Chemistry 52

REVIEW QUESTIONS
Chapter 15

For each reaction shown below, determine the Brønsted-Lowry acid and base and their conjugates:

1. H_3BO_3 + H_2O ⇔ H_3O^+ + $H_2BO_3^-$

_____ _____ _____ _____

2. HCO_3^- + OH^- ⇔ H_2O + CO_3^{2-}

_____ _____ _____ _____

3. CN^- + H_2O ⇔ HCN + OH^-

_____ _____ _____ _____

4. Identify the Brønsted-Lowry acid for each base shown below:

a) NO_3^- _____ b) OH^- _____

c) SO_4^{2-} _____ d) CH_3O^- _____

e) O^{2-} _____ f) HPO_4^{2-} _____

5. Identify the Brønsted-Lowry base for each acid shown below:

a) NH_3 _____ b) H_2SO_4 _____

c) HS^- _____ d) HClO _____

e) HNO_2 _____ f) H_2O _____

6. Complete the missing information in the table below:

$[H_3O^+]$	$[OH^-]$	**Acidic/Basic**
1.0×10^{-12}		
3.8×10^{-4}		
	4.2×10^{-4}	
	1.0×10^{-9}	
6.5×10^{-8}		

7. Identify each of the substances below as **strong electrolyte**, **weak electrolyte** or **non-electrolyte**:

   a) KCl _____

   b) HNO_3 _____

   c) CH_3OH _____

   d) HF _____

   e) H_3PO_4 _____

8. What are the $[H_3O^+]$ and $[OH^-]$ for a solution with a pH of 4.10.

9. If 30.0 mL of 0.400 M H_2SO_4 is required to neutralize 15.0 mL of a NaOH solution, what is the molarity of NaOH?

10. Determine the molarity of a solution of H_3PO_4 if 25.0 mL of the acid is titrated with 14.0 mL of 0.250 M NaOH to the end point.

11. Complete and balance the equations below for reactions of acids:

a) $HNO_3 + Ba(OH)_2 \rightarrow$

b) $CaCO_3 + HCl \rightarrow$

c) $HNO_3 + Mg \rightarrow$

d) $Al(OH)_3 + HBr \rightarrow$