Chem 1H AMSAT Mr. Dehne

Name: _____

Date: _____

Per#: ___

Topic#4 Atom

Objectives

Atomic Structure

- Outline the historical development of atomic structure.
- Describe atomic structure.
- Distinguish among atomic number, mass number, and atomic mass.
- Calculate the molar mass, moles, parts, and grams of various compounds.

Nuclear Chemistry

- Differentiate among alpha, beta, and gamma radiation.
- Discuss half-life of a radioactive element
- Complete nuclear equations.
- Distinguish between fission and fusion.

Vocabulary

- law of conservation of mass
- allotrope
- law of definite proportions
- mole
- law of multiple proportions
- molar mass (*MM*)
- nuclear forces
- Avogadro's number
- atomic mass unit (amu)
- gram formula mass (*GFM*)
- atomic number
- formula mass
- average atomic mass
- strong nuclear force
- isotope
- ion
- mass number
- atomic symbol
- nuclide
- complete chemical symbol
- alpha particle
- beta particle
- gamma ray
- radioactivity
- nuclear reaction
- transmutation
- radioactive decay
- nuclear radiation
- nucleon
- radioactive nuclide
- nuclear reactor
- half-life
- decay series
- nuclear fission
- nuclear fusion
- chain reaction
- daughter nuclide
- parent nuclide
- Gieger-Muller counter
- atom

Formulas/Conversion Definitions/Diagrams

Formulas

- mass # = (at#) + ($\#n^0$) = ($\#p^+$) + ($\#n^0$)
- ($\#n^{0)}$ = (mass#) – ($\#p^+$)
- ($\#e^-$) = ($\#p^+$) *for atom
- ($\#e^-$) = ($\#p^+$) - (charge) *for ion
- AAM = I_1(%) + I_2(%) + I_3(%) + etc
- 1 mole = $6.022x10^{23}$parts *a part is an ion, atom, molecule, or formula unit
- *MM* = *GFM* = *FM* = #(AAM_1) + #(AAM_2) + etc
- grams = moles x MM
- moles = grams ÷ MM
- parts = moles x $6.022x10^{23}$
- moles = parts ÷ $6.022x10^{23}$
- grams = parts x (MM/$6.022x10^{23}$)
- parts = grams x ($6.022x10^{23}$/*MM*)

Drawings:

Dalton's Model

JJ Thomson's Model

Rutherford's Model