

CHAPTER 2

TUTORIAL QUESTIONS

1. Determine the charge and mass (in amu) of nuclei made up of the following particles:
 - a. 6 protons and 6 neutrons
 - b. 8 protons and 9 neutrons
 - c. 20 protons and 25 neutrons
 - d. 52 protons and 78 neutrons

2. Determine the number of protons, number of neutrons, and number of electrons of the following isotopes:
 - a- ${}^3_2\text{He}$
 - b- ${}^9_4\text{Be}$
 - c- ${}^{235}_{92}\text{U}$
 - d- ${}^{16}_8\text{O}^{2-}$
 - e- ${}^{23}_{11}\text{Na}^+$

3. Determine the mass number, atomic number, and the symbol of following characteristic:
 - a. 5 protons and 6 neutrons
 - b. 10 protons and 10 neutrons
 - c. 18 protons and 23 neutrons

4. Determine the molecular weights of the following in amu:
 - a. fluorine (F_2)
 - b. carbon disulfide (CS_2)

5. Calculate the atomic weight of silicon on the basis of the following information:

symbol	amu	%
Silicon-28	27.9769	92.21
Silicon-29	28.9765	4.70
Silicon-30	29.9738	3.09

6. Calculate the number of moles of beryllium atoms in a 10.0 g sample of beryllium
7. Calculate the number of lead atoms in a 2.00 mole sample of lead
8. Determine how many grams of BF_3 contain the same number of molecules as 0.34 g of H_2S .
9. How many moles of oxygen atoms are contained in one mole of CO_2 molecules?
10. How many grams of carbon are contained in 1.00 mol of C_2H_6 ?
11. Determine the mass percentage of carbon in CO and CO_2 ?
12. Fill in the blanks in the following table.

Symbol		$^{54}_{26}\text{Fe}^{2+}$			
Protons	5			79	86
Neutrons	6		16	117	136
Electrons	5		18	79	
Net charge			-3		0