Unit 8 Exercise 3 - Nuclear Decay

1. Identify the missing particle in the following nuclear reactions.

a. $^{42}_{19}K \quad ^{0}_{-1}e + $ _____

b. $^{214}_{83}Bi \rightarrow \, ^{4}_{2}He + $ _____

c. $^{66}_{29}Cu \rightarrow$ _____ $+ \, ^{0}_{-1}e$

d. $^{226}_{88}Ra \rightarrow$ _____ $+ \, ^{4}_{2}He$
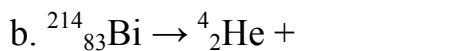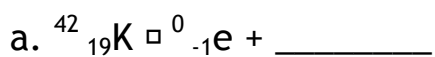
2. Write the complete balanced equation for the following nuclear reactions.

    a. Neptunium-239 undergoes decay emitting a beta particle.

    b. Radium-226 undergoes decay emitting an alpha particle.

    c. An unidentified radioactive element decays <u>into</u> thallium-205 and emits an

    alpha particle.

3. Fermium-253 has a half-life of 0.334 seconds. A radioactive sample is considered to be completely decayed after 10 half-lives. How much time will elapse for this sample to be considered gone?

4. After 24.0 days, 2.00 grams of an original 128.0 gram sample remain.
    a. How many half-lives passed during the 24 days?
    b. How many days is ONE half-life of the sample?

5. The half life of iodine-131 is 8.1 days. How much of a 400 g sample of iodine-131 will remain after 40.5 days?