CHM151   Quiz 2a   Fall 2013   Name: __Key__

1. (3 Pts) The table below describes four atoms.

	Atom A	Atom B	Atom C	Atom D
Number of protons	79	80	80	79
Number of neutrons	118	120	118	120
Number of electrons	79	80	80	79

Which atoms represent the same element?

A & D   and   B & C

2. (4 Pts) Calculate the molar mass, in g/mol, of $Al_2(SO_4)_3$.

$3 \times 4 = 12 \times 16.00 =$
$3 = 3 \times 32.07 =$
$2 = 2 \times 26.98 =$

$342 \ g/mol$

3. (4 Pts) A compound with a percent composition by mass of 87.5% N and 12.5% H was recently discovered. What is the empirical formula for this compound? (You must show your work)

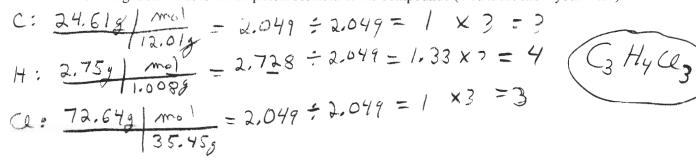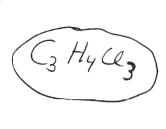N: $\dfrac{87.5g}{} \Big| \dfrac{mol}{14.01g} = 6.25 \div 6.25 = 1$

H: $\dfrac{12.5g}{} \Big| \dfrac{mol}{1.008g} = 12.40 \div 6.25 = 1.98$

NH_2

4. (3 Pts) An atom of the isotope ^{137}Ba consists of how many protons (p), neutrons (n), and electrons (e)?

$137 - 56$

protons __56__   neutrons __81__   electrons __56__

5. (5 Pts) A compound with a percent composition by mass of 24.61% C, 2.75% H, and 72.64% Cl has a molar mass of 292.82 g/mol. What is the empirical formula of the compound? (You must show your work)

C: $\dfrac{24.61g}{} \Big| \dfrac{mol}{12.01g} = 2.049 \div 2.049 = 1 \times 3 = 3$

H: $\dfrac{2.75g}{} \Big| \dfrac{mol}{1.008g} = 2.728 \div 2.049 = 1.33 \times 3 = 4$

Cl: $\dfrac{72.64g}{} \Big| \dfrac{mol}{35.45g} = 2.049 \div 2.049 = 1 \times 3 = 3$

$C_3H_4Cl_3$

6. (3 Pts) How many hydrogen atoms are in one molecule of $CH_3(CH_2)_3CH_3$?

12

7. (3 Pts) How many electrons, protons, and neutrons are in a neutral atom of the following isotope of gadolinium?

$^{160}_{64}Gd$

64 protons
64 electrons
$160 - 64 =$ 96 neutrons