Chemistry 221  
Worksheet 5

1. The combustion of octane yielded 5.02 grams of carbon dioxide. Theoretically, 6.78 grams of carbon dioxide should have been produced. What is the percent yield of the reaction?

2. 2 Fe (s) + 3/2 O2 (g) → Fe2O3 (s)

Iron reacts with oxygen to produce Iron (III) oxide as represented in the above equation. A 75.0 g sample of Iron is mixed with 39.99 g of oxygen. (A) Calculate the number of moles of each of the reactants before the reaction begins. (B) Identify the limiting reactant when the mixture is heated to produce Fe2O3 (s). Support your answer with calculations. (C) Calculate the number of moles and grams of Fe2O3 (s) when the reaction has run to completion. (D) Calculate the mass of the remaining reactant. (E) If 102.3 grams of Fe2O3 (s) is recovered, what is the percent yield of the reaction?