

1. Molarity is \_\_\_\_\_.
- (A) the number of moles of solute dissolved in a liter of solvent  
(B) the number of moles of solute dissolved in a liter of solution  
(C) the number of moles of solute dissolved in 1 kilogram of solvent  
(D) the number of moles of solute dissolved in 1 kilogram of solution
2. Molality is \_\_\_\_\_.
- (A) the number of moles of solute dissolved in a liter of solvent  
(B) the number of moles of solute dissolved in a liter of solution  
(C) the number of moles of solute dissolved in 1 kilogram of solvent  
(D) the number of moles of solute dissolved in 1 kilogram of solution
3. To make a 1 molar solution, you dissolve 1 mole of solute in \_\_\_\_\_.
- (A) 1 liter of solvent  
(B) less than 1 liter of solution and then add solvent to the 1 liter mark  
(C) 1 kilogram of solvent  
(D) 1 kilogram of solvent and then add solvent to the 1 liter mark
4. What is the molarity of a solution of 0.395 g of  $\text{KMnO}_4$  (molecular weight 158) dissolved in enough water to make 250 ml total solution?
- (A) 0.1 M  
(B) 0.01 M  
(C) 0.0001 M  
(D) 0.00001 M
5. What is the molarity of a solution of NaCl when 6 moles of NaCl are dissolved in 2 liters of solution?
- (A) 2  
(B) 3  
(C) 4  
(D) 6
6. Two immiscible substances, that would normally separate from each other when left to settle out, can be prevented from separating by making them into an emulsion or a colloid. Emulsions are a form of colloid, the only restriction being that in an emulsion \_\_\_\_\_.
- (A) one mixture is a gas and other a liquid  
(B) both mixtures are solids  
(C) both mixtures are liquids  
(D) one mixture is a liquid and the other a solid

7. What do solutes do to the freezing and boiling points?

- (A) They raise the freezing point and lower the boiling point.
- (B) They raise both the freezing point and the boiling point.
- (C) They lower both the freezing point and the boiling point.
- (D) They lower the freezing point and raise the boiling point.

8. The lowering of the freezing point of water by salt is an example of salt's \_\_\_\_\_ properties.

- (A) colloidal
- (B) colligative
- (C) emulsive
- (D) covalent

9. The pH of water is 7.0. The pH of acids is \_\_\_\_\_.

- (A) more than 7.0
- (B) less than 7.0

10. A difference of 1 pH unit means that one solution is \_\_\_\_\_ times more or less acidic than the other solution.

- (A) 2
- (B) 5
- (C) 10
- (D) 100

11. A molecule that accepts electrons is a Lewis \_\_\_\_\_.

- (A) acid
- (B) base

12. If 50 ml of a HCl solution is neutralized by 150 ml of 0.5 M NaOH solution, what is the molarity of the HCl solution?

- (A) 1.0 M
- (B) 1.5 M
- (C) 0.1 M
- (D) 0.15 M

13. What is the pH of a  $2.5 \times 10^{-4}$  M solution of HCl? (The log of 2.5 is 0.4.)

- (A) 2.8
- (B) 3.2
- (C) 3.4
- (D) 3.6

14. 400 ml of a 2 M solution contains \_\_\_\_\_ moles of solute.

- (A) 0.4
- (B) 0.6
- (C) 0.8
- (D) 1.2