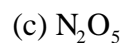


Chemistry 105 Exam 2

Name _____

Useful information: $N_A = 6.022 \times 10^{23}$, percent yield = actual/theoretical x 100%

(1)(4 pts) Are the following compounds electrolytes or nonelectrolytes?



(2) (4pts) Write the formulas for the following compounds

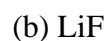
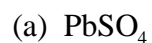
(a) diiodide pentoxide

(b) barium phosphate

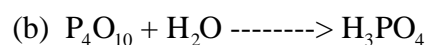
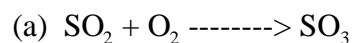
(c) copper(II)chlorate

(d) silicon dioxide

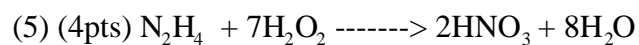
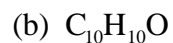
(3) (4pts) Write the names of the following compounds



(3) (4pts) Balance the following equations



(4) (4pts) Calculate the masses of the following compounds state the units.



Using the balanced equation above, answer the following questions.

(a) How many moles of hydrogen peroxide (H_2O_2) are needed to react with 0.35 moles of hydrazine (N_2H_4)?

(b) If 0.35 moles of N_2H_4 is reacted with excess H_2O_2 , how many grams of water would be formed ideally?

(6) (4pts) If you know that there are $4.39 \times 10^{25} \text{ClO}_2^-$ ions in a sample of $\text{Al}(\text{ClO}_2)_3$, how many moles of $\text{Al}(\text{ClO}_2)_3$ are there in the sample?

(7) (4 pts) Do you think that an element will ever be discovered between Magnesium and Aluminum on the periodic table? Why or why not?

(8) (4pts) Who is credited with inventing the periodic table and what nationality was he?

(9) (8 pts) $2 \text{MnI}_2 + 13\text{F}_2 \rightarrow 2\text{MnF}_3 + 4\text{IF}_5$

Using the balanced equation above, if 0.451 moles of MnI_2 is reacted with 2.98 moles of F_2 ...

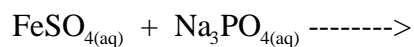
(a) what is the limiting reagent (show work)

(b) What is the theoretical yield of MnF_3 ?

(c) If the actual yield of MnF_3 is 42.0 g, what is the percent yield for the reaction?

(10) A compound is found to have a composition that is 40.05% S and 59.95% O by mass. What is the empirical formula for the compound?

(11) Write the balanced molecular, ionic, and net ionic equations for the reaction of the following reagents



(Extra Credit) (4 pts) Predict the products of the following reactions (you only have to give the balanced molecular equation)



