

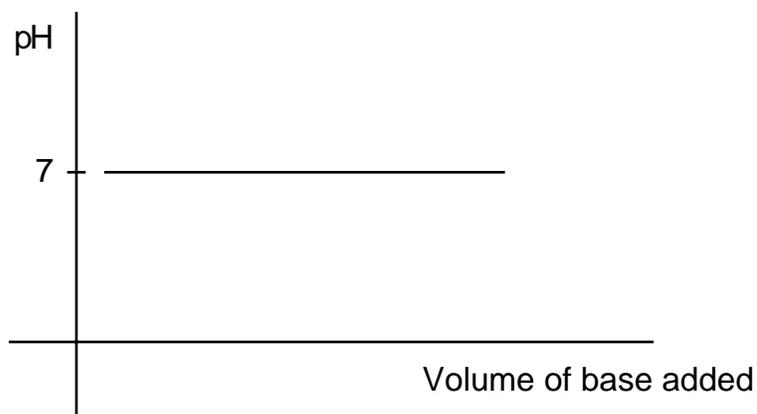
## Chem12 Buffer/Titration : Quiz-240

1) Answer the following:

- What is a standard solution?
- Give a property of a primary standard.
- What is the purpose of doing a titration?
- What is the transition point (or endpoint)?
- What is the equivalence point?
- How is an acidic buffer prepared?
- Why are buffers used?

2) Explain why your blood has buffers in it.

3) A weak acid is titrated with a strong base (base added to acid). Draw the titration curve. Name an indicator that can be used to find the equivalence point.



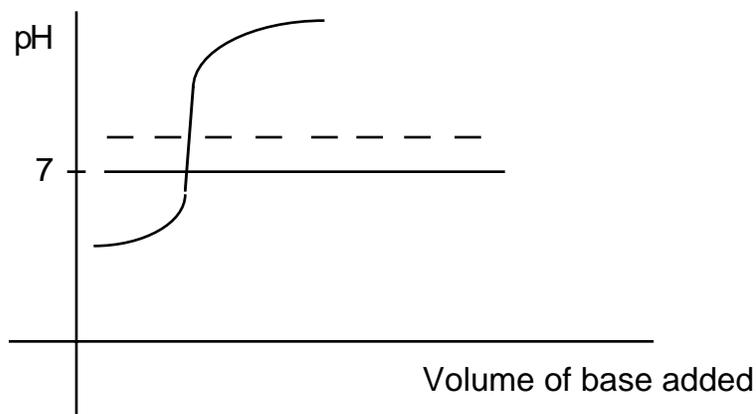
4) A buffer is made by adding 1.50 mol of formic acid and 1.00 mol of HCOONa to 1.00 L of water. ( $K_a$  for formic acid =  $1.78 \times 10^{-4}$ )

- Give the equilibrium reaction for this buffer solution.

b) Find the pH of this buffer (to two decimals).

c) Find the new pH (to two decimals) if 0.10 mol of  $\text{H}_3\text{O}^+$  is added.

Answers : 1)a) It is a solution with an accurately known concentration., b) stable compound, high molar mass, does not absorb water, non-reactive, c) A titration is done in order to find the concentration of an unknown solution., d) This is the point (pH) where the indicator in the titrated solution changes color., e) moles  $\text{OH}^- = \text{moles H}_3\text{O}^+$ , f) Generally, an acidic buffer is prepared by combining a weak acid with an equal amount of its conjugate base., g) Buffers are used to prevent large changes in the pH of a solution., 2) The blood has several buffers in it to maintain a relatively constant pH. Certain reactions will occur only at a specific pH. 3)



A suitable indicator for this titration is one that changes color in a pH range of 8.0 to 10. (e.g. phenolphthalein), 4)a)  $\text{HCOOH} + \text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^+ + \text{COOH}^-$ , b) 3.57, c) 3.50.