Chem.11-Q3W1-Water and Solutions-Qs. Bank

True/False
Indicate whether the statement is true or false.

____ 1. Carbonated water is a solution of carbon monoxide in water.

____ 2. In a saturated solution, solute particles can be added into the solvent at a constant temperature and pressure.

____ 3. The surface tension of water decreases when a detergent is added to it.

____ 4. A molecule in the interior of a liquid is affected equally in all directions by intermolecular forces.

____ 5. The meniscus in a test tube of water demonstrates the equal effect intermolecular forces have on all particles in a liquid.

Completion
Complete each statement.

6. When a liquid is insoluble in another liquid, the liquids are said to be _____.
7. A substance that does not dissolve in a solvent is said to be _____ in that solvent.
8. When solute particles are added to a pure solvent in a closed container at a constant temperature and pressure, the vapor pressure _____.
9. The type of solution formed by creek water after heavy rain is called _____.
10. The maximum amount of solute that can dissolve in a given amount of solvent at a specific temperature and pressure is called _____.
11. The surface tension of water is greater than the surface tension of cooking oil because the attractive forces between the molecules of cooking oil is _____ than the attractive forces between the molecules of water.
12. Paper towels can absorb water to a large extent because the _____ forces between the molecules of paper and water are greater than the _____ forces among water molecules.
13. A human body controls its temperature by the method of _____.
14. At boiling point, the _____ pressure over a liquid equals the atmospheric pressure.
15. _____ is the amount of heat needed to raise 1 g of a substance 1ºC.
16. A solution that contains all of a solute that can dissolve in the solvent at a given temperature is a(n) _____.
17. The symbol *M* in 2.0*M* stands for _____.
18. The force needed to overcome the attraction among molecules at the surface of a liquid is called _____.
19. Although they are not true solutions, _____ may not settle out for long periods of time.
20. A solution that holds less of a solute than it is capable of holding is a(n) _____.
21. A(n) _____ is an unstable system that contains more solute than would normally dissolve in the solvent at a given temperature.

22. _____ is the flow of molecules through a selectively permeable membrane.
23. The tendency of liquids to rise in tubes of narrow diameter is called _____.
24. The heat gained or lost when a solute is dissolved in a solute is called the _____.
25. The light-scattering effect observed when light shines through a colloid is called the _____.

Matching

Match each statement with the correct item below.

a. dissolved molecule
b. heat of solution
c. are more soluble at lower temperature
d. contain particles larger than those in solutions
e. supersaturated solution
f. involves scattering light
g. ion in a crystal
h. is driven by differences in solution concentration
i. definition of molarity
j. ion in solution
k. dilute solution
l. generally increases solubility
m. hydrogen bond

____ 26. $K^+(s)$
____ 27. $K^+(aq)$
____ 28. $C_6H_{12}O_6(aq)$
____ 29. O - H.....O - H
____ 30. $10^{-10}M$ NaCl
____ 31. unstable
____ 32. temperature
____ 33. heat term in A(s) - A(aq) + heat
____ 34. moles solute per liter solution
____ 35. osmosis
____ 36. gases in water solutions
____ 37. colloids
____ 38. Tyndall effect

Match each item with the correct statement below.

a. true solutions
b. colloids
c. both
d. neither

____ 39. particle size: typically individual atoms, ions, and small molecules
____ 40. particle size: clumps typically 10-100 times larger than a typical atom or molecule
____ 41. heterogeneous mixture
____ 42. evenly distributed particles
____ 43. exhibit the Tyndall effect
____ 44. composition does not change upon standing
____ 45. include proteins in blood

Short Answer

46. Explain why boiling point elevation is considered a colligative property.
47. Why is it not possible to have a colloidal dispersion from one gas to another?
48. Explain why sand particles are insoluble in water.
49. Consider two compounds, A and B. The fluidity of compound A is greater than that of compound B. Which compound has greater viscosity and why?
50. Explain which of the following two compounds you would expect to have a higher boiling point and tell why: $CH_3CH_2CH_2CH_2CH_3$ or $CH_3CH_2CH_2CH_2OH$.
51. Explain why the alternate freezing and melting of water in rocky areas contributes to the conversion of rocks to soil.
52. Suppose that the inside surface of a glass graduated cylinder were coated with nonpolar wax. Would the meniscus on the water poured into the cylinder be higher or lower at the edges than it would be in a cylinder without the wax? Why?
53. How is it possible for some insects, such as the water strider, to actually walk on top of water?
54. How would the ability of the water strider insect to walk on water be affected if a few drops of ethanol (CH_3CH_2OH) were added to the water?
55. The specific heat of methanol, CH_3OH, is 2.5 J/g°C. Suppose you have 100 mL of water at 15°C in a 200-mL beaker, and 100 g of methanol at 15°C in an identical beaker. You heat both liquids to 45°C. Which liquid absorbs more heat?
56. Suppose the specific heat of water were 6.0 J/g°C. How would the climate on Earth be different?
57. Write an equation for the dissociation of the following ionic compound when it dissolves in water: $Al_2(SO_4)_3$.
58. Do you expect that the liquid compound 1-butanol ($CH_3CH_2CH_2CH_2OH$) will dissolve in water? Explain.
59. How would you prepare 2.00 L of a 0.400*M* solution of strontium nitrate $Sr(NO_3)_2$?
60. What mass of ammonium selenite, $(NH_4)_2SeO_3$, must be dissolved to make 1240 mL of a 0.300*M* solution?
61. What mass of methanol, CH_3OH, must be dissolved to make 1.50 L of a 0.675*M* solution?
62. What is the molarity of a solution that contains 17.2 g of lithium perchlorate, $LiClO_4$, in 2250 mL of solution?
63. If you add 213 g of Na_2HPO_4 to 2.00 L of water, have you created a 0.750*M* Na_2HPO_4 solution? Explain.
64. A selectively permeable membrane separates two aqueous solutions of potassium chloride. On the left side of the membrane is a solution composed of 145 g of KCl dissolved in 820 g of water. On the right side of the membrane is a solution composed of 49 g of KCl dissolved in 210 g of water. In which direction is the net solvent flow?
65. Name each type of colloid described: solid particles dispersed in a gas, concentrated dispersion of solids in a limited amount of liquid, and dispersion of fine droplets of liquid in another liquid.

Problem

66. Calculate the molarity of a solution containing 0.2 mol of sodium hydroxide dissolved in 0.5 L of water.

67. What is the molarity of a methanol solution that contains 25 g of methanol in 3.5 L of a solution? The molar mass of methanol is 32 g/mol.

68. A 41.0-mL barium hydroxide solution of molarity 3.41 *M* is diluted with water to form 279 mL of the solution. Calculate the molarity of the solution.

69. What is the boiling point elevation of a solution containing 17.1 g of sucrose in 100.0 g of water? The molal elevation constant of water is 0.512°C/*m* and the molar mass of sucrose is 342 g/mol.

70. A solution containing 34.2 g of cane sugar ($C_{12}H_{22}O_{11}$) in 500.0 g of an unknown solvent froze at –0.374°C. Calculate the freezing point depression constant of the solvent. Calculate the molar mass of cane sugar.

The amount by which the freezing point of a solution is depressed or the boiling point is elevated is different for various solvents. The approximate values of these two quantities for the solvent water are given below. Calculate the freezing point and the boiling point of each of the solutions listed.

- *Freezing point depression = -1.86ºC for 1 mole of solute particles per liter solution*
- *Boiling point elevation = +0.52ºC for 1 mole of solute particles per liter solution*

71. Solution A: 1*M* sucrose F.P. = _____ B.P. = _____

72. Solution B: 1*M* KCl F.P. = _____ B.P. = _____

73. Solution C: 5*M* C_2H_5OH F.P. = _____ B.P. = _____

74. Solution D: 0.5*M* NH_4Cl F.P. = _____ B.P. = _____

75. Solution E: 2*M* $AlCl_3$ F.P. = _____ B.P. = _____

76. Solution F: 0.05*M* NaCl F.P. = _____ B.P. = _____

A group of students made a number of solutions of known concentration for the class stockroom. Unfortunately, they neglected to record all the information regarding the way in which the solutions were made. From the information provided in the chart below, determine the ten missing values indicated by the question marks.

Solute formula	**Solute mass**	**Solution volume**	**Molarity**
KOH	7.8 g	500 mL	?
LiCl	?	4.00 L	0.125*M*

$CaCl_2$	9.0 g	250 mL	?
$Al_2(SO_4)_3$	12.3 g	?	0.900*M*
K_3PO_4	?	250 mL	0.324*M*
$KClO_3$	122.5 g	?	1.0*M*
NH_4Br	?	2.0 L	0.50*M*
HNO_3	20.0 g	500 mL	?
HCl	?	750 mL	0.044*M*
$(NH_4)_2SO_4$	44.2 g	600 mL	?

77. _____ KOH molarity
78. _____ $KClO_3$ solution volume
79. _____ LiCl solute mass
80. _____ NH_4Br solute mass
81. _____ HNO_3 molarity
82. _____ $Al_2(SO_4)_3$ solution volume
83. _____ HCl solute mass
84. _____ K_3PO_4 solute mass
85. _____ $(NH_4)_2SO_4$ molarity

Chem.11-Q3W1-Water and Solutions-Qs. Bank
Answer Section

TRUE/FALSE

1. ANS: F
   Carbonated water is a solution of carbon dioxide in water.

   PTS: 1 DIF: 1 REF: Page 469
   OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   KEY: Solutions MSC: 1
   NOT: /T/ When carbon dioxide gas is mixed with water, it forms a carbonate of water, which is called carbonated water. /F/ Correct!
2. ANS: F
   In a saturated solution, the amount of dissolved solute particles is maximum for a given amount of solvent at a constant temperature and pressure.

   PTS: 1 DIF: 1 REF: Page 459
   OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   KEY: Saturated solution MSC: 1
   NOT: /F/ Correct! /T/ In a saturated solution, solute particles can be added into the solvent particles by raising the temperature.
3. ANS: T
   A detergent is soluble in water. It disrupts the hydrogen bonds of water molecules. This decreases the surface tension of water as new bonds are created between the molecules of the detergent and the molecules of water.

   PTS: 1 DIF: 1 REF: Page 442
   OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
   TOP: Relate the physical properties of water to the molecular model.
   KEY: Surface tension MSC: 2
   NOT: /T/ Correct! /F/ The disruption of hydrogen bonds decreases the surface tension of water.
4. ANS: T
   Since a molecule in the interior of a liquid is completely surrounded by other molecules, it is attracted equally in all directions by intermolecular forces.

   PTS: 1 DIF: 1 REF: Page 438
   OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
   TOP: Relate the physical properties of water to the molecular model.
   KEY: Surface tension MSC: 2
   NOT: /T/ Correct! /F/ Particles at the surface of a liquid are attracted by particles from the molecules present in the interior of the liquid only.
5. ANS: F
   The meniscus in a test tube of water demonstrates the unequal effect intermolecular forces have on all particles in a liquid due to the concave shape of a meniscus.

   PTS: 1 DIF: 2 REF: Page 444

OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
TOP: Relate the physical properties of water to the molecular model.
KEY: Intermolecular forces MSC: 2
NOT: /T/ The concave shape of a meniscus demonstrates that water molecules in the meniscus are more strongly attracted to the glass than to other water molecules creating an imbalance of intermolecular forces. /F/ Correct!

COMPLETION

6. ANS: immiscible

   PTS: 1 DIF: 1 REF: Page 454
   OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   KEY: Immiscible MSC: 1
7. ANS: insoluble

   PTS: 1 DIF: 1 REF: Page 454
   OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
   KEY: Insoluble MSC: 1
8. ANS:
   decreases
   lowers

   PTS: 1 DIF: 1 REF: Page 459
   OBJ: 13.2.3 Compare and contrast colligative properties.
   TOP: Compare and contrast colligative properties. KEY: Vapor pressure
   MSC: 2
9. ANS: suspension

   PTS: 1 DIF: 1 REF: Page 472
   OBJ: 13.2.3 Compare and contrast colligative properties.
   TOP: Compare and contrast colligative properties. KEY: Suspensions
   MSC: 1
10. ANS: solubility

    PTS: 1 DIF: 1 REF: Page 458
    OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
    TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
    KEY: Solubility MSC: 1
11. ANS: less

    PTS: 1 DIF: 1 REF: Page 442
    OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
    TOP: Relate the physical properties of water to the molecular model.
    KEY: Surface tension MSC: 1
12. ANS: adhesive, cohesive

    PTS: 1 DIF: 1 REF: Page 442

OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
TOP: Relate the physical properties of water to the molecular model.
KEY: Capillary action MSC: 1

13. ANS: evaporation

PTS: 1 DIF: 1 REF: Page 446
OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
TOP: Relate the physical properties of water to the molecular model.
KEY: Evaporation MSC: 1

14. ANS: vapor

PTS: 1 DIF: 1 REF: Page 446
OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
TOP: Relate the physical properties of water to the molecular model.
KEY: Vapor pressure MSC: 1

15. ANS: Specific heat

PTS: 1 DIF: B OBJ: 13-3

16. ANS: saturated solution

PTS: 1 DIF: B OBJ: 13-4

17. ANS: molarity

PTS: 1 DIF: B OBJ: 13-4

18. ANS: surface tension

PTS: 1 DIF: B OBJ: 13-3

19. ANS: colloids

PTS: 1 DIF: B OBJ: 13-5

20. ANS: unsaturated solution

PTS: 1 DIF: B OBJ: 13-4

21. ANS: supersaturated solution

PTS: 1 DIF: B OBJ: 13-4

22. ANS: Osmosis

PTS: 1 DIF: B OBJ: 13-6

23. ANS: capillarity

PTS: 1 DIF: B OBJ: 13-3

24. ANS: heat of solution

PTS: 1 DIF: B OBJ: 13-3

25. ANS: Tyndall effect

PTS: 1 DIF: B OBJ: 13-5

MATCHING

26. ANS: G PTS: 1 DIF: B OBJ: 13-5
27. ANS: J PTS: 1 DIF: B OBJ: 13-4
28. ANS: A PTS: 1 DIF: B OBJ: 13-4
29. ANS: M PTS: 1 DIF: B OBJ: 13-2
30. ANS: K PTS: 1 DIF: B OBJ: 13-4
31. ANS: E PTS: 1 DIF: B OBJ: 13-4
32. ANS: L PTS: 1 DIF: B OBJ: 13-4
33. ANS: B PTS: 1 DIF: B OBJ: 13-3
34. ANS: I PTS: 1 DIF: B OBJ: 13-4
35. ANS: H PTS: 1 DIF: B OBJ: 13-6
36. ANS: C PTS: 1 DIF: B OBJ: 13-4
37. ANS: D PTS: 1 DIF: B OBJ: 13-5
38. ANS: F PTS: 1 DIF: B OBJ: 13-5

39. ANS: A PTS: 1 DIF: B OBJ: 13-5
40. ANS: B PTS: 1 DIF: B OBJ: 13-5
41. ANS: D PTS: 1 DIF: B OBJ: 13-5
42. ANS: C PTS: 1 DIF: B OBJ: 13-5
43. ANS: B PTS: 1 DIF: B OBJ: 13-5
44. ANS: C PTS: 1 DIF: B OBJ: 13-5
45. ANS: B PTS: 1 DIF: B OBJ: 13-5

SHORT ANSWER

46. ANS:
The boiling point of a solution is usually higher than the boiling point of the solvent. This is because the solute lowers the vapor pressure of the solution below the atmospheric pressure. This prevents the solution from boiling at the boiling point of the solvent. Additional solute will create a greater disparity between the vapor pressure of the solution and the atmospheric pressure resulting in an elevated boiling point. Since the elevation of the solution's boiling point is solely a result of the amount of solute particles, boiling point elevation is considered a colligative property.

PTS: 1 DIF: 2 REF: Page 465
OBJ: 13.2.2 Distinguish solutions from colloids. TOP: Distinguish solutions from colloids.
KEY: Colligative property MSC: 2

47. ANS:
It not possible to have a colloidal dispersion from one gas to another because the two gases would result in the formation of a homogenous molecular mixture. A colloidal solution is a heterogeneous mixture.

PTS: 1 DIF: 2 REF: Page 472
OBJ: 13.2.3 Compare and contrast colligative properties.
TOP: Compare and contrast colligative properties. KEY: Colloids
MSC: 2

48. ANS:

Sand particles are insoluble in water because the attractive forces between sand particles are greater than the attractive force between water and sand particles. The attractive forces of sand particles are so strong that they cannot be overcome by the attractive forces exerted by water molecules. Therefore, sand particles are insoluble in water.

PTS: 1 DIF: 2 REF: Page 438
OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
TOP: Relate the physical properties of water to the molecular model.
KEY: Solvation MSC: 2

49. ANS:
Viscosity is the measurement of a liquid's resistance to flow. Since compound A has greater fluidity, it can flow easily. Therefore, the viscosity of compound B is greater than that of compound A.

PTS: 1 DIF: 2 REF: Page 442
OBJ: 13.1.3 Relate the physical properties of water to the molecular model.
TOP: Relate the physical properties of water to the molecular model.
KEY: Viscosity MSC: 2

50. ANS:
The latter has the higher boiling point because of the formation of hydrogen bonds.

PTS: 1 DIF: B OBJ: 13-3

51. ANS:
As water freezes, it expands and breaks rocks into smaller pieces.

PTS: 1 DIF: A OBJ: 13-1

52. ANS:
It would be lower because water is attracted less to wax than to glass.

PTS: 1 DIF: B OBJ: 13-3

53. ANS:
The downward force exerted by the insect (its weight) is less than the surface tension of the water.

PTS: 1 DIF: B OBJ: 13-3

54. ANS:
Ethanol would reduce the surface tension and the insect might not be able to walk on the water.

PTS: 1 DIF: A OBJ: 13-3

55. ANS:
You have equal masses of each liquid, so water absorbs more heat since its specific heat, 4.18 J/g°C, is higher.

PTS: 1 DIF: B OBJ: 13-1

56. ANS:
A specific heat of 6.0 J/g°C would be higher than the actual specific heat of water, 4.18 J/g°C. A value of 6.0 J/g°C would mean that oceans and lakes would be even more effective in moderating temperature, so temperatures would decrease less at night and increase less during the day.

PTS: 1 DIF: B OBJ: 13-1

57. ANS:
$Al_2(SO_4)_3(s) \rightarrow 2Al^{3+}(aq) + 3SO_4^{2-}(aq)$

PTS: 1 DIF: B OBJ: 13-4

58. ANS:
The polar OH group enables 1-butanol to form hydrogen bonds with water, and the nonpolar part of the molecule is not too large, so 1-butanol is moderately soluble in water.

PTS: 1 DIF: B OBJ: 13-4

59. ANS:
Measure 169 g of strontium nitrate, add enough water to dissolve it, then add water to make a total volume of 2.00 L.

PTS: 1 DIF: B OBJ: 13-4

60. ANS:
60.6 g

PTS: 1 DIF: B OBJ: 13-4

61. ANS:
32.4 g

PTS: 1 DIF: B OBJ: 13-4

62. ANS:
0.0719*M*

PTS: 1 DIF: B OBJ: 13-4

63. ANS:
You are adding 1.50 mol of Na_2HPO_4 to 2.00 L of water. The final volume of the solution will probably be somewhat greater than 2.00 L, so the molarity of the solution will be somewhat less than 0.750*M*.

PTS: 1 DIF: B OBJ: 13-4

64. ANS:
The solution on the left side contains 17.7 g of KCl per 100 g of water, and the solution on the right contains 23.3 g of KCl per 100 g of water, so the net solvent flow is from left to right across the membrane.

PTS: 1 DIF: B OBJ: 13-6

65. ANS:
solid aerosol, paste, emulsion

PTS: 1 DIF: B OBJ: 13-5

PROBLEM

66. ANS:
0.4 *M*

PTS: 1 DIF: 1 REF: Page 461 | Page 463
OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
KEY: Molarity MSC: 3
NOT: To calculate the molarity, divide moles of sodium hydroxide by liters of water.

67. ANS:

0.22 *M*

PTS: 1 DIF: 2 REF: Page 461 | Page 463
OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
KEY: Molarity MSC: 3
NOT: To calculate the molarity, first calculate the moles of the solute by dividing the mass of the solute by the molar mass of the solute, and then divide the moles of the solute by the liter volume of the solution.

68. ANS:
0.501 *M*

PTS: 1 DIF: 1 REF: Page 461 | Page 463
OBJ: 13.2.1 Compare and contrast the ability of water to dissolve ionic and covalent compounds.
TOP: Compare and contrast the ability of water to dissolve ionic and covalent compounds.
KEY: Molarity MSC: 3
NOT: To calculate the molarity of the dilute solution, use the formula, molarity of dilute solution = molarity of given solution * volume of given molar solution/volume of dilute solution.

69. ANS:
Boiling point elevation = 0.256°C.

PTS: 1 DIF: 3 REF: Page 467
OBJ: 13.2.2 Distinguish solutions from colloids. TOP: Distinguish solutions from colloids.
KEY: Boiling point elevation MSC: 3
NOT: Number of moles of sucrose = weight of sucrose/molar mass of sucrose. Convert the mass of water from grams to kilograms and then divide the given mass of water by 1000. To calculate the molality, divide the number of moles of sucrose by the kilogram of water. To calculate the boiling point elevation, multiply the molal elevation constant by the molality.

70. ANS:
The molar mass of cane sugar = 342 g/mol.
The freezing point depression constant of the solvent = 1.87°C/*m*.

PTS: 1 DIF: 3 REF: Page 465
OBJ: 13.2.2 Distinguish solutions from colloids. TOP: Distinguish solutions from colloids.
KEY: Freezing point depression MSC: 3
NOT: To calculate the moles of cane sugar, calculate the molar mass of cane sugar. Divide the mass of cane sugar by its molecular mass. Convert the grams of the solvent to kilograms. To calculate the freezing point depression constant, calculate the molality by dividing the moles of cane sugar by the kilograms of solvent. Then, divide the freezing point depression by the molality.

71. ANS:
-1.86ºC; 100.52ºC

PTS: 1 DIF: B OBJ: 13-6

72. ANS:
-3.72ºC; 101.04ºC

PTS: 1 DIF: B OBJ: 13-6

73. ANS:
-9.30ºC; 102.60ºC

PTS: 1 DIF: B OBJ: 13-6

74. ANS:
-1.86ºC; 100.52ºC

PTS: 1 DIF: B OBJ: 13-6

75. ANS:
-14.88ºC; 104.16ºC

PTS: 1 DIF: B OBJ: 13-6

76. ANS:
-0.186ºC; 100.052ºC

PTS: 1 DIF: B OBJ: 13-6

77. ANS:
0.28*M*

PTS: 1 DIF: A OBJ: 13-4

78. ANS:
1.0 L

PTS: 1 DIF: A OBJ: 13-4

79. ANS:
21.2 g

PTS: 1 DIF: A OBJ: 13-4

80. ANS:
98.0 g

PTS: 1 DIF: A OBJ: 13-4

81. ANS:
0.635*M*

PTS: 1 DIF: A OBJ: 13-4

82. ANS:
40.0 mL

PTS: 1 DIF: A OBJ: 13-4

83. ANS:
1.2 g

PTS: 1 DIF: A OBJ: 13-4

84. ANS:
17.2 g

PTS: 1 DIF: A OBJ: 13-4

85. ANS:
0.557*M*

PTS: 1 DIF: A OBJ: 13-4