

CHAPTER REVIEW

Critical Thinking Items

22.2 Nuclear Forces and Radioactivity

9. Explain why an alpha particle can have a greater range in air than a beta particle in lead.
 - a. While the alpha particle has a lesser charge than a beta particle, the electron density in lead is much less than that in air.
 - b. While the alpha particle has a greater charge than a beta particle, the electron density in lead is much lower than that in air.
 - c. While the alpha particle has a lesser charge than a beta particle, the electron density in lead is much greater than that in air.
 - d. While the alpha particle has a greater charge than a beta particle, the electron density in lead is much higher than that in air.
10. What influence does the strong nuclear force have on the electrons in an atom?
 - a. It attracts them toward the nucleus.
 - b. It repels them away from the nucleus.
 - c. The strong force makes electrons revolve around the nucleus.
 - d. It does not have any influence.

TEST PREP

Short Answer

22.1 The Structure of the Atom

21. Why do Bohr's calculations for electron energies not work for all atoms?
 - a. In atoms with more than one electron in an atomic shell, the electrons will interact. That requires a more complex formula than Bohr's calculations accounted for.
 - b. In atoms with 10 or more electrons in an atomic shell, the electrons will interact. That requires a more complex formula than Bohr's calculations accounted for.
 - c. In atoms with more than one electron in an atomic shell, the electrons will not interact. That requires a more complex formula than Bohr's calculations accounted for.
 - d. In atoms with 10 or more electrons in an atomic shell, the electrons will not interact. That requires a more complex formula than Bohr's calculations accounted for.

22.5 Medical Applications of Radioactivity: Diagnostic Imaging and Radiation

15. Why are different radiopharmaceuticals used to image different parts of the body?
 - a. The different radiopharmaceuticals travel through different blood vessels.
 - b. The different radiopharmaceuticals travel to different parts of the body.
 - c. The different radiopharmaceuticals are used to treat different diseases of the body.
 - d. The different radiopharmaceuticals produce different amounts of ionizing radiation.

22.3 Half Life and Radiometric Dating

23. How does the radioactive activity of a sample change with time?
 - a. The radioactive activity decreases exponentially.
 - b. The radioactive activity undergoes linear decay.
 - c. The radioactive activity undergoes logarithmic decay.
 - d. The radioactive activity will not change with time.