HW 1
CHEM 1002

36 Base a) $NaOH_{(aq)} \longrightarrow Na^+ + OH^-$

acid b) $HBr_{(aq)} \rightarrow H^+ + Br^-$

Base c) $Sr(OH)_{2(aq)} \rightarrow Sr^{2+} + 2OH^-$

d) acid $H_2SO_{4(aq)} \rightarrow H^+ + HSO_4^-$

or $\rightarrow 2H^+ + SO_4^{2-}$

(2) a) $[H_3O^+] \geq 0.125$

b) $> 1.25\ M$

c) $2.77\ M$

d) $0.95\ M$

(68) a) basic

b) basic

c) acidic

d) basic

70) a) $[OH^-] = \frac{10^{-14}}{1.3 \times 10^{-3}} = 7.7 \times 10^{-12}\ M$

b) $[OH^-] = \frac{10^{-14}}{9.1 \times 10^{-12}} = 1.1 \times 10^{-3}\ M$

c) $[OH^-] = \frac{10^{-14}}{5.2 \times 10^{-4}} = 1.9 \times 10^{-11}\ M$

d) $[OH^-] = \frac{10^{-14}}{6.1 \times 10^{-1}} = 1.7 \times 10^{-6}$

76) a) 9.6

b) 1.1

c) 1.2

d) 4.5

77) $[H_3O^+] =$

a) $10^{-1.76} = 1.74 \times 10^{-2}\ M$

b) $10^{-3.88} = 1.32 \times 10^{-4}\ M$

c) $10^{-8.43} = 3.72 \times 10^{-9}\ M$

d) $10^{-12.32} = 4.766 \times 10^{-13}\ M$

82) $[OH^-] =$

a) $10^{-(14-1.82)}$

b) $10^{-(14-13.28)} = 0.19\ M$

c) $10^{-(14-8.29)} = 1.95 \times 10^{-6}\ M$

d) $10^{-(14-2.32)} = 2.09 \times 10^{-12}\ M$

90) a) $pH = 14 - 12.5$ basic acidic
$= 1.5$

b) $pH = 14 - 5.5$ basic $= 8.5$

c) $pH = 14 - 0.55$ basic $= 13.45$

d) $pH = 14 - 7.98$ acidic $= 6.02$

100) # moles H^+ to be neutralized
$= \frac{25}{1000} \times 0.150\ M = 3.75 \times 10^{-3}$ moles

Volume of KOH^- containing equal # moles OH^-

3.75×10^{-3} moles $= x\ L \left(0.200 \frac{\text{moles}}{L}\right)$

$x = 1.88 \times 10^{-2}\ L$

18.8 mL