

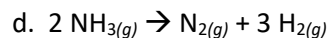
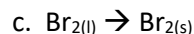
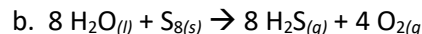
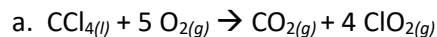
Unit 12 – Chapter 16: Thermodynamics

Name _____

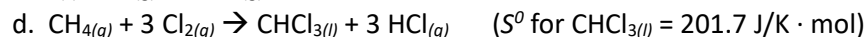
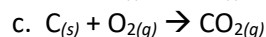
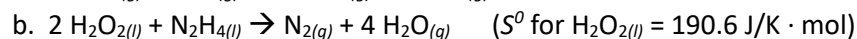
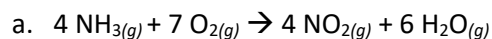
Assignment #3: ΔS , ΔG Calculations

Period _____

1) Predict the sign of ΔS° for each of the following reactions.



2) Use Table 17.1 to calculate ΔS° for each of the following reactions.



3) Calculate ΔG° at 45°C for reactions for which

a. $\Delta H^\circ = 293 \text{ kJ}$; $\Delta S^\circ = -695 \text{ J/K}$

b. $\Delta H^\circ = -1137 \text{ kJ}$; $\Delta S^\circ = 0.496 \text{ kJ/K}$

c. $\Delta H^\circ = -86.6 \text{ kJ}$; $\Delta S^\circ = -392 \text{ J/K}$

4) It has been proposed that wood alcohol, CH_3OH , a relatively inexpensive fuel to produce, be decomposed to produce methane. Methane is a natural gas commonly used for heating homes. Is the decomposition of wood alcohol to methane and oxygen thermodynamically feasible at 25°C and 1 atm?

5) The reaction between magnesium metal and liquid water produces solid $\text{Mg}(\text{OH})_2$ and hydrogen gas. Calculate ΔG° for the formation of one mole of $\text{Mg}(\text{OH})_2$ at 25°C and at 15°C .