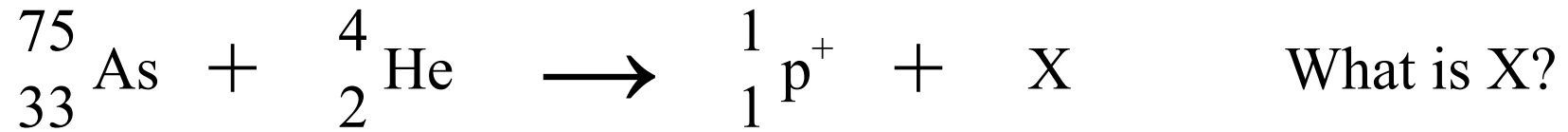


1-2

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

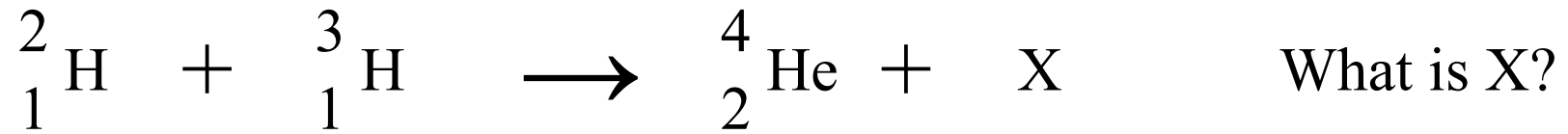
Fluorine-18 emits positron particles. Show the natural transmutation equation.

3-4



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

5-6



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

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?

