# Chapter 13 Practice Questions

1) Which compound below forms an electrolyte solution when dissolved in water?
   A) KOH
   B) $CH_3CH_2OH$
   C) $Cl_2$
   D) $C_{12}H_{22}O_{11}$ (sucrose)
   E) none of the above

2) How many moles of KOH are contained in 750. mL of 5.00 M KOH solution?
   A) 56.1 mol
   B) $3.75 \times 10^3$ mol
   C) 3.75 mol
   D) 6.67 mol
   E) none of the above

3) Given that you wished to use exactly 0.325 mole of NaCl to prepare a 2.50 M NaCl solution, how many milliliters of solution must you prepare?
   A) 0.813 mL
   B) 0.130 mL
   C) 7.69 mL
   D) 130. mL
   E) none of the above

4) What is the molarity of a solution prepared by dissolving 54.3 g of $Ca(NO_3)_2$ into 355 mL of water?
   A) 1.99 *M*
   B) 0.117 *M*
   C) 0.331 *M*
   D) 0.932 *M*
   E) none of the above

5) What are the ion concentrations in a 0.12 M solution of $AlCl_3$?
   A) 0.12 M $Al^{3+}$ ions and 0.040 M $Cl^-$ ions
   B) 0.12 M $Al^{3+}$ ions and 0.36 M $Cl^-$ ions
   C) 0.36 M $Al^{3+}$ ions and 0.12 M $Cl^-$ ions
   D) 0.040 M $Al^{3+}$ ions and 0.040 M $Cl^-$ ions
   E) none of the above

6) Which solution below contains the highest total quantity of dissolved sodium ions?
   A) 100. mL of 4.0 M NaCl
   B) 50.0 mL of 8.0 M NaOH
   C) 50.0 mL of 2.0 M $Na_3PO_4$
   D) 75.0 mL of 3.0 M $Na_2SO_4$
   E) none of the above

7) How many sodium ions are contained in a "nanodroplet" of a $Na_3PO_4$ solution with a volume of 1.0 fL and a concentration of 0.0100 M ?

A) $1.0 \times 10^{-17}$ B) $6.0 \times 10^{8}$ C) $1.8 \times 10^{7}$ D) $6.0 \times 10^{11}$ E) $1.8 \times 10^{10}$

8) What volume of 12.0 M HCl is required to make 75.0 mL of 3.50 M HCl?

A) 0.560 mL
B) 21.9 mL
C) 560. mL
D) 257 mL
E) none of the above

9) What molarity should the stock solution be if you want to dilute 25.0 mL to 2.00 L and have the final concentration be 0.103 M?

A) 4.12 M
B) 0.243 M
C) 0.206 M
D) 8.24 M
E) none of the above

10) How many grams of barium sulfate are produced if 25.34 mL of 0.113 M $BaCl_2$ completely react given the reaction:

$BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaCl\ (aq)$

A) 5.90
B) 0.668
C) 26.3
D) 1039
E) none of the above

11) What is the concentration of sodium chloride in the final solution if 25.34 mL of 0.113 M $BaCl_2$ completely reacts and the total volume of the reaction is 110.4 mL, given the reaction:

$BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaCl\ (aq)$

A) 0.667
B) 0.0259
C) 0.0519
D) 0.226
E) none of the above

12) Which of the following substances would cause the greatest drop in the freezing temperature if we dissolve 1 mol in a fixed amount of water?

A) $C_6H_{12}O_6$ (fructose)
B) $KNO_3$
C) NaCl
D) $CaCl_2$
E) All of these solutions would freeze at the same temperature.

13) How many milliliters of 0.755 M $H_2SO_4$ solution is needed to react with 55.0 mL of 2.50 M KOH solution?
Given: 2 KOH (aq) + $H_2SO_4$ (aq) → 2 $H_2O$ (l) + $K_2SO_4$ (aq)

A) 182 mL
B) 17200 mL
C) 51.9 mL
D) 91.1 mL
E) none of the above

14) Osmotic pressure is:

A) the pressure required to stop the flow of solvent from a region of low solute concentration through a semipermeable membrane into a region of high solute concentration.
B) the pressure required to stop the flow of solvent from a region of high solute concentration to a region of low solute concentration.
C) the pressure required to stop the rupture of the semipermeable membrane.
D) the pressure required to reverse the flow of solvent through a semipermeable membrane during osmosis.
E) none of the above

15) Why is it NOT a good idea to drink seawater when people are lost at sea?

A) The high concentration of salt forces water out of the cells lining your stomach and intestine.
B) The osmotic pressure builds up in the cells of your intestine until they potentially rupture.
C) The seawater has fish urine in it and who wants to drink that?
D) The semipermeable membrane protecting your stomach is ruptured during osmosis.
E) none of the above

16) Solution A has a concentration of 0.10 M sugar and Solution B has a concentration of 0.20 M sugar. If the two solutions are separated by a semipermeable membrane, which of the following occurs during osmosis?

A) The molarity of B increases.
B) Solvent molecules move from B into A.
C) The molarity of A increases.
D) Sugar molecules move from B into A.
E) none of the above

Answer Key
Testname: PRACTICEQ_CH13

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