

* I-1 _____ C _____ NC

** I-2 _____ C _____ NC

Chemistry 152
Worksheet 6

Name: _____

A. For the reaction $\text{C}_2\text{H}_4(\text{g}) + 3 \text{O}_2(\text{g}) \rightarrow 2 \text{CO}_2(\text{g}) + 2 \text{H}_2\text{O}(\ell)$

1. (2.0 pts.) Calculate $\Delta H^\circ_{\text{rxn}}$ from the heats of formation given in the table and indicate whether the reaction is endothermic or exothermic.

*2. (2.0 pts.) Calculate $\Delta G^\circ_{\text{rxn}}$ from the free energies of formation given in the table and indicate whether the reaction is spontaneous or nonspontaneous.

3. (2.0 pts.) Calculate $\Delta S^\circ_{\text{rxn}}$ from the entropies given in the table and indicate whether disorder increases or decreases when the reaction occurs.

**B. (2.0 pts.) For a certain reaction at 400K, $\Delta H = -1059\text{kJ}$ and $\Delta G = -1196\text{kJ}$. Determine ΔS for the reaction using the Gibbs-Helmholtz equation.

C. (2.0 pts.) At 25°C, K_{sp} for BaSO_3 is 2.6×10^{-9} . Calculate ΔG° for the reaction:
($R = 8.314 \text{ J/moleK}$)

