

ST Pretest 1.2

1. Answer with one of the following: Thomson, Rutherford or Bohr:
 - a) His experiments led to the discovery of the electron Thomson
 - b) We show that a magnet affects the image of an old TV to simulate the way cathode rays were affected by magnetism in his experiment Thomson
 - c) Most alpha particles went right through the gold foil of his experiment. Rutherford
 - d) His model explained the thin colored lines of hydrogen's spectrum Bohr



TRUE or FALSE?

2. a) When an electron in a hydrogen atom gets excited and falls back, it could emit energy of a specific color. TRUE
b) Red light has less energy than blue light TRUE
c) If the atom did not have specific energy levels, the emission spectrum of an element would look more like a rainbow TRUE

3. Draw the Bohr-Rutherford diagram for:

a) Ne (neon)



b) Ca (calcium)



4. Draw the Lewis dot structure for:

a) Fluorine (F)



b) Potassium(K)



5. What is the difference between an atom and an ion?

An atom is the basic unit of an element; an ion is a charged atom.

6. Is there a difference between the neutral calcium metal in the lab and the calcium in your bones? Explain by commenting on charge and chemical properties.

Big difference: Ca^{2+} in your bones is the ion, which in this case is less reactive than the neutral metallic Ca which is only found in the lab, not in nature. ***The neutral version of any element NEVER has the same chemical properties as the ionic version of that same element.***



7. What is the valence of ... (valence is the number of electrons found in the last shell)

- | | |
|------------------|---|
| a) Li | 1 |
| b) Ca | 2 |
| c) B | 3 |
| d) O | 6 |
| e) Br^- | 8 |
| f) Br | 7 |

8. What must neutral magnesium do in order to become Mg^{2+} ?

Lose two valence electrons

9. Draw a Bohr Rutherford diagram for neutral oxygen and then a new one for oxide(-2).

Neutral oxygen: $(8p^+) \quad 2e^- \quad 6e^-$

Oxide (-2)

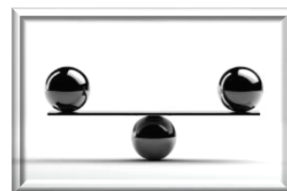
Protons – charge = electrons

$8 - (-2) = 10$ electrons in total

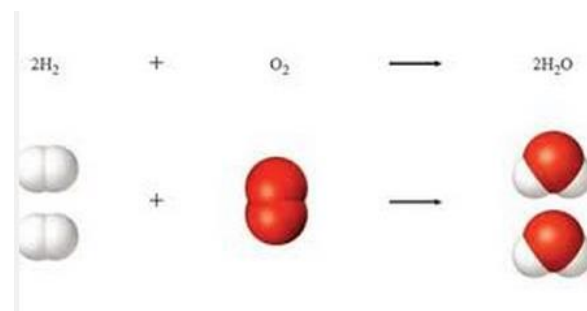
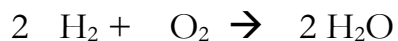
$(8p^+) \quad 2e^- \quad 8e^-$

10. Fill in the blanks:

We balance equations because in a reaction, atoms can be rearranged but they cannot be created or destroyed. While balancing equations, we cannot change small numbers(subscripts), but we could add coefficients(large #s)__



11. Draw circles to represent the molecules and atoms in the following reaction between an alkali metal and water:



12. Which family's elements have a common charge of +1? **Alkali metals**

13. In the lab, how do you tell a metalloid apart from a non-metal?

Only the metalloid(not the non metal) will be a semiconductor of electricity. The metalloid will also be shiny like a metal.

14. In the lab, how do you tell a metalloid apart from a metal?

Most metals usually react with acid. Metalloids do not. Metals are also more malleable than metalloids.

15. Which two families of the periodic table both have lousy conductors of heat and electricity?

Halogens and noble gases.

16. What is the common charge formed by halogens when they react with metals?

-1

17. List three alkaline earth metals:

Be, Mg and Ca and or Sr, Ra, Ba