

\* I-3 \_\_\_\_\_C \_\_\_\_\_NC  
\*\* I-4 \_\_\_\_\_C \_\_\_\_\_NC

\*\*\* II-1 \_\_\_\_\_C \_\_\_\_\_NC  
\*\*\*\* II-2 \_\_\_\_\_C \_\_\_\_\_NC  
\*\*\*\*\* II-3 \_\_\_\_\_C \_\_\_\_\_NC

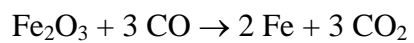
**Chemistry 151**  
**Worksheet 3**

Name: \_\_\_\_\_

- \*A. (1.0 pts.) Phenol is 76.5% C, 6.44% H, and 17.0% O. Determine the empirical (simplest) formula for phenol. (at.wt. C=12.0, H=1.01, O=16.0amu)
- \*\*B. (1.0 pts.) The empirical formula for butanoic acid is  $C_2H_4O$ . If the molecular weight of butanoic acid is 88 amu, determine the molecular formula for butanoic acid. (at.wt. C=12.0, H=1.01, O=16.0amu)
- \*\*\*C. (3.0 pts.) Balance each of the following skeleton equations:
- $$\text{_____ } C_7H_{12} + \text{_____ } O_2 \rightarrow \text{_____ } CO_2 + \text{_____ } H_2O$$
- $$\text{_____ } C_6H_{10} + \text{_____ } O_2 \rightarrow \text{_____ } CO_2 + \text{_____ } H_2O$$
- $$\text{_____ } H_2SO_4 + \text{_____ } Cr(OH)_3 \rightarrow \text{_____ } Cr_2(SO_4)_3 + \text{_____ } H_2O$$
- \*\*\*\*D.(1.0 pts.) Given the balanced chemical equation
- $$2 C_2H_2 + 3 O_2 \rightarrow 4 CO + 2 H_2O$$
- Calculate the theoretical yield of CO when 48.9 g of  $C_2H_2$  is reacted with an excess of  $O_2$ . (at.wt. C=12.0, H=1.0, O=16.0amu)
- \*\*\*\*\*E. (1.0 pts.) A student calculates the theoretical yield of acetaminophen in an experiment to be 8.77g. If the actual yield of acetaminophen is 5.62g, find the percent yield.

F. (1.0 pts.) Determine the percent composition by mass of  $\text{Ca}(\text{NO}_3)_2$ .  
(at.wt. Ca=40.1, N=14.0, O=16.0amu)

G. (2.0 pts.) Determine the limiting reagent and the maximum mass of Fe that can be produced from 38.4g of  $\text{Fe}_2\text{O}_3$  and 25.0g of CO according to the reaction



(at.wt. Fe=55.8, C=12.0, O=16.0amu)