Name: _____ Grade/Class: _____

Unit 11 Review - Water and Its Solutions

1. Determine whether the following compounds are electrolytes or nonelectrolytes:
   a. SO_2
   b. $MgSO_4$
   c. C_2H_6
   d. Ag_2CO_3
   e. $Ca_3(PO_4)_2$
   f. $LiNO_3$
   g. PbO
   h. $AlBr_3$

2. What factors affect the rate at which solute particles can be dissolved?

3. Brass, a metal commonly used in the productions of musical instruments, is a mixture of about 65% Copper (by mass) and about 35% Zinc (by mass). Which substance is the solute and which is the solvent? What type of solution is brass?

4. In the following table, identify which compounds are electrolytes and which are nonelectrolytes.

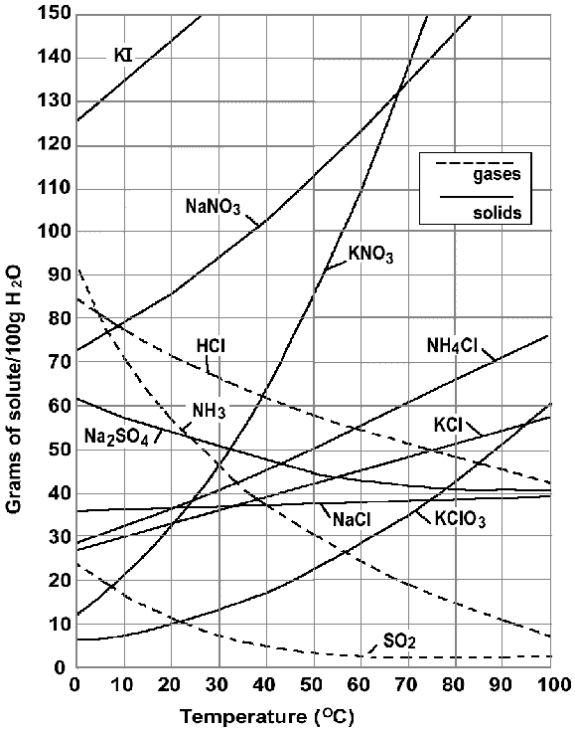
Solution	Conductivity (μS)	Electrolyte	Non-Electrolyte
$CaCl_2$	5321 μS		
$AlCl_3$	8725 μS		
NaCl	4124 μS		
$HC_2H_3O_2$	895 μS		
$H_2O_{deionized}$	137 μS		
CH_3OH	145 μS		
$C_2H_6O_2$	122 μS		

For #5-6, determine the concentration of the following solution (both % by mass and Molarity):

5. A solution containing 4.95 g of sodium chloride in 0.0500 L of solution. (Assume that the solute does not appreciably affect the volume of the solution.)

6. How would you prepare the following solution: 1200 ml of a 3.71 M sodium acetate solution?

7. Use the following solubility curve to determine whether each of the following is unsaturated, saturated or supersaturated.



a. A solution of 76 g of Ammonium Chloride dissolved into 100 g of water at 80 °C.

a. A solution of 40 g of Potassium Nitrate dissolved into 100 g of water at 50 °C.

b. A solution of 100 g of HCl dissolved in 200 g of water at 75°C.

For #8-9, how would you prepare the dilution?

8. How would you prepare 500. ml of 1.00 M H_2SO_4 from a stock solution of 10.0 M H_2SO_4?

9. How would you prepare 1.50 L of 2.5 M HCl from a stock solution of 6.00 M HCl?

10. If I add 45 grams of sodium chloride to 500 grams of water, what will the melting and boiling points be of the resulting solution? $K_b(H_2O) = 0.512\ ^0C/m$ and $K_f(H_2O) = -1.86\ ^0C/m$.