## **Chapter Five**

- 1. Sulfur-35 decays by beta emission. What is the decay product?
- 2. The only stable isotope of iodine is iodine-127. Predict the mode of decay of  $^{130}_{53}I$  .
- 3. For each pair of isotopes listed, predict which one is more stable: (a)  ${}_{3}^{6}Li$  or  ${}_{3}^{9}Li$  (b)  ${}_{11}^{23}Na$  or  ${}_{11}^{25}Na$  (c)  ${}_{20}^{48}Ca$  or  ${}_{21}^{48}Sc$
- 4. Determine how much energy is released when polonium-210 decays according to  ${}^{210}Po \rightarrow {}^{4}He + {}^{206}Pb$  [Atomic masses: Po-210 = 209.982857 amu; He-4 = 4.002603 amu; Pb-206 = 205.974449 amu]
- 5. If 19% of a certain radioisotope decays in 10.4 years, what is the half-life of this isotope?
- 6. Strontium-90 has a half-life of 28.8 years. How much strontium-90 was present initially, if after 144 years 10.0 g remain?
- 7. A sample of a radioisotope shows an activity of 999 disintegrations per minute due to beta decay. If after 1.10 years the activity is 952 disintegrations per minute, what is the half-life of this radioisotope?