

(13.46) a C_7H_8 $\frac{0.867g}{ml}$ C_4H_4S $\frac{1.065g}{ml}$

HAVE soln

9.08g C_4H_4S
250ml C_7H_8

a $X_{C_4H_4S} = \frac{\text{mole } C_4H_4S}{\text{mole } C_4H_4S + \text{mole } C_7H_8}$

$= \frac{0.108}{0.108 + 2.36}$

$= 0.04376$

$X_{C_4H_4S}$

9.08g C_4H_4S	1 mole C_4H_4S	
84g C_4H_4S		= 0.108 mole C_4H_4S

250ml C_7H_8	0.867g	1 mole C_7H_8	
	1ml	92g C_7H_8	= 2.36 mole C_7H_8

Jan 7-7:38 AM

(13.46) b C_4H_4S find m = $\frac{\text{mole } C_4H_4S}{Kg C_7H_8}$

250ml C_7H_8	0.867g C_7H_8	1Kg	
	1ml	1000g	

$= \frac{0.108 \text{ mole}}{0.217 \text{ Kg}}$

$= 0.498 \text{ m } C_4H_4S$

Jan 7-8:03 AM

13.46c Find M of C_4H_4S

$$\frac{9.08g C_4H_4S}{1.065g} = \frac{mole C_4H_4S}{l \text{ of solution}}$$

8.53ml
0.00853l

$$= \frac{0.108}{(0.25l + 0.00853l)}$$

C_4H_8 C_4H_4S

0.4177M C_4H_4S

Jan 7-8:09 AM

Collig Prop

- ① MP/FP ↓
- ② BP ↑
- ③ ↑ π

$PV = nRT$

$P = \frac{n}{V} RT$

$P = M RT$

$\pi = M RT$

④ Vapor Pressure

Osmotic Pressure

UP ↓

Jan 7-8:42 AM

Raoult's Law → Vapor Pressure of a solution

$$P = X P^{\circ}$$

Vapor Pressure of the solution (points to P)
 Mole fraction of the SOLVENT (points to X, with SOLVENT circled in red)
 Pure substance (points to P[∘])

Jan 7-8:46 AM

Glycerine $C_3H_8O_3$ 1.26g } VP pure H₂O at 25°C
 Solute 36 8 vs 56 ml } 23.8 Torr P[∘]

Calc VP at 25°C of a solution of
 50ml glycerin + 50ml H₂O
 Solute Solvent

50ml H ₂ O	1g	1mole
	1ml	18g

= 2.78 mole H₂O

50ml gly	1.26g	1mole
	1ml	92g

= 0.685 mole gly

$VP = X_{H_2O} P^{\circ}$
 $= \frac{\text{mole H}_2\text{O}}{\text{mole H}_2\text{O} + \text{mole gly}} (23.8)$
 $= \frac{2.78}{2.78 + 0.685} (23.8)$
 = 19.1 torr

Jan 7-8:50 AM

Calculate the ΔT_{BP} and ΔT_{FP} or ΔT_{MP}

$\Delta T = (K * M) i$

Change from Normal BP/FP

Constant

MOLALITY of Solute in Soln

Vant Hoff factor (# of ions present)

$\frac{C_{\text{H}_2\text{O}}}{0}$	$\frac{\text{NaCl}}{0}$	$\frac{C_{\text{Al}_2\text{O}_3}}{0}$
\downarrow	\downarrow	\downarrow
-2	-4	-6

Moles Solute / Kg Solvent

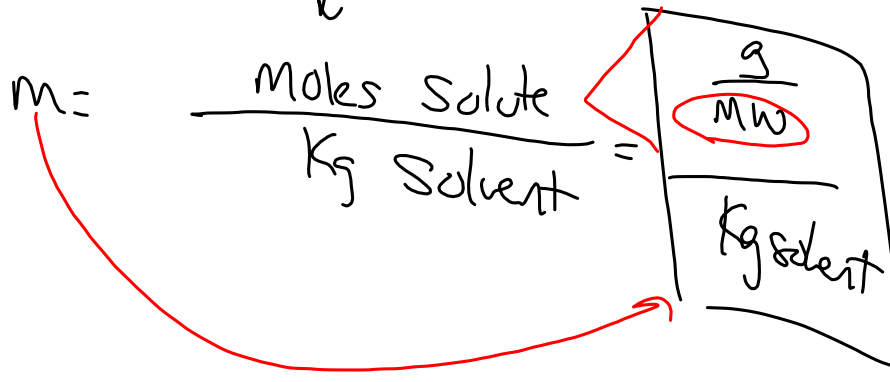
Jan 7-9:01 AM

	<u>1</u>	
NaCl	2	<p>Covalent</p> <p>Does not break up</p> <p>only <u>1</u> item present</p>
MgCl ₂	3	
CaCl ₂	3	
Al ₂ (SO ₄) ₃	5	
C ₆ H ₁₂ O ₆	1	

Jan 7-9:04 AM

$$\Delta T = (K \times m) \cdot i$$

↓

$$m = \frac{\text{Moles Solute}}{\text{Kg Solvent}} = \frac{\frac{\text{g}}{\text{MW}}}{\text{Kg solvent}}$$


Jan 7-9:13 AM

$$13 / 70, 73, 78$$

Jan 7-9:14 AM