

Quiz.

1. Which radiation has no electric charge associated with it?
 - a) alpha rays
 - b) beta rays
 - c) gamma rays
 - d) all of these
 - e) none of these
2. Once an alpha particle is outside the nucleus it is
 - a) free to wander about the nucleus.
 - b) quickly bound to a neighboring nucleus.
 - c) electrostatically repelled.
 - d) radioactive.
3. An atom with an imbalance of electrons to protons is
 - a) a hadron.
 - b) a baryon.
 - c) an ion.
 - d) an isotope.
 - e) none of these
4. The atomic number of an element is the same number of its
 - a) protons.
 - b) neutrons.
 - c) nucleons.
 - d) neither of these
5. The atomic mass number of an element is the same as the number of its
 - a) protons.
 - b) neutrons.
 - c) nucleons.
 - d) none of these
6. Different isotopes of an element have different numbers of
 - a) protons.
 - b) hadrons.
 - c) photons.
 - d) neutrons.
 - e) none of these
7. Electric forces within an atomic nucleus tend to
 - a) hold it together.
 - b) push it apart.
 - c) neither of these

8. Generally speaking, the larger a nucleus is, the greater its
- a) stability.
 - b) instability.
 - c) neither stability nor instability.
9. The half-life of an isotope is one day. At the end of two days the amount that remains is
- a) none.
 - b) one-half.
 - c) one-quarter.
 - d) one-eighth.
 - e) none of these

Answer Key.

1. c)

Alpha rays are positively-charged, beta rays may be negatively- or positively- (beta particles can also be positrons) charged Gamma rays are high-energy electromagnetic radiation.

2. c)

Since alpha particles have the same mathematical sign charge as the nucleus, it becomes electrostatically repelled once it escapes the nucleus, due to the Coulomb force.

3. c)

This is the definition of an ion.

4. a)

This is the definition of the atomic number.

5. c)

This is the definition of the atomic mass number.

6. d)

This is the definition of an isotope.

7. b)

The electrostatic force between protons in an atomic nucleus push them apart. The strong force of all the nucleons pull them together.

8. b)

Although neutrons act as a “cement” keeping the atomic nucleus together, the more neutrons an atomic nucleus contains the greater potential it has for radioactive decay.

9. c)

Half is left after the first day, and half of that remains at the end of the second day.