Acid-Base Worksheet

1. Calculate the pH of the following solutions:

   a) 0.062 *M* acetic acid ($K_a = 1.8\times10^{-5}$)

   b) 1.55×10^{-4} *M* $HClO_4$

   c) 0.8 *M* trimethylamine ($K_b=7.4\times10^{-5}$)

   d) 3 g of NaOH dissolved in 400 mL of water

   e) 0.04 *M* KCN (K_a for HCN = 4×10^{-10})

2. Complete the following table

	pH	$[H^+]$	pOH	$[OH^-]$
a)	2.50			
b)		8.6×10^{-11}		
c)			1.87	
d)				3.45×10^{-3}

3. What is the relationship between the strength of an acid and it's K_a?

4. Calculate the [HF] in 0.01 *M* HF

5. The pH of a 0.35 *M* solution of uric acid is 2.17. What is the value of K_a for uric acid?

6. A 0.068 *M* solution of benzamide has a pOH of 2.91. What is the value of K_b for this compound?

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Answers

1. a) 2.98
   b) 3.81
   c) 11.88
   d) 13.27
   e) 11

2.

	pH	$[H^+]$	pOH	$[OH^-]$
a)	2.50	0.00316	11.5	3.16×10^{-12}
b)	10.07	8.6×10^{-11}	3.93	1.16×10^{-4}
c)	12.13	7.41×10^{-13}	1.87	0.0135
d)	11.54	2.9×10^{-12}	2.46	3.45×10^{-3}

3. The larger the *K*, the more product-favored the reaction. This corresponds to a stronger acid.

4. 0.00765 *M*

5. $.1.33\times10^{-4}$ *M*

6. 2.27×10^{-5} *M*