Practice Questions Chapter 2 Chem. 141

1. The element potassium has two naturally occurring isotopes: 39K and 41K. The mass of 41K is 40.962 amu. Potassium consists of 6.88% 41K and has an average atomic mass of 39.101 amu. Calculate the mass of 39K.
2. Nitrogen has two naturally occurring isotopes, 14N and 15N, whose atomic masses are 14.0031 and 15.0001, respectively. The atomic mass of nitrogen is 14.0067. Calculate the percentage abundance of each isotope of nitrogen
3. Compounds A and B both contain only iron and oxygen. A 10.00 g sample of A contains 7.77 g of Fe while a 5.00 g sample of B contains 3.62 g of Fe. If compound A is FeO, determine the chemical formula of compound B. Your method must demonstrate how the data illustrate Dalton's Law of Multiple Proportions.
4. Write complete chemical formulas for the following compounds.

|  |  |
| --- | --- |
| (a) barium phosphide  |  |
| (b)  | Hg2(CN)2 |
| (c) ammonium phosphate |   |
| (d)  | FeSO3•7H2O  |
| (e) calcium dichromate |  |
| (f)  | HBrO (aq) |

1. The Rutherford experiment was performed and its conclusions reached before protons and neutrons were discovered. When they were found, why was it believed that they were in the nucleus of the atom?
2. Explain Millikan’s oil-drop experiment?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Mass number |  | 46 |  |  |
| Atomic number |  | 21 |  |  |
| Number of protons |  |  |  |  |
| Number of neutrons |  |  |  | 124 |
| Number of electrons |  | 18 |  | 53 |
| Elemental symbol |  |  |  | I |

1. Fill in the following table for four neutral atoms or ions. Include any charges appropriate.