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Time: 10'

Chem 205
Drop Quiz 8

Friday, April 19, 2013
H. Deeb

Name: ___



1. Given the following solutions:

0.005 m Na₂SO₄; 0.008 m CaCl₂; 0.01 m sucrose; 0.01 m NaCl.

0.015 0.024 0.01 0.02

0.0247 0.02 > 0.015

a) Which of the above solutions should have the highest boiling point?

0.008 m CaCl₂

b) Which of the above solutions should have the highest freezing point?

0.01 m sucrose

2. A solution of 0.400 g of a nonelectrolyte in 40.0 g of water freezes at -0.465°C. What is the molecular weight of the nonelectrolyte? (K_f of water is 1.86°C/m).

Why
n
m
4.00

$\Delta T_f = K_f m$



0.465

1.86

0.25 = m

$n \approx 10$

$m = \frac{n}{m}$

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3. While determining the normal boiling point of an unknown liquid, darkening in color and decomposition occurred before it boils. How would you bring the liquid to boil without decomposition? Be brief.

We add solute to ~~be~~ higher the K_{sp}.

~~and~~ lower the vapor pressure.

(-2)



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1. Given the following solutions:

0.005 m Na_2SO_4 ; 0.008 m CaCl_2 ; 0.01 m sucrose; 0.01 m NaCl . 0.02.

a) Which of the above solutions should have the highest boiling point?

highest boiling pt: 0,01 m NaCl ✓b) Which of the above solutions should have the highest freezing point? (4)highest freezing point: 0,005 m Na_2SO_4 ✓2. A solution of 0.400 g of a nonelectrolyte in 40.0 g of water freezes at -0.465°C . What is the molecular weight of the nonelectrolyte? (K_f of water is $1.86^\circ\text{C}/\text{m}$).

$$\Delta T_f = T_f^\circ - T_f = 0 - (-0.465) = 0.465^\circ\text{C}$$

$$\Delta T_f = K_f m$$

$$m = \frac{\Delta T_f}{K_f} = \frac{0.465}{1.86} = 0.25 \text{ m}$$

$$m = \frac{n}{\text{mass}} \Rightarrow n = m \times \text{mass of solvent} = 0.25 \times 40 \times 10^{-3}$$

$$m = \frac{m}{M} \Rightarrow M = \frac{m}{n} = \frac{0.4}{0.01} = 40 \text{ g/mol} = 40.1$$

3. While determining the normal boiling point of an unknown liquid, darkening in color and decomposition occurred before it boils. How would you bring the liquid to boil without decomposition? Be brief.



(4)