Seaborgium-263 is element 106, it emits alpha particles. Show the natural transmutation equation.

Fluorine-18 emits positron particles. Show the
natural transmutation equation.

$$^{75}_{33}\text{As} + {}^{4}_{2}\text{He} \longrightarrow {}^{1}_{1}\text{p}^{+} + \text{X}$$

What is X?

Np-237 emits alpha particles. Show the natural transmutation equation.

$${}^{2}_{1}\mathrm{H} + {}^{3}_{1}\mathrm{H} \longrightarrow {}^{4}_{2}\mathrm{He} + \mathrm{X}$$ What is X?

Cu-65 emits positron particles. Show the natural transmutation equation.

Ac-227 emits beta particles. Show the natural transmutation equation.

Ni-63 emits beta particles. Show the natural transmutation equation.

The half life of zinc-71 is
2.40 minutes.
If you start with 100.0grams of zinc,
how many grams remain
unchanged after 14.4 minutes?

The half life of sodium-22 is 135 weeks.

If you start with 100.0 grams of sodium, how many grams remain unchanged after 405 weeks?

Which of these statements are true?

A. I-131 is used to treat thyroid disease

B. I-131 is used to diagnose thyroid disease

C. Co-60 is used to treat cancer

D. C-14 is used to treat cancer

E. U-235 is used to diagnose diseases

F. C-14 and C-12 ratios are used to date dinosaur bones (older than 200 million years)

G. C-14 and C-12 ratios are used to date more recently living organisms (under 50,000 years)

H. Alpha particles are used to treat tumors found under the skin

I. Beta particles can't be used to treat tumors under the skin, they can't penetrate skin

J. Gamma rays have many modern medical uses

12

Tell what happens in the reactor vessel. What happens in the steam generator? What is a turbine? What happens in the generator? Besides the radioactive waste, what is the other waste product produced in a nuclear power plant? What type of reaction occurs to make the heat? Why is the waste such a big problem (2 reasons)? What is the best "pro" for using nuclear power in the world?