Homework #5

Due Tuesday, Feb 23rd

Chem 192 – Spring 2010
Cañada College

Name: _____

Student ID: _____

Total Possible Points: 10

Suggested chapter 5 review questions: 1, 4, 6. Paired exercises: 6, 12, 14, 18, 24, 36

IMPORTANT: Know the contributions to atomic theory of each of these scientists: Democritus, Empedocles, Aristotle, John Dalton, Michael Faraday, Svante Arrhenius, J.J. Thomson and Ernest Rutherford.

1..(1½ points) How many protons, electrons, and neutrons are found in each of these isotopes?

Isotope	Protons	Electrons	Neutrons
$^{4}_{2}He$			
$^{80}_{35}Br$			

2..(3½ points) Chlorine is found in nature as two isotopes. One is $^{37}_{17}Cl$ (24.47%) the other is $^{35}_{17}Cl$ (75.53%). The atomic masses of each are 36.96590 amu and 34.96885 amu, respectively. Determine the average atomic mass of chlorine. Your answer must have the correct number of significant figures. You must show your work.

3..(2 points) In a nuclear reaction, we can remove or add sub atomic particles like neutrons, protons, and electrons. Below are four pure isotopes. For each isotope below consider the nuclear reaction shown and **write the atomic symbol of the product**.

Starting Material	Nuclear Reaction	Result
$^{80}_{35}Br$	Add one proton and one electron.	
Carbon-14	Remove two neutrons	
$^{235}_{92}U$	Add three neutrons.	
$^{4}_{2}He$	Add one proton.	

4..(3 points). In his 1911 experiment, Rutherford shot alpha particles through a thin gold foil. He made three observations. What was the significance of each of these observations?

(a) Observation 1: Most particles simply passed through the gold foil.
(b) Observation 2: Some particles deflected back from the foil.
(c) Observation 3: Some particles were deflected as they passed through the foil.