

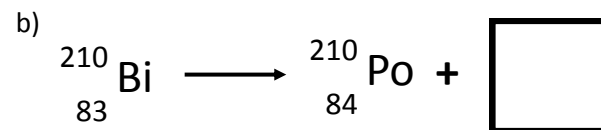
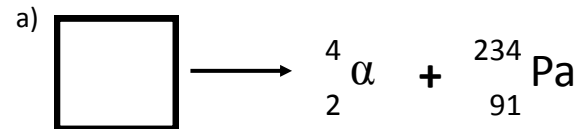
CHEM: Atomic & Nuclear Theory Study Guide

- 1) What are the 5 parts of Dalton's Theory? Which were wrong & why?
- 2) Describe Thomson's experiment (setup, original outcome, final outcome, conclusion & drawing).
- 3) Describe Rutherford's experiment (setup, expected, actual results, final 2 conclusions, drawing).
- 4) What are the 3 subatomic particles? What are the charges of each? Where are they located in the nucleus? Which is heaviest? Lightest?
- 5) What is the atomic number? What is the mass number?
- 6) Why are the atomic masses on the periodic table in decimals?
- 7) Chlorine has an average atomic mass of 35.45 amu. Which isotope is more abundant, ^{35}Cl or ^{37}Cl ? Explain.
- 8) What is an isotope? Which subatomic particle changes to make isotopes?
- 9) What is an ion? Which subatomic particle changes to make ions?
- 10) Which of the atom contains most of its mass? Least of its mass?
- 11) What is the name of the force holding the nucleus together?
- 12) What does the neutron to proton ratio determine?
- 13) Compare and contrast between nuclear fission and fusion. Give examples of both in the universe. Draw pictures.
- 14) What are the names and symbols for the 3 different radioactive particles? What are each made of?
- 15) Which is stopped by cardboard? Which is stopped by aluminum? Which is stopped by concrete?
- 16) What happens in general to atoms when they release radioactive particles?
- 17) In general, what happens to the mass number and atomic number when an alpha particle leaves? When beta leaves? When gamma leaves?
- 18) Write the reaction to determine the daughter nuclide when ^{212}Rn releases an alpha particle.
- 19) Write the reaction to determine the daughter nuclide when ^{13}C releases a beta particle.
- 20) What happens to ^{34}P when it gives up a beta and a gamma particle?

21) Completely fill in the table below: (including symbol)

Atomic #	Mass #	# p ⁺	# e ⁻	# n ⁰	Charge	Full Symbol
	15	7			0	
		40		91	0	
17			18	19		
11	23		10			
						$^{80}_{35}\text{Br}$
79	195				+1	
	82	35	35			
	33	16			-2	
7			10	8		

22) Find the missing piece in the nuclear reactions:



Then undergoes gamma decay

