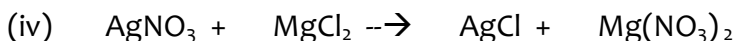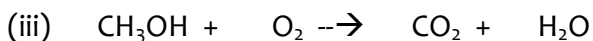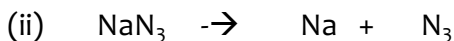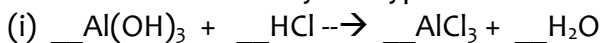# Homework Set 10
(Distributed 11/21/15; Due on 11/30/15)

Review Chapter 6 and read Chapters 7 and 15 in Zumdahl and complete the listed questions from the text: Chapter 7: 18, 40, 53, 91, 95; Chapter 15: 22, 34, 43, 46, 62, 69; as well as the following problems:

**A.** Balance and Identify the type of reaction for each of the equations.

(i) __$Al(OH)_3$ + __HCl --→ __$AlCl_3$ + __H_2O

(ii) __NaN_3 -→ __Na + __N_3

(iii) __CH_3OH + __O_2 --→ __CO_2 + __H_2O

(iv) __$AgNO_3$ + __$MgCl_2$ --→ __$AgCl$ + __$Mg(NO_3)_2$

(v) __Zn + __$CuCl_2$ ---→ __$ZnCl_2$ + __Cu
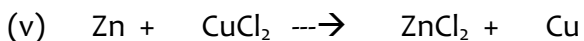
B. Calculate the molarity of the following solutions:
(i) 7.85 g of $C_9H_8O_4$ in 350 mL of H_2O

(ii) 18.3 g of $FeCl_3$ in 500 mL of H_2O

(iii) 25 mL of 6 *M* HCl solution diluted to 200 mL

C. If sulfuric acid is spilled in the lab, it can be neutralized by sprinkling sodium bicarbonate ($NaHCO_3$) on the spill. The reaction is as follows:

$$2\ NaHCO_3(s) + H_2SO_4\,(aq) \longrightarrow Na_2SO_4(aq) + H_2O(l) + CO_2(g)$$
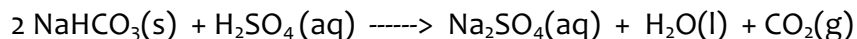
If 27 mL of 6.0 M H2SO4 was spilled, how many grams of $NaHCO_3$ must be added to neutralize the acid?

D. Titration of 12.5 mL of HCl solution requires 24.22 mL of a 0.1004 M KOH solution. What is the molarity of the HCl solution?

$$KOH + HCl \longrightarrow H_2O + K^+ + Cl^-$$