

**Radiochemistry Fundamentals**  
**Pre-Course Assessment Answer key**

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

Answer: A

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

Answer: C

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

Answer: D

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

Answer: B

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

Answer: A

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

Answer: D

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

Answer: C

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

Answer: B

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

Answer: A

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

Answer: A

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

Answer: B

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

Answer: A

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

Answer: D

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

Answer: D

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

Answer: B