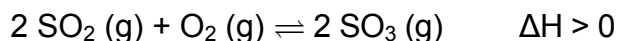
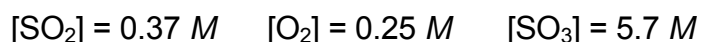


- 1) Explain what does it mean for a reaction to be at equilibrium?
- 2) How does the value of K_c determine if a reaction favors products or reactants?
- 3) How do the values of K_c and Q_c determine the direction a reaction will proceed?
- 4) What is the expression and value of K_w ?
- 5) Can you identify the conjugate base of any acid? How is acid strength related to conjugate base strength?
- 6) What does the value of K_a tell you about the strength of the acid?
- 7) Make sure you can calculate the pH of either a Strong Acid or Weak Acid solution.
- 8) Write the equilibrium constant expression for the reaction below.



- 9) For the reaction above, $K_c = 4.3 \times 10^{-4}$, if the following initial concentrations are used, what happens in the reaction?



- 10) For the reaction in problem 8 above, explain how decreasing the temperature will affect the equilibrium position of the reaction.
- 11) Write K_a expressions for all steps in the ionization H_3PO_4 and identify all acid/conjugate base pairs.
- 12) Calculate the pH of a 0.37 M solution of a mono-protic strong acid.
- 13) What is the percent ionization of a weak acid with an initial concentration of 0.5 M and $[\text{H}^+] = 0.002 \text{ M}$?
- 14) How does reversing a reaction alter the K_c value? What about multiplying through by a factor of 3?
- 15) What is the $[\text{OH}^-]$ in a solution with $\text{pH} = 4.73$?
- 16) Explain the trend in acid strength based on Bond Enthalpy
- 17) Explain the trend in acid strength based on Electronegativity