Chem 1A Summer 2017 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exam 2 (Ch 2 Nomenclature, Ch 3, Bonus Ch4)

**ALL WORK MUST BE SHOWN to receive credit. All calculations should show UNITS & Chemical formulas appropriately to receive credit.**

1. Give the appropriate name for the following (spelling counts):

White exam: Co(SO4)2

HNO2

N2O5

Pink exam: CuS

HNO3

P2O6

1. Give the appropriate formula for the following:

White exam: Chloric acid

Zinc nitride

Potassium carbonate

Pink exam: Chlorous acid

Silver nitride

Sodium sulfate

1. Balance the following equations:
   1. Ca3P2 + H2O 🡪 Ca(OH)2 + PH3
   2. The combustion of octane, C8H18.
2. Calculate the mass % of oxygen in copper (II) nitrite (155.6g/mol).
3. What is the mass in kilograms of 7.70 x 1020 molecules of caffeine, C8H10N4O2 (194.2g/mol)? (1mol = 6.022 x 1023 “things”)
4. Determine the empirical formula for the following: 62.1%C, 5.21% H, 12.1% N, and the remainder O.
5. Calculate the theoretical yield of carbon dioxide (44.01g/mol) produced when 1.00g of sodium bicarbonate (84.01g/mol) reacts with 1.00g of citric acid (192.12g/mol). You must show a full calculation for each reactant to prove the theoretical yield as done in class.

3NaHCO3 + H3C6H5O7 🡪 3CO2 + 3H20 + Na3C6H5O7

1. Calculate the grams of the excess reactant that remain after the limiting reactant has been completely used for question #8.
2. Automotive airbags inflate according to the following: 2NaN3 🡪 2Na + 3N2. How many grams of NaN3 are required to produce 10.0 grams of nitrogen gas?

BONUS #1 Chapter 4

1. Show the balanced reaction when liquid chlorine reacts with aqueous potassium iodide. Label the type of reaction that occurred as well.
2. Show the balanced reaction when aqueous sodium carbonate reacts with aqueous hydrochloric acid. Label all phases for the reaction. The sodium product is also soluble and you should know the rest of the phases! Label the type of reaction that occurred as well.
3. Give the net ionic reaction for #2.