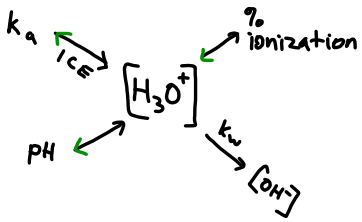
Ionization Constant Problems

Ionization Constant Problem-Map



Acid-Base Indicators

Indicators are, themselves, weak acids.
They have different colours for acid + base form.
example- phenolphthalein (HPt)

$HPt + H_2O \rightleftharpoons H_3O^+ + Pt^-$

HPt: Clear Pt^-: Pink

i) If HPt is in an acidic solution,
Stress ↑ $[H^+]$
Shift reactants
Consequence- more HPt (clear)
- less Pt^- (pink)

ii) .... if basic solution.
first- $OH^- + H_3O^+ \rightarrow H_2O$ neutral
Stress ↓ $[H_3O^+]$
shift: products
Consequence- Pink

Neutralization Reactions

Recall- ksp lab

$Ca(OH)_2 + 2HCl \rightarrow CaCl_2 + 2H_2O$

Base acid salt water

Used in titration (P.599)

Example- A 14.8 mL sample of HCl is titrated with 8.5 mL of 0.50 mol/L NaOH. Find [HCl]. → 0.0085 L

$HCl + NaOH \rightarrow NaCl + H_2O$

1. Moles $NaOH = \frac{0.50\ mol}{1\ L} \times 0.0085\ L$
$= 0.00425$ mol NaOH

2. Moles HCl $= 0.00425$ mol NaOH $\times \frac{1\ mol\ HCl}{1\ mol\ NaOH}$
$= 0.00425$ mol HCl

3. $[HCl] = \frac{0.00425\ mol\ HCl}{0.0148\ L\ HCl} = 0.287\ mol/L\ HCl$

Can be other ratios

Questions P.602 text #17-20

Hydrolysis Reactions