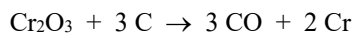CH 151 Sample Quiz #5   Name: _____

Be sure to show all work, use the correct number of significant figures, circle final answers and use correct units in all problems.

1. How many grams of carbon monoxide will be produced if 3.303×10^{10} molecules of chromium(III) oxide are consumed? (5 points)

$$Cr_2O_3 + 3\,C \rightarrow 3\,CO + 2\,Cr$$

2. For the balanced equation shown below, if 93.8 grams of PCl_5 were reacted with 20.3 grams of H_2O, how many grams of H_3PO_4 would be produced? (5 points)

$$PCl_5 + 4\,H_2O \rightarrow H_3PO_4 + 5\,HCl$$
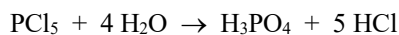
3. Using the information in problem #2, above, calculate the percent yield for the reaction if 20.2 g of H_3PO_4 are actually produced. (4 points)

4. The poison phosgene ($COCl_2$) can be neutralized with sodium hydroxide (NaOH) to produce salt (NaCl), water and carbon dioxide by the reaction: **$COCl_2 + 2\,NaOH \rightarrow 2\,NaCl + H_2O + CO_2$**

   If 9.5 grams of phosgene and 9.5 grams of sodium hydroxide are reacted, what is the theoretical yield of NaCl? If only 1.1 g of NaCl are collected, what is the percent yield of NaCl? (6 points)