16) a mixture whose particles cannot be separated by filters or semipermeable membranes

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17) a mixture whose particles can be separated by filters

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Answers: 13) A 14) C 15) B 16) A 17) C

Compare the osmotic pressure of these solutions to the osmotic pressure of red blood cells.

A) hypertonic

B) hypotonic

C) isotonic

18) water

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19) 0.5% NaCl

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20) 0.9% glucose

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21) 7% glucose

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22) 5% NaCl Page Ref: 9.6

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23) 5% glucose

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24) 0.9% NaCl

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Answers: 18) B 19) B 20) B 21) A 22) A 23) C 24) C