

PS13  
 (21)

6m glucose  $\frac{180g}{mole}$   
 $C_6H_{12}O_6$  (aq) Find  $X_{H_2O}$

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\*  $6 \text{ mda} = \frac{6 \text{ moles } C_6H_{12}O_6}{1 \text{ Kg } H_2O}$   
 glucose

1000g

$\frac{1000g \text{ } H_2O}{18g \text{ } H_2O} = 55.6 \text{ moles } H_2O$

$X_{H_2O} = \frac{55.6 \text{ moles } H_2O}{55.6 \text{ moles } H_2O + 6 \text{ moles } C_6H_{12}O_6}$

$X_{H_2O} = 0.903$

Jan 20-7:29 AM

End Chap 10

$PV = nRT$  (with  $n$  and  $R$  circled in red)

$P_{Soln} = X_{Pure Solvent} P_{Pure Solvent}$

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

Jan 20-8:30 AM

$PV = nRT$

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

$$\text{Molarity} = \frac{\text{Moles}}{\ell}$$

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

Jan 20-8:32 AM

Density     $\boxed{\frac{g}{\ell}}$      $\boxed{\frac{g}{V}}$

$PV = nRT$

$$\frac{PV}{1} = \frac{gRT}{MW}$$

$\Rightarrow$

$$\frac{g}{V} = \frac{P(MW)}{RT}$$

density

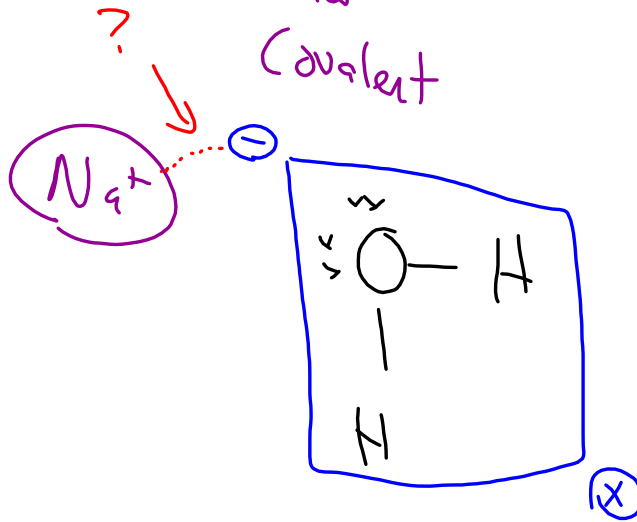
Jan 20-8:33 AM

2019 Exam 4

① NaCl in H<sub>2</sub>O

Ionic  
Na<sup>+</sup>  
Cl<sup>-</sup>

Polar  
Covalent



Jan 20-8:35 AM

②  $PV = nRT$

mass  $\rightarrow$  60g  
 $v = 1\text{L}$ ,  $P = 57\text{torr}$   
 $T = 25^\circ\text{C}$

$MW = ?$

$\frac{PV}{1} = \frac{gRT}{MW}$

$\frac{57\text{torr}}{760\text{torr}} = 0.075\text{atm}$

$\frac{MW}{1} = \frac{gRT}{PV} = \frac{(60)(0.08206)(298)}{(0.075)(1)} = 19563.04\text{g/mole}$

Jan 20-8:52 AM

$$\textcircled{12} \quad \text{He} + \text{Ne} + \text{Ar} = \text{Total}$$

$$1.5 + 2.0 + \text{Ar} = 8.4$$

$$X_{\text{Ar}} = ?$$

$$\text{Ar} = 4.9 \text{ atm}$$

$$P_{\text{Ar}} = X_{\text{Ar}} P_{\text{T}}$$

$$4.9 = X_{\text{Ar}} 8.4$$

$$X_{\text{Ar}} = 0.583 \text{ atm}$$

Jan 20-9:01 AM

$$\textcircled{13} \quad \cancel{\text{a}} \quad \Delta T = (\cancel{R} \times M) i$$

$$(0.5 \times 2) = 1 \quad \leftarrow *$$

$$\textcircled{b} \quad (0.75 \times 1) = 0.75$$

$$\textcircled{c} \quad (0.75 \times 1) = 0.75$$

$$\textcircled{d} \quad (0.24 \times 4) = 0.96$$

Jan 20-9:05 AM

①  $\Delta T = (K \times m) i$

↑  
molality

$Molality = \frac{\text{g/mw}}{\text{kg Solvent}}$

$= \frac{8}{62}$

$= \frac{0.1 \text{ kg}}{1.29 \text{ M}}$

$\Delta T = (1.86 \times 1.29)$

$\Delta T = 2.4^\circ \text{C}$

$0^\circ \text{C} - 2.4^\circ \text{C} = -2.4^\circ \text{C}$

New fp

old fp

$\Delta T$

Jan 20-9:12 AM

②  $X_{\text{glucose}} = 0.2 = \frac{2}{10}$

~~Mole glucose~~

Find molality glucose

$\frac{\text{Mole glucose}}{\text{kg H}_2\text{O}}$

$\frac{2}{0.144}$

$13.88 \text{ m}$

$X_{\text{glucose}} = \frac{\text{Mole glucose}}{\text{Mole glucose} + \text{Mole H}_2\text{O}} = \frac{2}{2 + 8}$

$8 \text{ Mole H}_2\text{O} \quad 18 \text{ g}$

$1 \text{ Mole} \quad = 144 \text{ g H}_2\text{O}$

Jan 20-9:21 AM

(24) 1m BP  $101.04^{\circ}\text{C}$   $K_b = 0.52$

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

$1.04 = (0.52 \times 1) \cdot i$

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

$101.04$  new BP  
 $- 100$  old BP  


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 $1.04 = \Delta T$

Jan 20-9:26 AM

(25)  $P_{\text{decane}} = 250 \text{ mmHg}$   $120^{\circ}\text{C}$

$VP_{\text{soln}} = ?$

$0.97 \text{ mole C}_{10}\text{H}_{18}$   
 $+ 7.04 \text{ mole Decane}$

$VP_{\text{soln}} = X_{\text{solvent}} P_{\text{pure solvent}}$

$= \left( \frac{7.04}{7.04 + 0.97} \right) (250)$

$= 219.79 \text{ mmHg}$

Jan 20-9:28 AM