Practice/Acids and Bases ***DO NOT SUBMIT***

1) Write the conjugate base for the following acids:

H_3PO_4, HCl, H_2S

$H_2PO_4^-$ Cl^- HS^-

2) Write the conjugate acid for the following bases:

OH^-, HSO_4^-, ClO^-

H_2O H_2SO_4 $HClO$

3) Identify the acid-base and conjugate acid/conjugate base pair in the following equations.

a) $HCO_3^- + OH^- \rightleftharpoons CO_3^{2-} + H_2O$

A B CB CA

b) $C_5H_5NH^+ + H_2O \rightleftharpoons C_5H_5N + H_3O^+$

A B CB CA

4) Circle the stronger acid in the following pairs:

a) H_2S vs H_2Se b) HNO_3 vs HNO_2 c) $HClO_3$ vs HIO_3

5) Identify the Lewis acid and the base in the following reactions.

a) $Cu^{2+} + 4NH_3 \rightleftharpoons [Cu(NH_3)_4]^{2+}$

b) $CO_2 + OH^- \rightleftharpoons HCO_3^-$

6) Calculate the pH, pOH, $[H_3O^+]$ or $[OH^-]$ concentrations as indicated in the problem:

a) pH for 0.65 M HBr

$pH = -\log 0.65 = \boxed{0.187}$.

b) pOH for 0.073 M LiOH

$pOH = -\log 0.073 = \boxed{1.1}$

c) pH for 0.070 M KOH

$pOH = -\log 0.07 = 1.155$; $pH = 14 - 1.155$

$\boxed{12.8}$.

d) $[H_3O^+]$ for lemonade, pH 2.91

antilog -2.91. $\boxed{1.07 \times 10^{-3}\ M}$.

e) $[OH^-]$ for blood plasma, pH 7.42

pH antilog $-7.42 = 3.802 \times 10^{-8}\ M = \{H_3O^{\oplus}\}$

$[OH^{\ominus}] = \dfrac{1.0 \times 10^{-14}}{3.802 \times 10^{-8}} = \boxed{2.63 \times 10^{-7}\ M}$.