Unit 7 Test **Name _____**

College Prep Chemistry **Block _____**

Must show all work. Answers must contain #, units, and chemical formula.

Molar Mass & Percent Composition

a) **Calculate the molar mass of ammonium nitrate, NH_4NO_3.**

b) **Calculate the percent composition for each element in ammonium nitrate, NH_4NO_3.**

Empirical Formulas

a) **Find the empirical formula for a common over-the-counter antacid, which contains 34.59% Al, 61.53 % O, and 3.88 H%.**

b) **Find the empirical formula for a chemical with a strong, sweet woody odor, which contains 78.90% C, 10.59% H, and 10.51% O.**

Molecular Formulas

a) **An ingredient, used by the food industry to produce fruity flavors, has an empirical formula of C_2H_4O and a molar mass of 132 g/mol Calculate the molecular formula of this compound.**

b) **A common ligand in coordination chemistry has the empirical formula $C_3H_{10}N_2$ and a molecular mass of 74 g/mol. Find its molecular formula.**

Balancing and Types of Reactions

a) ___ NH_3 (l) + ___ I_2 (g) → ___ N_2I_6 (s) + ___ H_2 (g) **Type: _____**

b) ___ $AlCl_3$(s) → ___ Al(s) + ___ Cl_2 (g) **Type: _____**

c) ___ KCl (aq) + ___ MgO (aq) → ___ K_2O (aq) + ___ $MgCl_2$ (aq) **Type: _____**

d) ___ CaO (s) + ___ H_2O (l) → ___ $Ca(OH)_2$ (s) **Type: _____**

e) ___ C_4H_8 (l) + ___ O_2 (g) → ___ CO_2 (g) + ___ H_2O (g) **Type: _____**

f) ___ KOH (aq) + ___ H_2CO_3 (aq) → ___ K_2CO_3 (aq) + ___ H_2O (l) **Type: _____**

g) ___ NaCl + ___ H_2SO_4 → ___ Na_2SO_4 + ___ HCl **Type: _____**

h) ___ HgO (s) → ___ Hg (l) + ___ O_2 (g) **Type: _____**

i) ___ P_4 (s) + ___ Cl_2 (g) → ___ PCl_3 (l) **Type: _____**

j) ___ Mg(s) + ___ $CuSO_4$(aq) → ___ $MgSO_4$(aq) + ___ Cu(s) **Type: _____**

Predict the Products & Write a Balanced Equation:

a) **Methane gas burns in the presence of oxygen gas to form carbon dioxide gas and water vapor.**

b) **Solid calcium carbonate decomposes to form solid calcium oxide and carbon dioxide gas.**