NAME: KEY

Lab Section: __1(TuTh@1) __2(TuTh@9)

CHM 103
20 points, 30 mins.
Wallace

Quiz #3
Chemistry, 7th ed., Zumdahl & Zumdahl, sections 14.6, 14.8-14.12

Spring 2008
week 5
revised 5/6/2008

Unless otherwise specified, each question is worth 4 points.

1. What is the pH of a 0.50 *M* KOH solution? SOLUBLE ← STRONG BASE; $[OH^-]=[KOH]$

$pOH = -\log(0.50) = 0.30$; $pH + pOH = 14.00$

$\boxed{pH = 13.70}$

2. What is the pH of a 0.50 M $NH_3(aq)$ solution? K_b for NH_3 = 1.8×10^{-5}.

	NH_3	+ H_2O ⇌	NH_4^+	+ OH^-
INIT	0.50	—	∅	~∅
RXN	−X	—	+X	+X
EQUIL.	0.50−X	—	X	X

$K_b = 1.8\times10^{-5} = \frac{X^2}{0.50-X} \approx \frac{X^2}{0.50}$; $X = 0.00190$

$pOH = -\log(0.00190) = 2.72$ → $\boxed{pH = 11.28}$

3. Identify each of the following solutions as acidic, basic, or neutral:

a. $NH_4Cl(aq)$ (CONJ. ACID OF WEAK BASE) ..... (acidic) basic neutral

b. $Na_2SO_3(aq)$ (CONJ. BASE OF WEAK ACID) ..... acidic (basic) neutral

c. $Fe_2O_3(aq)$ (METAL OXIDE) ..... acidic (basic) neutral

d. $CO_2(aq)$ (COVALENT OXIDE) ..... (acidic) basic neutral

4. Identify (*circle*) the strongest acid in each set of acids:

a. (H3PO4) H3PO3 H3PO2 (MORE O ON ACID)

b. (HOOCCH2F) HOOCCH2Cl HOOCCH2Br
← MOST ELECTRONEGATIVE