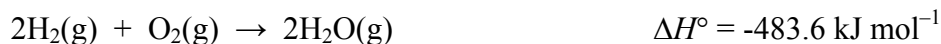
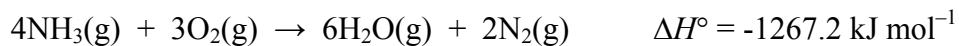


Marks
6

- The final step in the industrial production of urea, $\text{CO}(\text{NH}_2)_2$, is:



Using the following data, calculate the standard enthalpy of formation ΔH°_f of solid urea.

 $\Delta H^\circ_f =$

The formation of urea in this process is only spontaneous above 821°C . What is the value of the entropy change ΔS° (in $\text{J K}^{-1} \text{mol}^{-1}$) for the reaction?

 $\Delta S^\circ =$

Rationalise the sign of ΔS° in terms of the physical states of the reactants and products.