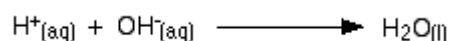


Chemguide – answers

ENTHALPIES OF NEUTRALISATION

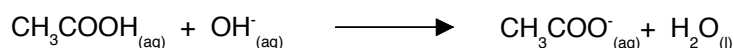
1. The standard enthalpy change of neutralisation is the enthalpy change when solutions of an acid and an alkali react together under standard conditions to produce 1 mole of water.

2. The first three of these are just



and you could also use the same equation for the weak acid in (d), because there will be some hydrogen ions present, and as those react, they will be replaced by new ones as further acid ionises.

However, most of the reaction will be between unionised acid molecules and hydroxide ions:



If you come across a question like this in a past paper, check the mark scheme and Examiner's Report to see whether it matters which you use. If you can use the simpler version, do so, because you are much less likely to get it wrong.

3. a) In each case, the acid and base are fully ionised as $\text{H}^+_{(\text{aq})}$ and $\text{OH}^-_{(\text{aq})}$ respectively. The enthalpy change of the reaction is therefore the enthalpy change of the reaction occurring in Q2.
b) Weak acids and weak bases aren't fully ionised in solution, and so other reactions have to be occurring as well as the one above. These will also make a contribution to the overall enthalpy change.