Chem. 110
50 Points   **Final Exam Part 1 Practice**
Write the chemical names or formulas for the following

a	H_2SO_4	
b	$NiNO_2$	
c	Aluminum thiosulfate	
d	Plumbic acetate	
e	$Ag_2C_2O_4$	
f	P_2O_5	
g	Cyanic acid	
h	Chlorine dibromide	

Write complete, and balance the following equations. Correct physical states must be included

     a   **Calcium is added to water**

     b   **Aluminum is added to Chlorine**

     c   **Silver nitrate solution is added to sodium dichromate solution**

     d   **Potassium carbonate decomposes**

     e   **Zinc is added to a solution of copper nitrate**

Balance the given equations and write the toatl ionic and net ionic equations. The correct physical states must be included in all equations. NOTE; ALL REACTIONS ARE IN WATER

Calcium chloride + sodium carbonate

Molecular:

Total:

Ionic:

Sulfuric acid + calcium acetate

Molecular:

Total:

Ionic:

Zinc nitrate + sodium hydroxide

Molecular:

Total:

Ionic:

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150 Points
Final Exam Part 2 Practice

Show all work using dimensional analysis when appropriate. Show all units.	Answer
Unit 1	
1. Convert 52.3 mm per minute into nm/hr.	
2. Is a race car speeding at 68 mph an example of kinetic or potential energy?	
3. Is NaCl an example of a compound, element or mixture?	
4. Is a reaction that releases heat an example of an endothermic or exothermic reaction?	
5. Is a Snickers Bar an example of a heterogeneous or a homogeneous mixture?	
6. Is density an example of a physical or chemical property?	
7. Is boiling water and example of chemical or physical change?	
8. What is the name of the family on the periodic table that contains chlorine?	
9. What is the state of Argon at room temperature?	
10. Is boron a metal, nonmetal or metalloid?	
11. Are nitrogen and oxygen in the same family or period or neither?	
12. What is the atomic number of silver?	
13. Is iodine diatomic or monatomic?	

14. What is the mass of a sample of lead (density = 11.34 g/cc) if it has a volume of 45.9 ml?	
Unit 2	
1. Draw the Lewis dot structure for monohydrogen phosphate	
2. Draw the electron configuration for Br	
3. Write the nuclear symbol for An atom of O that has 4 more subatomic particles than ^{13}C	
4. How many atoms are in a formula unit of potassium carbonate?	
5. What is the charge on copper in $Cu_2C_2O_4$	
6. How many neutrons are in an atom of I-130?	
7. How many valence electrons in an atom of Cl?	
8. How many protons are in a chloride ion?	
9. How many total electrons are in an aluminum ion?	
10. What is the type of bond that exists between hydrogen and oxygen in a water molecule	

11. What is the type of bond that exists between a hydrogen atom and an oxygen atom of two different water molecules?	
12. What is the type of bond that exists between two different nitrogen atoms?	
13. How many oxygen atoms in 46 grams of oxygen gas?	
14. In what family on the periodic table would you find an element with a full s orbital and 4 electrons in a p orbital?	
15. What is the molecular formula of a compound with an empirical formula of CH_3 that has the molar mass of 90 g/mole?	
16. A compound of only iron and oxygen is found to be 30.06% oxygen by mass. What is the compound's empirical formula?	
17. Draw the lewis dot structure of a nitrogen molecule.	

18. How many grams of carbon are in a sample of glucose $C_6H_{12}O_6$ (molar mass = 180.19 g/mole) that contains 435 g of hydrogen?	
Unit 3	
1. What is the solution inventory (main solute particles) for: carbonic acid	
2. What is the solution inventory (main solute particles) for: strontium nitrate	
3. What is the solution inventory (main solute particles) for: perchloric acid	
4. What would be the volume of a .800 <u>M</u> solution of $C_{12}H_{22}O_{11}$(342.22 g/mole) made with 505 g of solute?	
5. A crystal of a solute is added to a solution that same solute. The crystal dissolves. Is the solution saturated, unsaturated or supersaturated?	
6. Is oxalic acid a strong, weak or non electrolyte?	
7. Does heating a solution of a gas make the solute more or less soluble?	
8. How many Kg of water would be needed to make a 1.5 molal solution using 85 g of magnesium bromide as the solute?	

9. What is the molarity of a solution made by dissolving 975 grams of $C_{12}H_{22}O_{11}$ (342.22 grams/mole) in enough water to make 8,500.0 mL of solution?	
Unit 4	
1. How many grams of water are formed when 48 grams of hydrogen react with 128 grams of oxygen?	
2. What is the percent yield when 56 g of methane, CH_4, burns in air to form 18 grams of carbon dioxide?	

3. What is the molar concentration of a nitric acid solutions when 14.25 mls of the acid is titrated to an endpoint with 26.58 mls of .1589 M NaOH?	
4. How many molecules of hydrogen are formed when 32 grams of ammonia decomposes?	
5. What type of reaction is: $H_2O + CO_2 \rightarrow H_2CO_3$	
6. What type of reaction is: $Zn + CuCl_2 \rightarrow ZnCl_2 + Cu$	
7. What type of reaction is: $CH_4 + O_2 \rightarrow 2H_2O + CO_2$	
Unit 5	
1. How many calories are needed to raise the temperature of liquid water from $25\ ^0C$ to steam at $121\ ^0C$?	

2. What is the mass of 45 L of oxygen gas at 25 ^{0}C and 678 mm Hg?	
3. How many liters of hydrogen gas are produced when 56.2 grams of zinc react with excess nitric acid at 2.2 atm and 81 ^{0}C?	
4. What is the density of carbon dioxide at STP?	
5. If 35 ml of a gas at 28 ^{0}C are heated to 125 ^{0}C at constant pressure, what would be the new volume?	