

Answers to HPS Nuclear Chemistry Test Review:

1. nuclide
2. 286 is the mass number; 92 is the atomic number
3. as nuclide decays the nucleus gets lighter and more stable
4. least: alpha  
middle: beta  
most: gamma
5. a helium nuclei (+2 charge); can't penetrate paper
6. an electron; can't penetrate aluminum foil
7. an electromagnetic wave; can't penetrate thick pieces of lead or concrete
8.  $\begin{array}{cc} 4 & 0 \\ 2\text{He} & -1e \end{array}$
9. a series that consists of radioactive nuclides produced by successive radioactive decay until a stable nuclide is reached
10. parent nuclide  $\rightarrow$  daughter nuclide + particle
11. stable nuclide
12. unit used to measure tissue damage of human tissue
13. film badge
14. it detects radiation by producing an electric current when radiation is present causing a series of clicks
15. exposed it
16. Gold-198; Iridium-192, Cobalt-60
17. how well the fertilizer is absorbed into plants
18. splitting a heavier nucleus into two lighter nuclei; combining two light nuclei into one heavier nucleus
19. sun
20. Carbon-14
21. discovering radium
22. fission
23. high level is radioactive fragments from the nuclear fuel; low level is cooling water, material from a decommissioned reactor, or clothing used by employees
24. Burying it deep into the ground away from groundwater
25. Yucca Mountain, Nevada
22.
  - a.  $\begin{array}{cc} 195 & \\ 77 & \text{Ir} \end{array}$
  - b.  $\begin{array}{cc} 116 & \\ 50 & \text{Sn} \end{array}$
  - c.  $\begin{array}{cc} 238 & \\ 92 & \text{U} \end{array}$
  - d.  $\begin{array}{cc} 238 & \\ 92 & \text{U} \end{array}$

e. 0  
0 Y

f. 2.5 g

g. 16 g

h. 4 half lives