Chapter 7 - Lecture Worksheet 2

1. Predict the sign of ΔG^0_{rxn} for each of the following reactions.	ΔG^0_{rxn}
A. Melt ice	
B. Combustion of sucrose, $C_{12}H_{22}O_{11}(s)$	
C. Crystallization of a supersaturated solution of sodium acetate.	

PRS Answers	
1. Positive ALL Temperatures	**3.** Negative at HIGH Temperatures
2. Negative ALL Temperatures	**4.** Negative at LOW Temperatures

2. Which reaction is favorable in terms of both the enthalpy and the entropy ? 1. **A** **2. B** **3. C**

3. Which reaction is "entropy driven" but unfavorable in terms of the enthalpy ? 1. **A** **2. B** **3. C**

4. Which reaction is "enthalpy driven" but unfavorable in terms of the entropy ? 1. **A** **2. B** **3. C**

5. Write two expressions the show how to calculate the **standard** Gibbs Free Energy change for the decomposition of sulfur trioxide from tabulated values:

$2\ SO_3(g)$ ------> $2\ SO_2(g) + O_2(g)$

A.	B.

C. For this reaction ΔH^0_{rxn} = 197.78 kJ/mol and ΔS^0_{rxn} = 188.06 J/mol K. Calculate ΔG^0_{rxn} at 298K.

D. Under standard state conditions is the reaction spontaneous at 25^0C ? **1. YES** **2. NO** **2. MAYBE**

E. If it is not spontaneous at 25^0C, is there a temperature at which it it will become so ?