

(13.76) 5g LA, 0.1kg Bz

Find MW  $\frac{g}{mole}$

$T_f = 4.1^\circ C$   
soln  
→ FP solvent =  $5.5^\circ C$   
 $\Delta T = 1.4^\circ C$

$\Delta T = (K \times m)$   
 $1.4 = (5.12 \times m)$

|              |           |
|--------------|-----------|
| 0.27 mole LA | 0.1 kg Bz |
| 1 kg Bz      |           |

0.27 mole LA

$M = 0.27_m$

0.27 mole LA  
1 kg Bz

Molar Mass (MW) =  $\frac{g}{mole} = \frac{5}{0.0273} = 183$

Jan 9-7:39 AM

(2) PS 13 Find  $[Cl^-]$  45g  $CaCl_2$  in 500ml  $H_2O$

concentration = M =  $\frac{molar\ CaCl_2}{l\ soln}$

|              |                 |                 |                                |
|--------------|-----------------|-----------------|--------------------------------|
| 45g $CaCl_2$ | 1 mole $CaCl_2$ | 2 mole $Cl^-$   | = $\frac{16.4\ mole\ Cl^-}{l}$ |
| 0.5l         | 110 g $CaCl_2$  | 1 mole $CaCl_2$ |                                |

$CaCl_2(s) \rightarrow Ca^{2+}(aq) + 2Cl^-(aq)$

Jan 9-8:09 AM

④ If  $X_{\text{solute}} = 1$

$$X_{\text{solute}} = \frac{\text{Moles solute}}{\text{Moles solute} + \text{Moles solvent}}$$

only way  $X=1$  is if NO solvent  
 $\Downarrow$

Jan 9-8:15 AM

⑤  $X_{\text{meth}} = ?$

Equal masses Methanol  $\text{CH}_3\text{OH}$   
 + 32g/mole  
 H<sub>2</sub>O 18g/mole

$$X_{\text{methanol}} = \frac{\text{mole Methanol}}{\text{mole methanol} + \text{mole H}_2\text{O}}$$

Assume 32g each

$$\frac{32\text{g H}_2\text{O} / \text{mole}}{18\text{g}} = 1.78 \text{ mole H}_2\text{O}$$

$$= \frac{1}{1 + 1.78} = 0.3597$$

If pick 1g

$$= \frac{0.5625}{0.5625 + 1} = 0.36$$

|          |       |
|----------|-------|
| 18g/mole | 1mole |
|          | 32g   |

Jan 9-8:18 AM

Q ? moles glucose, 450g H<sub>2</sub>O, ~~0.3m~~ ←

|                       |
|-----------------------|
| 0.3 moles glucose     |
| 1 Kg H <sub>2</sub> O |

|                       |                           |
|-----------------------|---------------------------|
| 0.3 moles glucose     | 0.450 Kg H <sub>2</sub> O |
| 1 Kg H <sub>2</sub> O | =                         |

Jan 9-8:38 AM

Osmotic Pressure

$PV = nRT$

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

$\pi = M RT$

$P$  in atm

$V$  in l

$n$  in moles

$T$  in Kelvin

$R = 0.08206 \frac{\text{l} \cdot \text{atm}}{\text{mol} \cdot \text{K}}$

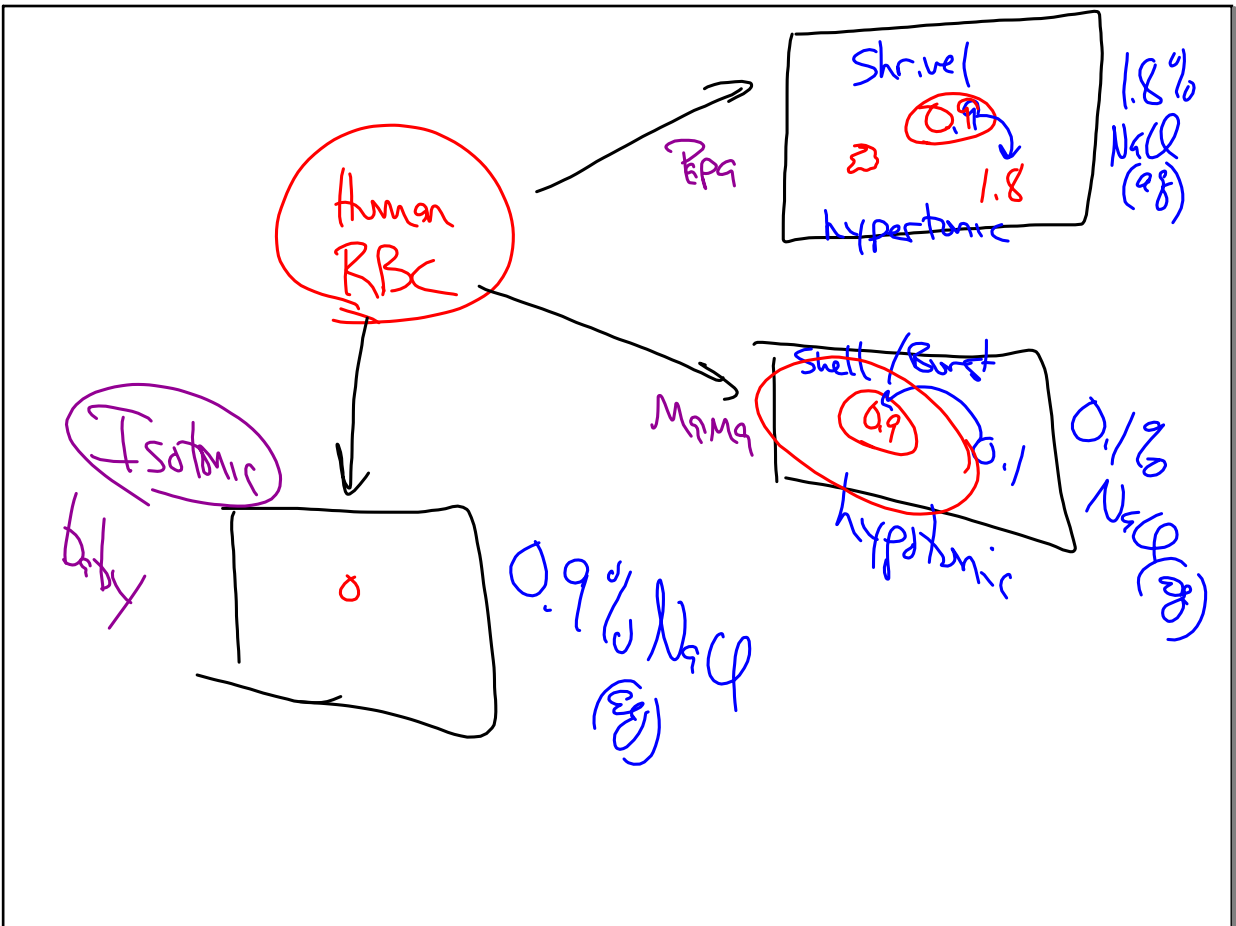
Jan 9-8:44 AM

Isotonic - Baby Bear  
 ↳ same amount.      Just right.

Hyper-tonic - Papa Bear  
 ↳ TOO much      TOO hot  
 TOO hard

Hypotonic - Mama Bear  
 ↳ too little      TOO cold  
 TOO soft

Jan 9-8:46 AM



Jan 9-8:51 AM

(3)  $Al_2(SO_4)_3$   $i = 5$

$\Delta T_b = (K_b \times m) \cdot i$

$= (0.51)(1) \cdot 5$

$= 2.55^\circ$

Jan 9-9:14 AM

(HW) Finish PS

Exam 4 # 1-9

Jan 9-9:18 AM