

Acid Base

Ka, Kb, Kw

- 1)
 - a) Determine the pH of a 0.500 M solution of nitrous acid.
 - b) Calculate the % ionization of this solution.

- 2)
 - a) Determine the pH of 1.20 M solution of sodium fluoride.
 - b) Calculate the % ionization of this solution.

- 3)
 - a) Calculate the concentrations of **all** species in the equilibrium formed when 1.00 M vinegar is dissolved in water.
 - b) Draw the concentration vs time graph for all species from the moment that the vinegar is added until several minutes after equilibrium is established.
 - c) Continue the concentration vs time graphs after a small amount of HCl is added
 - d) Continue the concentration vs time graphs after a small amount of NaOH is added

- 4) Calculate the $[H_3O^+]$ for each solution;
 - a) 1.0 M H_3PO_4
 - b) 1.0 M $H_2PO_4^-$
 - c) 1.0 M HPO_4^{2-}
 - d) Add up all the concentrations of a), b) and c). What pattern do you notice?

- 5) A solution of 0.6500 M potassium binoxalate is formed.
 - a) Is this solution acidic or basic? Prove with calculations.
 - b) Calculate the pH and pOH.

- 6) 110.00 g of lithium bicarbonate is dissolved in 2.00 L of water.
 - a) Is this solution acidic or basic? Prove with calculations.
 - b) Calculate the pH and pOH.

- 7) Explain the “leveling effect”. What is the consequence of the leveling effect?

- 8) Determine the pH of a saturated solution of magnesium carbonate.