

**Marks**  
**5**

- The autoionisation of water conforms to the following balanced equation:



Is this an exothermic or endothermic reaction?

What will happen to the equilibrium if the temperature is raised?

The equilibrium constant,  $K$ , for this reaction is  $1.8 \times 10^{-16}$  at  $25^\circ\text{C}$ . Calculate  $\Delta G$ .

Answer:

Why is  $\Delta G$  not equal to  $\Delta H$  for this reaction?

The pH of pure water is 6.81 at  $37^\circ\text{C}$ . Is water acidic, basic or neutral at this temperature? Explain.