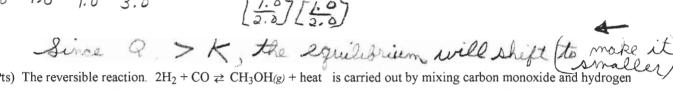
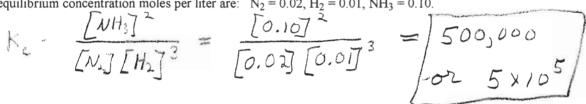
CHM152 QUIZ 3 SHOW ALL WORK TO RECI	3 25 Pts SPRING 2012 NAI	ME:	Key	
1. (4 Pts) Consider the reaction:	$2SO_2 + O_2 \rightleftharpoons 2SO_3 + \text{heat}$.	Under which condi	itions is SO ₃ most s	table?



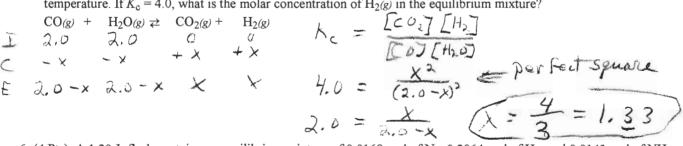
- (C) low pressure and high temperature (D) low pressure and low temperature
- (E) Must be determined experimentally



- 3. (4 Pts) The reversible reaction. 2H₂ + CO ≥ CH₃OH(g) + heat is carried out by mixing carbon monoxide and hydrogen gases in a closed vessel under high pressure with a suitable catalyst. After equilibrium is established at high temperature and pressure, all three substances are present. If the pressure on the system is lowered, with the temperature kept constant, what will be the result?
 - (A) The amount of CH₃OH will be increased. (B) The amount of CH₃OH will be decreased.
 - (C) The amount of each substance will be unchanged. (D) The amount of each substance will be increased.
 - (E) The result cannot be predicted from the information given.
- 4. (4 Pts) Calculate K_{eq} in terms of molar concentration for the reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ when the equilibrium concentration moles per liter are: $N_2 = 0.02$, $H_2 = 0.01$, $NH_3 = 0.10$.



5. (4 Pts) A mixture of 2.0 mol of CO(g) and 2.0 mol of $H_2O(g)$ was allowed to come to equilibrium in a 1 L flask at a high temperature. If $K_c = 4.0$, what is the molar concentration of $H_2(g)$ in the equilibrium mixture?



6. (4 Pts) A 1.20-L flask contains an equilibrium mixture of 0.0168 mol of N_2 , 0.2064 mol of H_2 , and 0.0143 mol of N_3 Calculate the equilibrium constant, K_c for the reaction: $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

