CH 151
Sample Quiz #5 Name: _____ Lab Section: _____
Answers

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

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

4.609×10^{-12} g CO

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)

$$PCl_5 + 4\,H_2O \rightarrow H_3PO_4 + 5\,HCl$$

Theoretical yield = 27.6 g H_3PO_4, limiting reactant = water

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)

73.2%

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)

Theoretical yield = 11 g NaCl, LR = $COCl_2$
% yield = 10. %