

Chapter 7 - Lecture Worksheet 2

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

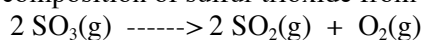
PRS Answers

1. Positive ALL Temperatures
2. Negative ALL Temperatures

3. Negative at HIGH 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 that show how to calculate the **standard** Gibbs Free Energy change for the decomposition of sulfur trioxide from tabulated values:



A.	B.
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- C. For this reaction $\Delta H_{\text{rxn}}^0 = 197.78 \text{ kJ/mol}$ and $\Delta S_{\text{rxn}}^0 = 188.06 \text{ J/mol K}$. Calculate ΔG_{rxn}^0 at 298K.

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

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