1. (2 points) Nomenclature:

(a) $PbSO_4$ _LEAD (II) SulFate_   (b) sodium phosphide _Na_3P_

2. (4 points) Calculate the sodium ion concentration (in moles/L) of a solution that results when 2.50 g of sodium sulfate (142.04 g/mol) is diluted to a final volume of 250.0 mL in a volumetric flask.

$$2.50g\ Na_2SO_4 \times \frac{mol}{142.04g} \times \frac{2\ mol\ Na^+}{1mol\ Na_2SO_4} \times \frac{1}{250.0mL} \to \frac{10^3mL}{L}$$

Ans: _0.141 M   3sf_

3. (3 points) Calculate the weight percent concentration of a solution that is made by adding 0.150 moles of KCl (74.56 g/mol) to 50.0 mL of water.

$$\frac{0.150\ mol\ KCl \times \dfrac{74.56g\ KCl}{1mol}}{0.150mol\ KCl \times \dfrac{74.56g}{1mol} + 50.0mL \times \dfrac{1.00g}{1mL}} \times 100$$

Ans: _16.3% 3sf_

4. (1 point) Strong electrolytes exist only as _IONS_ in an aqueous solution. *(fill in the blank)*

5. (1 point) Which of the following would you expect to be a strong electrolyte in solution? *{circle your choice(s)}*

    (a) CH_3OH (methanol)   **(b) sodium sulfide**   (c) MgO   (d) $HC_2H_3O_2$(acetic acid)

6. (1 point) True or **False:** Adding salt to water lowers the normal boiling point below 100°C. *{circle your choice}*

                  INCREASES

7. (1 point) When a solute is added to a solvent, its freezing point is depressed. Which solution would you expect to have the lowest freezing point? *{circle your choice}*

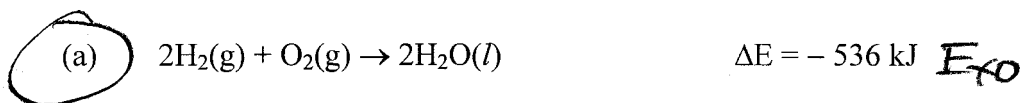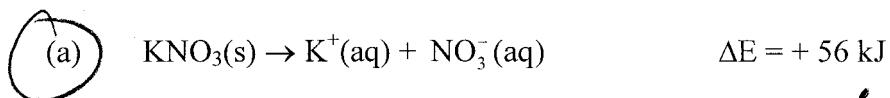(a) 1M NaCl   **(b) 1M K_2S**   (c) 1M CH_3OH (d) all would have the same freezing point
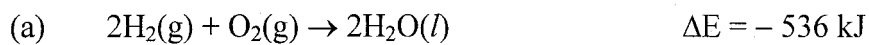
  2 M   3M   1M $\Delta T = K_F \cdot M$

8.(1 points)   Which of the following reactions is *Energy* favored? *{circle your choice}*

(a) $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$ $\Delta E = -536$ kJ   *Exo*

(a) $KNO_3(s) \rightarrow K+(aq) + NO_3^-(aq)$ $\Delta E = +56$ kJ

9.(1 points)   Which of the following reactions is **Entropy** favored? *{circle your choice}*

(a) $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$ $\Delta E = -536$ kJ

(a) $KNO_3(s) \rightarrow K^+(aq) + NO_3^-(aq)$ $\Delta E = +56$ kJ

More mols of product