Unit 3 Reading Assignment

Learning Objectives in this Unit:

- *Perform calculations using Avogadro's number and use the concept of the mole to convert between atomic/molecular and macroscopic quantities*
- *Determine the empirical and molecular formulas from elemental analysis data*
- *Calculate molarity for solutions and molarity of diluted solutions*

Read more about this topic: Section 3.1, Section 3.2 and Section 3.3

1. What is the correct way to find the formula mass of $C_6H_{14}O_2$
   a. 6x12.01+14x1.008+2x15.999
   b. 12.01+1.008+15.999
   c. 3x12.01+7x1.008+15.999
   d. (6+12.01)+(14+1.008)+(2+15.999)

2. Fill in the blanks
The [_____] mass of any substance is [_____] equivalent to its atomic or formula weight in [_____].

3. Select all of the true statements. A mole of carbon atoms….
   a. Weighs 1.000 grams
   b. Contains $6.02x10^{23}$ molecules
   c. Contains $6.02x10^{23}$ carbon atoms
   d. Weighs 12.01 grams
   e. Contains the same number of atoms as 1.008 grams of H atoms

4. Fill in the blanks
The term "molecular" mass cannot be used for [_____] compounds because they do not consist of discrete [_____], instead the term [_____] mass is used.

5. Match the steps for finding an empirical formula

Step 1	Divide each elements' moles by the smallest molar amount
Step 2	Multiple by an integer to achieve a whole number (if needed)
Step 3	Determine the moles of each element in the compound from the mass of each element by dividing by the molar mass of the element

6. Indicate whether the following statement is true or false:
It is possible for the molecular formula of a compound to be the same as the empirical formula of a compound

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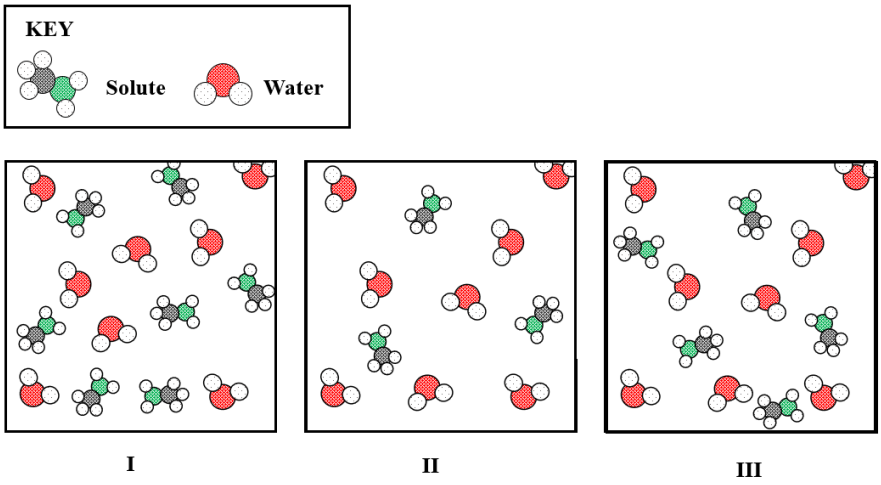
7. Which of the following solutions would have the highest molarity?



8. Which of the following solutions is most dilute?