TUTORIAL SERIES N°2- CHAPTER 2

Q.1. Complete the following table describing uncombined atoms of specific isotopes.

Symbol	Atomic Number	Number of Protons	Number of Electrons	Number of Neutrons	Mass Number
^{127}I					
	8			10	
		6			13

Q.2. A compound of carbon and oxygen is 42.9% carbon. A second compound of carbon and oxygen is 27.3% carbon. Show that these data are in good agreement with the law of multiple proportions.

Q.3. In a certain experiment, 4.60 g of sodium and 7.10 g of chlorine react to form NaCl, the only compound of sodium and chlorine.

a. What masses of NaCl is produced?
b. If 4.60 g of sodium and 11.10 g of chlorine has been used, what mass of NaCl would have been produced?
c. What law is used to allow you to tell the answer in question a?
d. What law is used to allow you to tell the answer in question b?

Q.4. A sample of ascorbic acid (Vitamin C) is synthesized in the laboratory. It contains 30.0 g of carbon and 40.0 g of oxygen.

Another sample of ascorbic acid, isolated from lemon contains 12.7 g of carbon.

Compute the mass of oxygen (in grams) in the second sample.

Q.5. Nitrogen N and silicon Si form two binary compounds with the following compositions.

Compound	Mass % N	Mass % Si
1	33.28	66.72
2	39.94	60.06

(a) Compute the mass of silicon that combines with 1.000 g of nitrogen in each case.
(b) Show that these compounds satisfy the law of multiple proportions. If the second compound has the formula Si_3N_4, what is the formula of the first compound?

Q.6. What monatomic ions do the following elements form?
(a) Iodine ($Z = 53$)

(b) Calcium ($Z = 20$)

(c) Aluminum ($Z = 13$)

Q.7. **(1)** Name the ionic compound formed from the following pairs of elements:

(a) magnesium and nitrogen;

(b) iodine and cadmium;

(c) strontium and fluorine;

(d) sulfur and cesium.

(2) Write formulas for the compounds named above.

Q.8. Give the systematic names for the formulas or the formulas for the names of each compound:

(a) tin(II) fluoride;

(b) CrI_3;

(c) ferric oxide;

(d) CoS.

Q.9. Give the systematic names for the formulas or the formulas for the names of the following compounds:

(a) $Fe(ClO_4)_2$;

(b) sodium sulfite;

(c) $Ba(OH)_2.8H_2O$.