Homework #5, Graded Answers

Chem20, Elementary Chemistry

4. 91) Determine the number of protons and neutrons in each isotope.

a.) **11 protons, 12 neutrons** (23 – 11)
b.) **88 protons, 188 neutrons** (266 – 28)
c.) **82 protons, 126 neutrons** (208 – 82)
d.) **7 protons, 7 neutrons** (14 – 7)

4.100) Cu-63 has a mass of 62.939 amu and a relative abundance of 69.17%. Find the mass of the other commonly-occurring isotope of copper.

From the periodic table: atomic mass of copper = 63.55 amu
Calculate the natural abundance of the second isotope: 100% - 69.17% = 30.83%
Convert percentages to decimals: 0.6917 ; 0.3083
Substituting into the equation (use "x" to represent second isotope's mass):
63.55 amu = (0.6917)(62.939 amu) + (0.3083)(x)
63.55 amu = 43.549063 amu + 0.3083x
20.0150937 amu = 0.3083x
64.92083587 amu = x → **64.92 amu**

5.46) Classify each compound as ionic or molecular.

a.) PtO_2 = **ionic**
b.) CF_2Cl_2 = **molecular**
c.) CO = **molecular**
d.) SO_3 = **molecular**

5.54) Write a formula for the ionic compound that forms from each pair of elements.

a.) aluminum and oxygen → **Al_2O_3**
b.) beryllium and iodine → **BeI_2**
c.) calcium and sulfur → **CaS**
d.) calcium and iodine → **CaI_2**

5.58) Write formulas for the compounds formed from:

a.) Rb and NO_3^-, SO_4^{2-}, PO_4^{3-} = **$RbNO_3$, Rb_2SO_4, Rb_3PO_4**
b.) Sr and NO_3^-, SO_4^{2-}, PO_4^{3-} = **$Sr(NO_3)_2$, $SrSO_4$, $Sr_3(PO_4)_2$**
c.) In and NO_3^-, SO_4^{2-}, PO_4^{3-} = **$In(NO_3)_3$, $In_2(SO_4)_3$, $InPO_4$**