Acid #8

1. $Zn(OH)_2$ <----> $Zn^{2+} + 2OH^-$

$Ksp = [Zn^{2+}][OH^-]^2$

$[OH^-]$ = Antilog - (14.000 - 9.627)= 4.236×10^{-5} M
$[Zn^{2+}]$ = 1/2 (4.236×10^{-5}) = 2.118×10^{-5} M

$Ksp = (2.118 \times 10^{-5})(4.236 \times 10^{-5})^2$
$= 3.80 \times 10^{-14}$
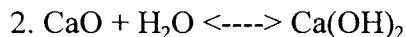
2. $CaO + H_2O$ <----> $Ca(OH)_2$
    Calcium hydroxide dissolves to form OH^- ions in solution

3.   a) $Al_2(SO_4)_3 + 12 H_2O$ <----> $2 Al(H_2O)_6^{3+} + 3 SO_4^{2-}$
       b) $Al(H_2O)_6^{3+} + H_2O$ <----> $Al(H_2O)_5OH^{2+} + H_3O^+$

4. $H_2NCH_2COOH + H_2O$ <----> $H_2NCH_2COO^- + H_3O^+$ Acid
    $H_2NCH_2COOH + H_2O$ <----> $H_3NCH_2COOH^+ + OH^-$ Base

5. $CO_2 + H_2O$ <----> H_2CO_3
    $H_2CO_3 + H_2O$ <----> $HCO_3^- + H_3O^+$
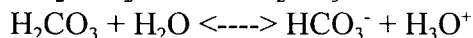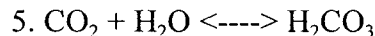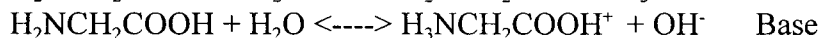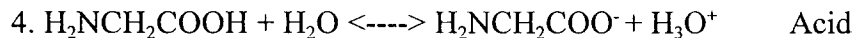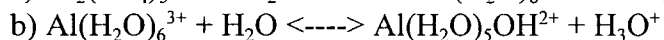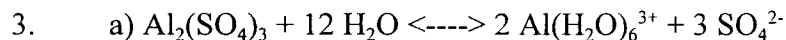
In daytime CO_2 levels are low and solution has a high pH at night when CO_2 levels rise the pH drops.

6.   a) $K_2O + H_2O$ <----> $2KOH$ Basic
       b) $SO_3 + H_2O$ <----> H_2SO_4 Acidic