

\* III-2 \_\_\_\_C \_\_\_\_NC  
\*\* IV-1 \_\_\_\_C \_\_\_\_NC

**Chemistry 130**  
**Worksheet 3**

Name: \_\_\_\_\_

- \*1. (0.5pt.) Explain the difference between osmosis and dialysis.
- \*\*2. (0.5pt.) A sample of  $\text{NO}_2$  gas occupies a volume of 150mL at a pressure of 1.80atm. Find the pressure required to reduce the volume of this gas to 105mL at constant temperature.
3. (1.0pt.) A sample of He gas occupies a volume of 60.0mL at STP. Find the volume of this gas at a pressure of 0.750atm and a temperature of  $77.0^\circ\text{C}$ .
4. (0.5pt.) A mixture of Ne gas and  $\text{Cl}_2$  gas has a total pressure of 6.00atm. If the partial pressure of Ne gas is 1.50atm, find the percent of Ne in the mixture.
5. (0.6pt.) List and briefly explain 3 of the 4 methods that heat generated by metabolism is removed from the body.
6. (.0.5pt.) Calculate the number of calories required to convert 4.00g of water at  $100^\circ\text{C}$  to 4.00g of steam at  $100^\circ\text{C}$ .
7. (0.8pt.) Indicate the effect (increase, decrease or none) that each of the following would have on the rate of a reaction.
1. Add a catalyst \_\_\_\_\_
  2. Increase temperature \_\_\_\_\_
  3. Increase concentration of a reactant \_\_\_\_\_
  4. Increase concentration of a product \_\_\_\_\_
8. (0.8pt.) A solution is prepared by dissolving 40.0mL of ethanol in enough water to make 150mL of solution. Find the % (v/v) ethanol in the solution.

9. (0.8pt.) Find the volume of 7.35%(w/v)  $C_6H_{12}O_6$  solution that would contain 23.0g of  $C_6H_{12}O_6$ .

10. (0.5pt.) Fill in the blanks for the following colloidal systems.

| Number | Type     | Dispersed Phase | Dispersion Medium |
|--------|----------|-----------------|-------------------|
| 1.     | Foam     |                 |                   |
| 2.     |          | Liquid          | Gas               |
| 3.     | Emulsion |                 |                   |

11. (0.6pt.) List 3 characteristics of a solution.

12. (1.2pt.) Indicate whether the following solution are hypertonic, hypotonic, or isotonic relative to the red blood cell and what would happen to a cell placed in each solution

A. 0.09% NaCl \_\_\_\_\_

B. 7.0% NaCl \_\_\_\_\_

C. 0.9% NaCl \_\_\_\_\_

13. (0.4pt.) Number the following from lowest boiling point to highest boiling point.

KI \_\_\_\_\_  $F_2$  \_\_\_\_\_  $H_2S$  \_\_\_\_\_  $H_2O$  \_\_\_\_\_

14. (0.6pt.) Given the reaction:  $CuSO_4(\text{undissolved}) + \text{heat} \rightarrow Cu^{+2} + SO_4^{-2}$ . Indicate the direction (forward or reverse) the reaction will shift when the following stresses are applied to the system.

| <u>Stress</u>         | <u>Shift</u> |
|-----------------------|--------------|
| A. Lower temperature  | _____        |
| B. Add $Cu^{+2}$      | _____        |
| C. Remove $SO_4^{-2}$ | _____        |

15. (0.7pt.) Fill in the blanks.

A. 0.20M  $Na_2S$  = \_\_\_\_\_ Osm.

B. 0.40M  $KCl$  = \_\_\_\_\_ Osm.

C.  $CaSO_4 \cdot 2H_2O$  is commonly called \_\_\_\_\_.

D.  $Na_2S_2O_3 \cdot 5H_2O$  is commonly called \_\_\_\_\_.

E. 14.3%(w/v)  $NaCl$  = \_\_\_\_\_ g  $NaCl/dL$

F.  $\text{SO}_2$  gas has a solubility of 4.3g/100g  $\text{H}_2\text{O}$  at 1.00atm of pressure. At a pressure 2.50atm the solubility of  $\text{SO}_2$  gas would be \_\_\_\_\_g/100g  $\text{H}_2\text{O}$ .

G. Ether has a normal boiling point of 36.4°C. Therefore, the vapor pressure of ether at 36.4°C would be \_\_\_\_\_mmHg.