

Radiochemistry Fundamentals

Pre-Course Assessment

1. The atomic number of an element is based on what?
 - a. number of protons
 - b. atomic weight
 - c. valence electrons
 - d. number of neutrons

2. What is an isotope?
 - a. a radioactive particle
 - b. an element with the same mass but a different electrical charge
 - c. an element with the same number of protons but a different number of neutrons
 - d. another term for a gamma ray

3. The modes of radioactive decay are _____.
 - a. proton, neutron
 - b. neutron, positron
 - c. microwave, x-ray
 - d. beta, gamma

4. Fission is _____.
 - a. the release of energy from an atom
 - b. the splitting of an atom
 - c. artificially radioactive decay
 - d. natural radioactive decay

5. What is chemistry definition of precipitation?
 - a. creation of a solid from a solution
 - b. collection of particles in a solution
 - c. loss of material from a container
 - d. conversion of material from liquid to solid

6. Why are carriers used in chemistry?
 - a. they can carry ions that normal chemical cannot
 - b. they stabilize a solution for better chemistry
 - c. they assist in capturing difficult ions
 - d. they help track small quantities of ions

7. What is a gas-proportion counter?
 - a. a gamma ray detection device
 - b. a radioactive decay meter
 - c. a simple radiation counting system
 - d. an airborne radiation detector

8. Liquid scintillation is based on what concept?
 - a. Ignition of material by gamma rays in liquid
 - b. light created by radioactive particles
 - c. X-ray penetration
 - d. nuclear fission

9. T or F – Alpha particles are similar to helium gas particles.
 - a. True
 - b. False

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10. T or F - Gamma radiation is only found in the form of energy.
 - a. True
 - b. False

11. T or F – Alpha and Beta particles penetrate a thin piece of paper?
 - a. True
 - b. False

12. Radioactive _____ is the amount of a radiation material remaining after a certain time.
 - a. half-life
 - b. separation
 - c. disintegration
 - d. fall-out

13. Background radiation can come from what source(s).
 - a. nuclear weapons testing
 - b. radon gas
 - c. food
 - d. all the above

14. Chemistry errors are usually caused by _____.
 - a. poorly written procedures
 - b. equipment failure
 - c. unknown sources
 - d. human error

15. Which government organization is responsible for enforcing radioactive waste cleanup sites?
 - a. Department of Energy
 - b. Environmental Protection Agency
 - c. Nuclear Regulatory Commission
 - d. Atomic Energy Commission