** Chemistry 130  
** Worksheet 3  

Name: ______________________________

1. (0.5pt.) Explain the difference between osmosis and dialysis.

2. (0.5pt.) A sample of NO₂ 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°C.

4. (0.5pt.) A mixture of Ne gas and Cl₂ 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°C to 4.00g of steam at 100°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) C₆H₁₂O₆ solution that would contain 23.0g of C₆H₁₂O₆.

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

<table>
<thead>
<tr>
<th>Number</th>
<th>Type</th>
<th>Dispersed Phase</th>
<th>Dispersion Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Foam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Liquid</td>
<td>Gas</td>
<td></td>
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<tr>
<td>3.</td>
<td>Emulsion</td>
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</table>

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 _____ F₂ _____ H₂S _____ H₂O _____

14. (0.6pt.) Given the reaction: CuSO₄(undissolved) + heat → Cu⁺² + SO₄⁻². Indicate the direction (forward or reverse) the reaction will shift when the following stresses are applied to the system.

<table>
<thead>
<tr>
<th>Stress</th>
<th>Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Lower temperature</td>
<td></td>
</tr>
<tr>
<td>B. Add Cu⁺²</td>
<td></td>
</tr>
<tr>
<td>C. Remove SO₄⁻²</td>
<td></td>
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</tbody>
</table>

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

A. 0.20M Na₂S = ________ Osm.

B. 0.40M KCl = ________ Osm.

C. CaSO₄ • 2H₂O is commonly called ________.

D. Na₂S₂O₃ • 5H₂O is commonly called ________.

E. 14.3%(w/v) NaCl = ________ g NaCl/dL
F. SO₂ gas has a solubility of 4.3g/100g H₂O at 1.00atm of pressure. At a pressure 2.50atm the solubility of SO₂ gas would be __________g/100g H₂O.

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