1. (4 pts) Give the products that result from reacting the following two compounds

\[ \text{ } \]

2. (4 pts) Using the given thermodynamic data, calculate the \( \Delta G^0_{\text{rxn}} \) for the following:

\[ \text{C}_3\text{H}_8(\text{g}) + \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{g}) \]

\[ \Delta G^0_{f}(\text{C}_3\text{H}_8(\text{g})) = -23.4 \text{ kJ/mol} \]
\[ \Delta G^0_{f}(\text{O}_2(\text{g})) = 0 \text{ kJ/mol} \]
\[ \Delta G^0_{f}(\text{CO}_2(\text{g})) = -394.4 \text{ kJ/mol} \]
\[ \Delta G^0_{f}(\text{H}_2\text{O}(\text{g})) = -228.72 \text{ kJ/mol} \]
3. (7 pts) If the reaction is at equilibrium at 7500 K, what must the partial pressure of propane be if \([O_2] = 0.12\) atm, \([CO_2] = 12.6\) atm, and \([H_2O] = 22.1\) atm?

Note that \(\Delta G_{\text{rxn}} = \Delta G_{\text{rxn}}^0 + RT \ln Q\)