NTI Day 4 Assignment
Lesson 4 Review
Content Standard: Atomic Structure and Theory
Class: Chemistry Teacher: K. Kelly

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1. What is a quick way to determine how many energy levels an element possesses?

A. Divide the element's atomic number by eight.
B. Find the element's group number on the periodic table.
C. Find the element's period number on the periodic table.
D. Divide the element's atomic mass by eight.

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2. Which of the following is true about the structure of an atom?

A. Electrons, neutrons, and protons are made up of even smaller constituents, such as quarks and gluons.

B. Electrons, neutrons, and protons are the smallest structures in an atom and cannot be broken down into smaller parts.

C. Atoms are composed of tiny cells that make up all forms of matter.

D. An atom is not composed of smaller parts and cannot be broken down into smaller constituents.

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3. Which scientist proposed the "plum pudding" model of the atom? In this model, negatively charged particles are embedded in a positively charged sphere.

A. Ernest Rutherford
B. James Chadwick
C. John Dalton
D. Joseph John Thomson

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4. If an atom has 2 electrons outside of its nucleus, which combination of protons and neutrons would result in a neutral atom?

A. 4 protons, 4 neutrons
B. 1 proton, 3 neutrons
C. 1 proton, 1 neutron
D. 2 protons, 2 neutrons

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5. A neutral atom could become a positively-charged particle through the loss of

A. electrons.
B. protons.
C. ions.
D. neutrons.

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6. An atom is composed of a nucleus surrounded by electron clouds of varying sizes. The nucleus contains protons and neutrons, while electrons move about the nucleus in the electron clouds.

Which of the following statements is also true of atoms?

A. The nucleus of an atom is very large, and it contains most of the atom's mass.
B. Even though the nucleus of an atom is very small, it contains most of the atom's mass.
C. The nucleus of an atom is very small, so most of the atom's mass is in the electron clouds.
D. Even though the nucleus of an atom is very large, most of the atom's mass is in the electron clouds.

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7. The atomic mass of an element can be approximated by adding the number of _____ plus the average number of _____.

A. neutrons; electrons
B. protons; isotopes
C. protons; electrons
D. protons; neutrons

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8. All matter, both living and nonliving, is made up of tiny particles called _____.

A. bacteria
B. atoms
C. dust
D. cells

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9. Can the number of protons in an element ever change?

A. Yes, when different elements bond, they can share or transfer protons.
B. No, protons and neutrons are bound together in atomic nuclei, and neither can change.
C. No, if the number of protons changes, the element changes.

D. Yes, isotopes of the same element have different numbers of protons.

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10. The nucleus is the center of an atom. It consists of

A. neutrons alone.
B. neutrons and electrons.
C. protons and electrons.
D. protons and neutrons.

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11. Which of the following subatomic particles are closest in mass?

A. proton and neutron
B. neutron and electron
C. proton and electron
D. electron and ion

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12. Most of the volume of an atom is taken up by the _____, and most of the mass of an atom is found in the _____.

A. nucleus; nucleus
B. nucleus; electron clouds
C. electron clouds; nucleus
D. electron clouds; electron clouds

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13. Which of the following scientists was the first to discover that atoms could be divided into smaller parts?

A. John Dalton
B. Joseph John Thomson
C. James Chadwick
D. Niels Bohr

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14. Which of the following is true about the neutrons of an atom?

A. The neutrons of an atom are the only subatomic particles that are involved in the interaction between two atoms.
B. The neutrons do not affect how the atom interacts with other atoms, but they do have an effect on the mass and stability of the nucleus.
C. The neutrons do not affect the mass or stability of an atom's nucleus, but they are involved in most interactions between two atoms.

D. The neutrons of an atom do not affect the interactions between atoms, the stability of the nucleus, or the mass of the nucleus.

15. An isotope of an unknown element has 17 neutrons and a mass number of 32. What is the symbol of this isotope?

A. $^{17}_{32}\mathrm{P}$
B. $^{32}_{15}\mathrm{P}$
C. $^{32}_{17}\mathrm{Ge}$
D. $^{32}_{17}\mathrm{Cl}$

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16. If phosphorus has an atomic number of 15, how many protons and neutrons are found in the phosphorus-32 atom?

A. 32 protons and 0 neutrons
B. 15 protons and 32 neutrons
C. 16 protons and 16 neutrons
D. 15 protons and 17 neutrons

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17. A neutral atom always contains the same number of

A. protons and electrons.
B. electrons and neutrons.
C. protons, electrons, and neutrons.
D. protons and neutrons.

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18. What is the mass of an electron?

A. -1.0 amu
B. 0.0005 amu
C. Electrons do not have mass.
D. 1.0 amu

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19. An atom is held together by

A. mechanical forces between the electrons of the atom.
B. mechanical forces between the protons and the nucleus.
C. electric forces between the nucleus and the electrons.
D. electric forces between the protons and the neutrons.

20. In the electron cloud model, if you begin at the electron shell closest to the nucleus of an atom and move out, what is the number of electrons that each energy level or electron shell needs to fill the first four electron shells?

A. 2, 6, 10, 14

B. 2, 8, 6, 2

C. 2, 8, 18, 32

D. 8, 8, 8, 8