Acid/Base Practice Test1 (Multiple Choice)

1a	2c	3b	4a	5b	6b	7c	8c	9c	10a
11b	12b	13a	14d	15a	16a	17a	18d	19c	20b
21b	22d	23b	24b	25d	26c	27d	28d	29c	30b
31c	32a	33c	34d	35c	36b	37c	38d	39b	40d

(Written Test)

1. (BAAD) - A strong Bronsted Lowry acid fully dissociates and donates all protons.

2. pH = 12.21 (Kb Ice box Q)

3. Ka = $[H_3O^+][C_3H_5O_3^-]$

$[HC_3H_5O_3]$

4. Ka = 1.4×10^{-4}

5. a) Any non-metal oxide, eg. SO_2

b) $SO_2 + H_2O$ --------------> H_2SO_3

6. a) HSO_3^- + $HC_2O_4^-$ -------------------> H_2SO_3 + $C_2O_4^-$
Base Acid
Ka = 1.0×10^{-7} Ka = 6.4×10^{-5}

HC_2O_4 + H_2O -----------------> H_3O^+ + $C_2O_4^-$

b) H_2SO_3 is a stronger acid than $HC_2O_4^-$, so it can donate protons more readily.

7. a) H_3PO_4 + H_2O ---------------------> $H_2PO_4^-$ + H_3O^+
Weak Acid Base Conjugate Base Acid

b) The pH of the solution does not change much because the KOH is added to a buffer solution. The addition of OH^- reacts with the H_3O^+, but there is only a slight change in the H_3O^+ because there is a relatively large $[H_3PO_4]$ which gets used up to form and maintain the $[H_3O^+]$. If the H_3O^+ only gets lowered slightly, the pH will not change significantly with the addition of 10.0 mL of KOH. The pH will only get raised up by a slight amount.

8. a) $NaNO_2$

b) The Acidity decreases because the reaction shifts left as NO_2^- reacts with H_3O^+.

c) HNO_2 + H_2O -------------------> NO_2^- + H_3O^+

9. pH = 1.<u>10</u> (.00<u>20</u> mol excess HNO_3, *WATCH YOUR SIG FIGS!)