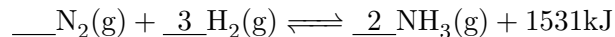


Name: _____

Date: _____

[10 pt] 1. Consider the following system at equilibrium:



Complete the following table. Indicate changes in concentration of each product and reactant by entering (I)ncrease, (D)ecrease, (N)o change, or a ? for insufficient information to determine.

Stress Applied:	Direction Reaction Shifted	[N ₂]	[H ₂]	[NH ₃]
Add N ₂				
Add NH ₃				
Decrease Volume				
Increase Temperature				
Add a catalyst				

[10 pt] 2. Consider the following system at equilibrium:

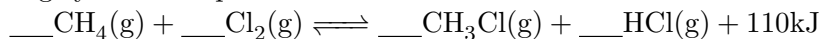


Complete the following table. Indicate changes in concentration of each product and reactant by entering (I)ncrease, (D)ecrease, (N)o change, or a ? for insufficient information to determine.

Stress Applied:	Direction Reaction Shifted	[O ₂]	[O ₃]
Add O ₂			
Remove O ₃			
Increase Volume			
Decrease Temperature			
Increase Pressure			

CHE 112 - Homework - Ch 13c

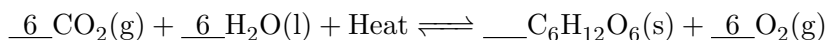
[10 pt] 3. Consider the following system at equilibrium:



Complete the following table. Indicate changes in concentration of each product and reactant by entering (I)ncrease, (D)ecrease, (N)o change, or a ? for insufficient information to determine.

Stress Applied:	Direction Reaction Shifted	[CH ₄]	[Cl ₂]	[CH ₃ Cl]	[HCl]
Remove Cl ₂					
Add HCl					
Increase Pressure					
Decrease Temperature					
Add a catalyst					

[10 pt] 4. Photosynthesis is described by the following equilibrium:



(a) Explain how and why the equilibrium will shift if the amount of water is increased. 4(a) _____

(b) Should you increase or decrease the temperature to increase the production of glucose? Explain. 4(b) _____

(c) Explain how the equilibrium will shift if a catalyst is added. 4(c) _____

(d) If you remove O₂ from the reaction what will happen to the concentration of glucose? Explain your answer. 4(d) _____

(e) Is the reaction shown an exothermic or endothermic reaction? Explain your answer. 4(e) _____