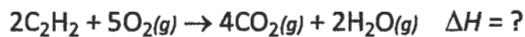


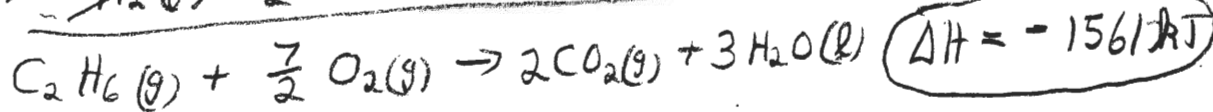
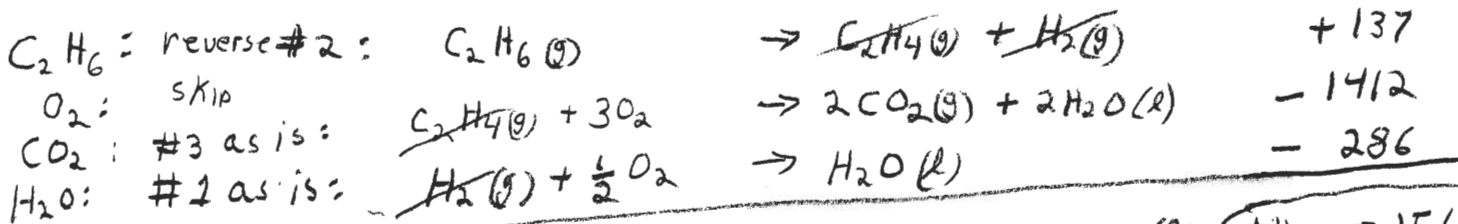
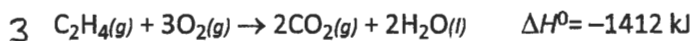
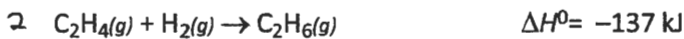
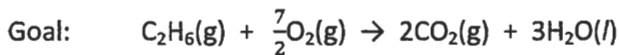
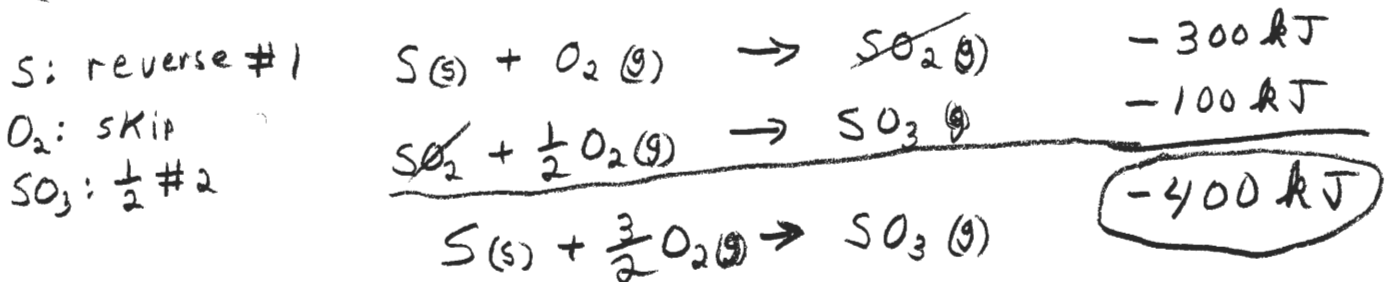
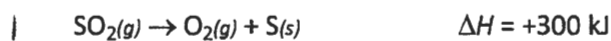
****SHOW ALL WORK TO RECEIVE CREDIT****

1. (6 Pts) The heats of formation, ΔH_f° in are shown in the table. What is ΔH in kJ for the reaction

ΔH_f° Values (kJ/mole): $\text{C}_2\text{H}_2(\text{g}) +227,$ $\text{H}_2\text{O}(\text{g}) -242,$ $\text{CO}_2(\text{g}) -393$

$$\Delta H_{\text{rxn}} = \sum \Delta H_{\text{products}} - \sum \Delta H_{\text{reactants}}$$

$$[4(-393) + 2(-242)] - [2(227) + 5(0)] = -2510 \text{ kJ}$$

2. (6 Pts) Calculate the enthalpy (ΔH) for the combustion of ethane, using the three equations given.3. (6 Pts) Calculate the heat of formation of $\text{SO}_3(\text{g})$. $\text{S}(\text{s}) + \frac{3}{2}\text{O}_2 \rightarrow \text{SO}_3(\text{g})$ 

4. (6 Pts) A 10.0 g sample of silver is heated to 100.0 °C and then added to 20.0 g of water at 23.0 °C in an insulated calorimeter. At thermal equilibrium the temperature of the system was measured as 25.0 °C. What is the specific heat of silver? The specific heat of water is 4.184 J/g·°C.

Heat gained by water = Heat lost by silver

$$\text{Joules gained by water} = \frac{4.184 \text{ J} \mid 20.0 \text{ g} \mid 2.0^\circ\text{C}}{\text{g} \cdot ^\circ\text{C}} = 167.2 \text{ J}$$

for sp-ht of Ag s

$$\frac{167.2 \text{ J}}{10.0 \text{ g} \mid 75^\circ\text{C}} = 0.223 \frac{\text{J}}{\text{g} \cdot ^\circ\text{C}}$$