Buffer solutions exam tips

• Learn the definition

A buffer solution is made up of a weak acid and its conjugate base OR a weak base and its conjugate acid

AND

the buffer solution is able to maintain a reasonably constant pH value OR the pH value doesn’t change significantly

AND

when **small** amounts of acid (H3O+) or base (OH-) are added to it

• Indicate that in the buffer region the concentration of the weak acid and conjugate base are equal

eg concentration of the weak acid = concentration of the conjugate base

[CH3COOH] = [CH3COO-]

eg. concentration of weak base = concentration of the conjugate acid

[CH3NH2] = [CH3NH3+]

• When describing the action of an acid or base on the buffer solution use both **sentences** and **equations**

eg When a small amount of acid (H3O+) ions are added,

they will react with the CH3NH2(*aq*) molecules to form CH3NH3+(*aq*) ions.

CH3NH2(*aq*) + H3O+(*aq*) → CH3NH3+(*aq*) + H2O(l)

The added acid (H3O+), is mostly consumed,

and the pH of the solution changes very little.

and complete your answer by letting the examiner know that you are aware that:

there will still be some unreacted weak base (CH3NH2 ) and therefore conjugate acid (CH3NH3+)in the solution so it still has buffering properties

*To achieve with Excellence you MUST include the* ***UNITS*** *and ensure your answer is to* ***3 sig figs***

Also…”don’t be daft”

In the buffer region the pH does not stay the same, the **pH changes only a little** or not significantly

You must include **equations** when describing the buffer region of a titration curve

When writing an equation to represent the effect of an acid on a buffer be sure to use **H3O+**not H+

Remember to use the word “concentration” or show square brackets **[ ]**

Don’t write a Ka expression for a buffer reacting with H2O

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