

Vasquez High School -- AP Chemistry -- Exam #2 -- Chapter 2 -- 100 points

Write TRUE if the statement is true OR write the word(s) that substitutes for the underlined word(s) that would make it true. Writing false earns only partial credit. Three points each.

- _____ 1) Solving Schroedinger's wave equation gave the energy and location of an electron.
- _____ 2) The monatomic formula is the lowest ratio of elements found in the molecular formula of a particular compound.
- _____ 3) The neutron is the most massive of the sub-atomic particles.
- _____ 4) Deuterium and tritium are isotopes of hydrogen.
- _____ 5) The discoverer (and namer) of X-rays was Antoine Becquerel.
- _____ 6) J. J. Thomson first established the charge-to-mass ratio for the electron.
- _____ 7) The more we know about an electron's momentum, the less we know about its speed.
- _____ 8) Chlorine is a fine example of the alkaline earth metals.
- _____ 9) In a molecule of hydrogen sulfate, the sulfur must have a charge of -2. (careful!)
- _____ 10) There were a lot of things to memorize for this test. I have to treat the subject more seriously in the future.

Short Answer/Fill-in Section. Be sure to read what you wrote before turning it in. Be complete (and neat).

11) How did Bohr's model of the atom differ from Thomson's model? _____

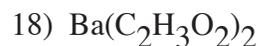
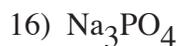
12) What are allotropes? Give an example. _____

13) Describe the difference between the atomic number and the mass number for an isotope. _____

14) Give five diatomic elemental gases by name: _____

15) Roughly speaking, the radius of an atom is _____ times larger than that of its nucleus.

For two points each, give the proper name for each of the following compounds. BE PRECISE!



For two points each, give the exact chemical formula for each of the following:

21) vanadium (III) perchlorate

22) aluminum carbonate

23) dinitrogen tetroxide

24) magnesium sulfate heptahydrate

25) silver cyanide

26) Imagine an element called vasquezium. It forms four oxoacids with the number of oxygens ranging from four to one. Each of the anions has a charge of -1. For five points, write the four formulas and their respective names according to what you have learned about oxoacids (aka oxy-acids).

Write the proper isotopic diagram for each of the following, with the correct chemical symbol (three points):

27) Copper, with 29 protons and 34 neutrons

28) Neon, with 10 electrons and 11 neutrons

Give the formula and name of the compound formed between these pairs of elements. Three points.

29) Si and Cl

30) Li and P

31) Sn(II) and As

32) Three stable isotopes of element X have atomic masses and relative abundances as follows:

Atomic mass = 142.58 amu

Abundance = 64.8 %

Atomic mass = 144.16 amu

Abundance = 12.4 %

Atomic mass = 148.74 amu

Abundance = 22.8 %

For five points, calculate the average atomic mass of element X. You must show your work for full credit.

33) For ten points, make as detailed a drawing of Rutherford's groundbreaking experiment of 1911 AND write the two main conclusions the results drove him to deduce.

34) EXTRA CREDIT - Guessing is okay - Five points - All or Nothing. The number $5!$, or 5 factorial, means $5 \times 4 \times 3 \times 2 \times 1 = 120$. How many zeroes does the number $127!$ end with?