CH 221 Exam Prep I Worksheet   Name: _____

Problem 1: Lithium has two stable isotopes with masses of 6.0152 amu and 7.0160 amu. The average molar mass of Li is 6.9410 amu. What is the percent abundance of each isotope?

Answer to Problem #1: **7.49% ^{6}Li and 92.51% ^{7}Li**

Problem 2: A given sample of xenon fluoride contains molecules of a single type XeF_n, where n is a whole number. If $9.35 * 10^{20}$ molecules of XeF_n weigh 0.322 g, calculate the most likely value of n.

Answer to Problem #2: ***n* = 4**

Problem 3: Complete the following problems using correct significant figures:

   $20.42 + 1.322 + 83.1 =$ _____ $15.5 \times 27.3 \times 5.4 =$ _____ $320.5 - 6104.5/2.3 =$ _____

Problem 4: A nail is coated with a 0.042 cm thick layer of zinc. The surface area of the nail is 9.17 cm². The density of zinc is approximately 7.13 g/cm³. How many zinc atoms are used in the coating?

Answer to Problem #4: **2.5 * 10²² atoms**

Problem 5: In a chemical reaction, 1.000 g of sulfur combines with 3.963 g of copper to give a pure compound. What is the empirical formula for this compound?

Answer to Problem #5: **Cu₂S**

Problem 6: Cyclooctene is a hydrocarbon containing only C and H atoms. When burned in oxygen, 1.000 g of cyclooctene produces 3.195 g of CO_2 and 1.144 g of water. Mass spectrometry shows a molar mass value of 110.2 g/mol. What is the empirical and molecular formula of cyclooctene?

Answer to Problem #6: **C₄H₇ and C₈H₁₄**