Atomic Theory
Basic Principles

1. Consider the following isotopes of an oxygen atom or ion (atomic number 8). Complete the table.

Isotopic Mass	Ionic Charge	Mass number	Number of Protons	Number of Neutrons	Number of electrons
15.9949 u	0	16	8	8	8
15.9949 u	-2	16	8	8	10
16.9991 u	0	17	8	9	8
16.9991 u	-1	17	8	9	9
17.9991 u	0	18	8	10	8

2. Consider the following isotopes of an hydrogen atom or ion (atomic number 1). Complete the table.

Name	Isotopic Mass	Ionic Charge	Mass number	Number of Protons	Number of Neutrons	Number of electrons
Protium	1.00782 u	0	1	1	0	1
Protium	1.00782 u	+1	1	1	0	0
Deuterium	2.01410 u	0	2	1	1	1
Tritium	3.01604 u	0	3	1	2	1

3. What is the color of the emitted radiation when an electron in a hydrogen atom undergoes a transition from the $n = 3$ to $n = 2$ energy levels? … $n = 6$ to $n = 2$ energy levels?

   $n = 3 \rightarrow 2$: Red
   $n = 6 \rightarrow 2$: Violet

4. Write the following isotopes in correct isotopic notation:

   Uranium-235 (atomic number 92) $^{235}_{92}\mathrm{U}$

   Deuterium $^{2}_{1}\mathrm{H}$

   The carbon isotope possessing 6 protons and 7 neutrons $^{13}_{6}\mathrm{C}$

   The element which has 2 protons and 2 neutrons in its nucleus $^{4}_{2}\mathrm{He}$