Answers to Practice Problems H in page 365

Answers to Practice Problems H

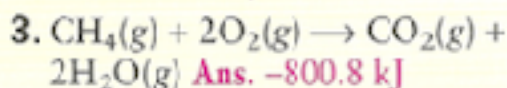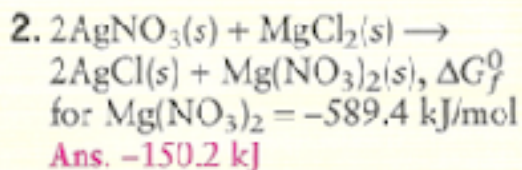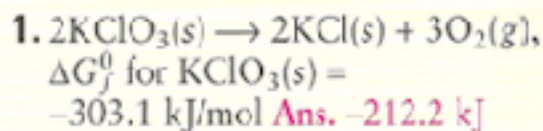1. $\Delta G = [(1 \text{ mol}) (-394.4 \text{ kJ/mol})] - [(0) + (0)] = -394.4 \text{ kJ}$
   Yes, the reaction is spontaneous.

2. $\Delta G = [(1 \text{ mol})(-604.0 \text{ kJ/mol}) + (1 \text{ mol}) (-394.4 \text{ kJ/mol})] - [(1 \text{ mol}) (-1128.8 \text{ kJ/mol})] = 130.4 \text{ kJ}$
   No, the reaction is not spontaneous.

Homework ———— GENERAL

Additional Practice Have students determine the change in Gibbs energy for the following chemical reactions. Remind students that they must multiply a molar Gibbs energy by the number of moles of that substance in the reaction. Assume that the coefficients represent the number of moles involved in the reaction.

1. $2KClO_3(s) \longrightarrow 2KCl(s) + 3O_2(g)$, ΔG_f^0 for $KClO_3(s) = -303.1 \text{ kJ/mol}$ **Ans. –212.2 kJ**

2. $2AgNO_3(s) + MgCl_2(s) \longrightarrow 2AgCl(s) + Mg(NO_3)_2(s)$, ΔG_f^0 for $Mg(NO_3)_2 = -589.4 \text{ kJ/mol}$ **Ans. –150.2 kJ**

3. $CH_4(g) + 2O_2(g) \longrightarrow CO_2(g) + 2H_2O(g)$ **Ans. –800.8 kJ**

LS Logical