pH, acid/base Practice -- Chemistry 121A Hanson

1. Fill in the table below.

pH	pOH	$[H^+]$	$[OH^-]$
4.00			
	5.00		
		1.0×10^{-6}	
			1.5×10^{-3}

2. What are the principal acidic or basic species (possibly plural) in each of the following solutions? For each, write the net ionic equation for the reaction of that species with water. The first one is done for you.

a. NaF F^- $F^- + H_2O \rightleftharpoons HF + OH^-$

b. KOH

c. HCl (write H_3O^+, not H^+; Cl^- is not basic)

d. NH_4I (what was the lesson in c?)

e. HF

3. Calculate the pH of each of the following solutions:

a. 10.0 mL of 0.030 M HCl

b. 15.0 mL of 0.050 M H_2SO_4

c. 10.0 mL of 0.015 M KOH

d. Solution (a) diluted to 100.0 mL

e. Solution (a) mixed with solution (b)

f. Solution (a) mixed with solution (c)

ANSWERS

1.

pH	pOH	$[H^+]$	$[OH^-]$
4.00	10.00	1.0×10^{-4}	1.0×10^{-10}
9.00	5.00	1.0×10^{-9}	1.0×10^{-5}
6.00	8.00	1.0×10^{-6}	1.0×10^{-8}
11.18	2.82	6.7×10^{-12}	1.5×10^{-3}

2b. OH^- $OH^- + H_2O \rightleftharpoons H_2O + OH^-$

2c. H_3O^+ $H_3O^+ + H_2O \rightleftharpoons H_2O + H_3O^+$

2d. NH_4^+ $NH_4^+ + H_2O \rightleftharpoons NH_3 + H_3O^+$

2e. HF $HF + H_2O \rightleftharpoons F^- + H_3O^+$

3. a. 1.52

b. 1.00

c. 12.18

d. 2.52

e. 1.14

f. 2.12