

PS 13  
 (12) Calc  $V_{P_{soln}}$  @  $80^\circ C$

0.03 mols glucose in 100 g  $H_2O$

$\frac{100}{18} = 5.56 \text{ mole } H_2O$

$V_{P_{H_2O}} = 355 \text{ torr @ } 80^\circ C$

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$P_{soln} = X_{\text{solvent}} P^{\circ}$   
 $= (0.994) (355)$   
 $\rightarrow = 353.09 \text{ Torr}$

$X_{H_2O} = \frac{\text{Moles } H_2O}{\text{Moles } H_2O + \text{Moles glucose}}$   
 $X_{H_2O} = \frac{5.56}{5.56 + 0.03}$   
 $X_{H_2O} = 0.994$

Jan 11-7:36 AM

(13) 1m glucose  
 $i = 1$

BP =  $100.51^\circ C$

$\Delta T = 0.51 = (K_b \times m)$

$\Delta T = 0.51 = (K_b \times m) \times i$

$K_b = 0.51 \text{ } H_2O$

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1m  $Al_2(SO_4)_3$

$\Delta T = (K_b \times m) \times i$   
 $= (0.51 \times 1) \times 5$

$2.55$

$100 \rightarrow 102.55$   
 $\Delta 2.55$

Jan 11-8:08 AM

(14) 125mg Caffeine + 100g Cyclohexane  
 $K_f = 20.1 \frac{K}{M}$

$\Delta T = 0.13$

Find MW Caffeine  $\frac{g}{mole}$   $\frac{0.125g}{0.0065}$

$\Delta T = (K_f * m) \ell$   
 $0.13 = (20.1 * m) \ell$   
 $0.0065m$

0.0065 mole Caffeine	0.1 kg Cyclohexane
1 kg Cyclohexane	

0.0065 mole

0.0065 mole Caffeine  
 1 kg Cyclohexane

Jan 11-8:17 AM

Exam 4 Practice

(12)  $P_T = P_{He} + P_{Ne} + P_{Ar}$   
 $8.4 = 1.5 + 2.0 + P_{Ar}$

$P_{Ar} = 4.9 atm$

Find  $X_{Ar}$

$P_{Ar} = X_{Ar} (P_T)$

$X_{Ar} = \frac{P_{Ar}}{P_T} = \frac{4.9}{8.4}$

0.583 atm

Jan 11-8:40 AM

⑪ 60g. unk  
 V = 1l soln  
 PV = nRT  
 $(0.075)(1) = n(0.08206)(298)$   
 $n = 0.00307 \text{ Mols}$

Non-electrolyte  $i = 1$   
 $P = 57 \text{ torr @ } 25^\circ = T$   
 Fm ↓ MW or  $\frac{g}{\text{mole}} \leftarrow n$

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PV = nRT  
 $\frac{PV}{1} = \left( \frac{gRT}{\text{MW}} \right)$   
 $\frac{\text{MW}}{1} = \frac{gRT}{PV} = \frac{60(0.08206)(298)}{0.075(1)}$

Jan 11-8:43 AM

⑫ 8g EG ( $\text{C}_2\text{H}_6\text{O}_2$ ) in 100g  $\text{H}_2\text{O}$   
 $K_f = 1.86 \frac{^\circ}{m}$

$\Delta T = (K_f * m) i$   
 $= (1.86 * 1.29) 1$

$\Delta T = 2.4^\circ$

$0 - 2.4 = -2.4^\circ \text{ new f.p.}$

$m = \frac{\text{mols } \text{C}_2\text{H}_6\text{O}_2}{\text{Kg } \text{H}_2\text{O}}$   
 $= \frac{\left( \frac{8}{62} \right) \frac{g}{\text{MW}}}{0.1} = 1.29 \text{ m}$

Jan 11-8:53 AM

①  $292\text{g Mg(NO}_3)_2$   
 $1\text{L}$

$D_{\text{soln}} = \frac{1.108\text{g}}{\text{ml}} = \frac{1108\text{g}}{1\text{L}}$

Find  $m = \frac{1.97\text{ mole Mg(NO}_3)_2}{\text{kg H}_2\text{O}}$   
 $0.816\text{ kg}$

$292\text{g Mg(NO}_3)_2$	$1\text{ mole Mg(NO}_3)_2$
$148\text{g Mg(NO}_3)_2$	$1.97\text{ mole Mg(NO}_3)_2$

THINK "Self"  $\text{Soln} = \text{Solute} + \text{Solvent}$   
 $1108\text{g} = 292\text{g} + \boxed{816\text{g}}$

Jan 11-9:02 AM

②  $P_{\text{decan}}^{\circ}$   $250\text{mmHg}$  @  $120^{\circ}\text{C}$

$P_{\text{soln}} = ?$   $0.97\text{ mole C}_{10}\text{H}_{18} + 7.04\text{ mole decane}$

$P_{\text{soln}} = X_{\text{decan}} P_{\text{decan}}^{\circ}$

$X_{\text{decan}} = \frac{\text{mole decane}}{\text{mole decane} + \text{mole C}_{10}\text{H}_{18}}$   
 $= \frac{7.04}{7.04 + 0.97}$

Jan 11-9:12 AM

$$\textcircled{24} \quad \Delta BP = 1.04$$

$$\Delta T = (K \cdot m) i$$
$$1.04 = (0.52 \cdot 1) i$$

$$i = 2 \text{ ions}$$

Jan 11-9:15 AM