

**Do not give help or receive on this test, or else you'll end up losing your curve. :P
No calculators allowed. If you are caught using one...we won't need one to calculate your grade. Muhahahahaha!**

Concept MC: Answer the following questions, with a statement defining why you picked what you picked.

- 1) Which of these ideas/concepts is not part of Dalton's Atomic Theory of Matter?
- Each element is composed of extremely small particles called atoms.
 - Atoms of an element are not created, destroyed, or changed into atoms of another element through ordinary chemical reactions.
 - All atoms of a given element are identical, and the atoms of different elements and have different properties.
 - Compounds are formed when elements with atoms of an element combine; a given compound has the same relative number and kind of atoms.**
 - All of the above are true.

Answer: _____

- 2) Which of the following is true about the cathode ray?
- Electrons move from anode to cathode.
 - It doesn't require electricity.
 - Magnetism deflects the cathode rays.**
 - The charge of the cathode ray is positive.
 - All of the above are true.

Answer: _____

- 3) Select the set of statements which are true:
- Beta rays have a positive charge
 - Gamma rays do not have particles and carry no charge**
 - Alpha particles are positive**
 - Alpha particles are bigger than beta particles.**

Answer: _____

Concept FRQ: Answer the following question with a series of statements.

- 1) What particles were used in Rutherford's gold foil experiment, and why?

- 2) What conclusion did the gold foil experiment reach, and how did Rutherford use the results to state this conclusion?

Computational MC: Answer the following questions, keeping in mind sig figs.

- 1) Theoretical element Aamoymium is now the heaviest of the Noble Gases. One of its ions is Ay^{18+} . Which of the following elements has the same number of electrons?
- Lr^{3-}
 - Rn^{14-}
 - Bk^{3-}**
 - Ab^{3+}
 - None of the above

Answer: _____

- 2) Which of the following compounds would you expect to be ionic?
- None of the below.
 - CCl_4
 - $RbBr$**
 - $NaCl_2$
 - KS_2

Answer: _____

- 3) Which of the following compounds do you expect to be molecular?
- None of the below.
 - $NaNO_3$
 - $NaLi$
 - CCl_4**
 - $ZnCl_3$

Answer: _____

- 4) In the complete combustion of heptyne, how many moles of oxygen are consumed?
- 1 mole
 - 7 moles
 - 10 moles**
 - 6 moles
 - None of the above

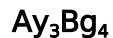
Answer: _____

- 5) Naturally occurring [theoretical] Babsium, ^{202}Bb occurs naturally with 1.5×10^2 amu, 66% of the time, ^{200}Bb with 300. amu 33% of the time, and ^{198}Bb with 120 amu 1% of the time. What is the approximate average atomic mass of Babsium?
- 2.0×10^2 amu**
 - 201.2 amu
 - 200 grams
 201. grams
 - None of the above

Answer: _____

Computational FRQ: Answer the following questions showing all of your work.

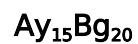
- 1) Theoretical elements Aamoymium and Bagdasarium are in a compound containing 66.7% and 33.3% respectively. Their molar masses are 622.8 grams and 232.3 grams respectively.
- What is the empirical formula?



- What's the mass of the empirical formula?

2797.6 g

- c. In a separate experiment, conducted by its creators, the molar mass was found to be 13988 grams. What is the molecular formula of the compound?



- d. Based on this molecular formula, how many grams of solute would be required to make an 18M solution in 7L?

35969.14 g

- e. Assuming the solution is fully dissociated, how many moles are there of each of the constituent elements?

Ay = 24.752 mol

Bg = 88.480 mol

Balancing Chemical equations: Balance the following equations and remember to reduce them to their net ionic form! This part is optional, so do it only if you are pro enough! :P

- a. A solution of potassium iodide is electrolyzed.

- b. Octyne goes through complete combustion.

- c. Butene undergoes incomplete combustion.

- d. Solid sodium chloride is added to a solution of 22M potassium hydroxide.

- e. Sodium Hydroxide crystals are added to de-ionized water.

- f. A solution of 3M potassium iodide is added to a solution of 2m lead(II) nitrate.

