CHEM 0101 Name _____
Fall 2009

Quiz 1

1. What particles were observed in a cathode ray tube?

2. How did scientists determine that the particles in a cathode ray tube were charged?

3. Which of the following subatomic particles is(are) not found in the nucleus of an atom?

neutron proton electron

4. Carbon-12 and carbon-14 are two isotopes of carbon.
   a. Carbon-12 and carbon-14 have different masses. This fact is **not** consistent with Dalton's atomic theory. What does Dalton's atomic theory say about the masses of an atom of a given element?

   b. How have modern scientists altered Dalton's atomic theory to allow for the fact that carbon-12 and carbon-14 have different masses. More specifically, how have we altered the atomic theory as it relates to identifying an element?

5. Chlorine commonly exists as two isotopes, chlorine-35 and chlorine-37.
   a. What do the two forms of chlorine, regardless of charge, have in common?

   b. What makes them different?

6. Complete the table for the following elements

element symbol		$^{14}_{7}N^{3-}$	$^{32}_{16}S$
number of protons	2		
number of neutrons	3		
number of electrons	1		

7. Calcium is a reactive metal, but as calcium citrate it can be an important source of dietary calcium. The calcium atoms in calcium citrate do not exist as a metal, instead the calcium has a charge of +2. Calcium has an atomic number of 20.

a. How many electrons does a Ca^{2+} ion possess?

b. How many electrons does a neutral atom of metallic calcium possess?