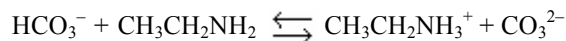


General Chemistry II-Jasperse  
Early Acid-Base Chemistry Quiz: Due:

Name:

1. In the following reaction in aqueous solution, the acid reactant is \_\_\_\_\_, and its conjugate base product is \_\_\_\_\_.



- a.  $\text{CH}_3\text{CHNH}_2$ ;  $\text{CH}_3\text{CH}_2\text{NH}_3^+$   
b.  $\text{CH}_3\text{CHNH}_2$ ;  $\text{CO}_3^{2-}$   
c.  $\text{HCO}_3^-$ ;  $\text{CH}_3\text{CH}_2\text{NH}_3^+$   
d.  $\text{HCO}_3^-$ ;  $\text{CO}_3^{2-}$   
e.  $\text{HCO}_3^-$ ;  $\text{H}_3\text{O}^+$
2. Which one of the following is ***not*** a **strong acid**?
- a. nitric acid,  $\text{HNO}_3$   
b. sulfuric acid,  $\text{H}_2\text{SO}_4$   
c. phosphoric acid,  $\text{H}_3\text{PO}_4$   
d. hydrobromic acid,  $\text{HBr}$   
e. perchloric acid,  $\text{HClO}_4$
3. The  $K_a$  for  $\text{HClO}$  is  $3.1 \times 10^{-8}$ . What is  $[\text{H}_3\text{O}^+]$  for an 0.250 M aqueous solution of  $\text{HClO}$ ?
- a.  $7.5 \times 10^{-9}$  M  
b.  $3.1 \times 10^{-8}$  M  
c.  $8.8 \times 10^{-5}$  M  
d.  $6.0 \times 10^{-17}$  M  
e. none of the above
4. A sample of the acid  $\text{HA}$  at 1.5-M gave  $[\text{H}_3\text{O}^+] = 1.3 \times 10^{-2}$  M. What is the value of  $K_a$  for  $\text{HA}$ ?
- a.  $2 \times 10^{-4}$   
b.  $3.5 \times 10^{-3}$   
c.  $3.6 \times 10^{-5}$   
d.  $8.2 \times 10^{-6}$   
e. none of the above
5. Rank the relative basicity of  $\text{NH}_3$ ,  $\text{OH}^-$ ,  $\text{HSO}_4^-$ , and  $\text{ClO}^-$ , given that:  
 $K_a(\text{NH}_4^+) = 5.6 \times 10^{-10}$  and  $K_a(\text{HClO}) = 3.1 \times 10^{-8}$ .
- a.  $\text{OH}^- > \text{NH}_3 > \text{HSO}_4^- > \text{ClO}^-$   
b.  $\text{OH}^- > \text{ClO}^- > \text{NH}_3 > \text{HSO}_4^-$   
c.  $\text{HSO}_4^- > \text{ClO}^- > \text{NH}_3 > \text{OH}^-$   
d.  $\text{OH}^- > \text{NH}_3 > \text{ClO}^- > \text{HSO}_4^-$   
e. none of the above
6. What is the pH of a solution that has 0.374-M  $\text{NaNO}_2$ ? (the  $K_a$  for  $\text{HNO}_2$  is  $4.5 \times 10^{-4}$ ).
- a. 1.3  
b. 1.9  
c.  $1.3 \times 10^{-2}$   
d. 12.1  
e. none of the above