

Chemistry Test Review

Grading: Each question, 1-17, is worth a 6 points

–0 points if you did not answer it

–1 point if you attempted to answer the question but were completely wrong,

–up to 6 points if the meaning of your answer is the same as the meaning of my answer

1. The atomic number of Phosphorus is 15. What does this tell you about Phosphorus?
a. That it has 15 protons and 15 electrons.
2. What is the number of neutrons in a neutral atom of Rubidium?
a. 48
3. Describe the most reactive and least reactive families of the periodic table.
a. [3 points] Most reactive – Hydrogen family – have 1 valence electron – all act like metals – highly reactive
b. [3 points] Least reactive – Helium Family (Noble Gases) – have a full valence shell – non-reactive (do not want to bond to any other atoms)
4. How many valence electrons exist in an electrically neutral atom of Aluminum? What does this tell you about the Boron Family?
a. [3 points] 3
b. [3 points] this tells you that the Boron Family has 3 valence electrons
5. Describe possible evidence that would suggest that a chemical change has occurred.
a. [must list at least 2] Change in temperature, bubbles produced, gas released, change in state of matter, color change, etc.
6. How many protons are in one molecule of NH_4 ? Two molecules?
a. [3 points] 11 protons in one molecule
b. [3 points] 22 protons in 2 molecules
7. Describe the chemical formula: 4NaHCO_3
a. 4 molecules made up of 1 Sodium atom, 1 Hydrogen atom, 1 Carbon atom and 3 Oxygen atoms.
8. List and describe the 3 subatomic particles. Include location, mass and charge.
a. [2 points] Proton – located in the nucleus – mass of 1 amu – charge is positive (+)
b. [2 points] Neutron – located in the nucleus – mass of 1 amu – charge is neutral (0)
c. [2 points] Electron – located in electron cloud (shells, orbitals) – mass of 0.005 amu (very small) – charge is negative (-)
9. Name **3** elements that have the most similar chemical properties to Cesium.
a. [2 points for each of the 3 elements listed] Anything in the hydrogen family (hydrogen, lithium, sodium, potassium, rubidium, francium)

10. Explain why chemical equation must be balanced.
- a. Due to the Law of Conservation of Mass; matter cannot be created or destroyed, therefore what you use for a chemical reaction must still be there when the reaction is over, albeit in a different form**
11. In the chemical equation:
 $O_2 + C_6H_{12}O_6 \rightarrow CO_2 + H_2O + \text{energy}$, what are the reactants?
- a. [3 points each] Oxygen and Sugar**
12. How many atoms are in one molecule of $C_6H_{12}O_6$?
- a. 24**
13. Describe a chemical formula. What is it used for?
- a. [3 points] A chemical formula is an easy way for a scientist to write a molecule using the element symbols.**
- b. [3 points] Its used to represent compounds in chemical equations**
14. Define the following words: atom, element, compound, molecule.
- a. [1.5 points] Atom – the smallest part of an element that still acts like that element; can't be broken down; basic part of matter**
- b. [1.5 points] Element – a substance that cannot be broken down into simpler substances.**
- c. [1.5 points] Compound – two or more different elements chemically combined**
- d. [1.5 points] Molecule – two or more atoms, they can be the same OR different, chemically combined**
15. Is the chemical equation $6O_2 + C_6H_{12}O_6 \rightarrow 3CO_2 + 4H_2O$ balanced?
- a. No. [although not part of the required answer, the equation is not balanced because of all 3 elements not being the same on both sides of the equation]**
16. List the following information about the element Potassium: atomic number, symbol, atomic mass, number of protons, electrons, neutrons, and # of valence electrons.
- a. atomic number = 19**
- b. symbol = K**
- c. atomic mass = 39**
- d. protons = 19**
- e. neutrons = 20**
- f. electrons = 19**
- g. # of valence electrons = 1**
17. Draw a Bohr model of the element Silicon.
- a. the element should have:**

