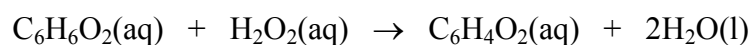
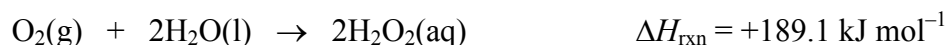
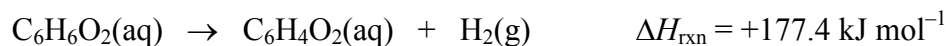


Marks
8

- The conversion of hydroquinone ($C_6H_6O_2(aq)$) to quinone ($C_6H_4O_2(aq)$) is involved in many important biochemical reactions. The bombardier beetle, for example, uses the explosive reaction between hydroquinone and hydrogen peroxide (as described by the equation below) as a defence mechanism.



From the following reaction data, calculate ΔH_{rxn} for the reaction between 1.00 mol of hydroquinone and 1.00 mol of hydrogen peroxide.

 $\Delta H_{rxn} =$

Use the answer you obtained above to calculate the heat liberated (in joules) in the oxidation of 3.86×10^{-4} mol of hydroquinone to quinone.

Answer:

Calculate the temperature rise of 0.250 g of water for this quantity of heat. (The heat capacity of water, $C_p = 4.184 \text{ J K}^{-1} \text{ g}^{-1}$)

Answer: