

General Chemistry Chapter 3 & 4 Pre-Test

1.) (2 pts) What is the molar mass of tryptophan,  $C_{11}H_{12}N_2O_2$ ?

2.) (2 pts) How many moles are in 320 g of  $(NH_4)_2SO_4$ ?

3.) (2 pts) How many water molecules are in 4.76 moles of  $H_2O$ ?

4.) (2 pts) How many molecules of  $CO_2$  are there in 68 g of carbon dioxide?

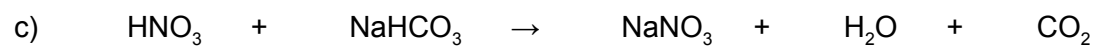
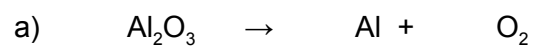
5.) (9 pts) Find the percent composition of each atom in  $\text{NaHCO}_3$ .

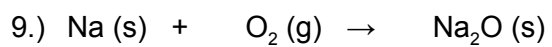
6.) (9 pts) The compound glutamine has the following percent composition. What is the empirical formula?

C = 44.9 % H = 6.4 % O = 30.8 % N = 17.9 %

7.) (4 pts) The empirical formula for a substance is  $\text{CH}_2\text{O}$ . What is its molecular formula if its molar mass is 210 g/mol?

8.) (6 pts total, 2 pts each) Complete each of the following stoichiometry reactions.



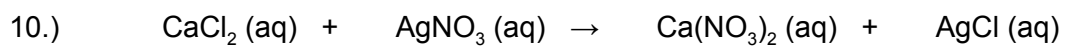


(12 pts total) Balance the equation. If you begin with 60 g of sodium and 100 g of oxygen

a) (5 pts) Identify the limiting reagent. Show work.

b) (5 pts) Find the mass of  $\text{Na}_2\text{O}$  produced during the reaction.

c) (2 pts) Find the mass of excess reagent.



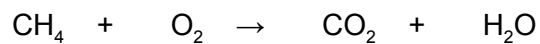
(12 pts total) If you begin with 90 g of  $\text{CaCl}_2$  and 120 g of  $\text{AgNO}_3$

a) (5 pts) Identify the limiting reagent.

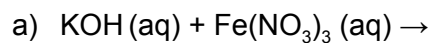
b) (5 pts) Find the mass of  $\text{AgCl}$  produced during the reaction.

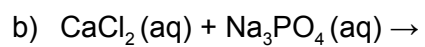
c) (2 pts) Find the mass of excess reagent.

- 11.) (12 pts) If you have 80 g of methane (CH<sub>4</sub>) is reacted with 90 g of oxygen (O<sub>2</sub>), find the liters of carbon dioxide (CO<sub>2</sub>) produced under STP conditions.



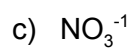
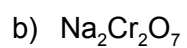
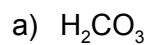
- 12.) (12 pts total, 4 pts each) For each reaction, 1) complete each reaction by writing the potential products. 2) Balance the reaction. 3) Consult the solubility rules and identify soluble and insoluble compounds. 4) Write the net reaction.





c) Aqueous solutions of lithium sulfate and calcium nitrate are mixed...

13.) (8 pts total, 2 pts each) Find the oxidation state of each atom within the compound.





14.) (8 pts total, 4 pts each) Find the oxidation state of each atom within the reaction. Indicate which atom is reduced and which is oxidized.

