Unit VI BBBBBBBBBB NAME _____

FORMULA, SUBSTITUTION, ANSWER IN SIGNIFICANT FIGURE, AND UNITS FOR FULL CREDIT

1. Given: the potential energy of the reactants = 50.0 u
the potential energy of the activation complex = 70.0 u
the potential energy of the products = 28.0 u

Show with a potential energy diagram the models of the a) reactants, b) the activation complex and c) products for the reaction between hydrogen and chlorine.

the reaction is a/an _____ reaction
the Δ H of the reaction is _____ ( ) <-- units

2. Calculate the heat of combustion of one (1) mole of C_2H_2 given the reaction is exothermic and the energy is 310.6 kcal for the reaction

$$C_2H_2 + 15/2\ O_2 \longrightarrow 2CO_2 + H_2O_{(g)} + 310.6\ kcal$$

3. Using figure 20.1 and figure 20.9 Calculate the entropy of the following reaction at 27 deg C.

Aluminum oxide + hydrogen gas --> Aluminum metal + water

4. Given:

$$energy + 2NH_{3(g)} \rightleftharpoons N_{2(g)} + 3H_{2(g)}$$

What is the equlibrium constant at 1000 deg C if the following are the concentrations of $[N_{2(g)}]$= 1.03M, $[NH_{3(g)}]$= 0.102M, $[H_{2(g)}]$= 1.62M

5. Refering to the equation of problem 4. what effect would the following have on the reaction?

a) heat the system.

b) remove ammonia

c) remove $N_{2(g)}$

d) add $H_{2(g)}$

e) decrease pressure

6. When one (1) mole of HI is heated at 500 deg c in a sealed one (1) liter flask until equilibrium is reached, the HI decomposes to form 0.24 mole of each product, H_2 and I_2. the reactant(s) and product(s) are in the gaseous phase Calculate the Keq

7. The solubility product of Lead (II) Sulfate is 1.3×10^{-8} at 25 deg C. What is the solubility of Lead (II) Sulfate?

8. At 25 deg C, a saturated solution of $Pb(OH)_2$ contains 4.80×10^{-6} mole of the compound in one (1) liter of solution. What is the Ksp of $Pb(OH)_2$?