

Salt Lake Community College, Chemistry Department

Chem 1110 Workshop 12

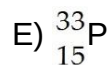
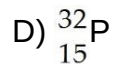
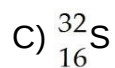
Topic: Nuclear Chemistry

Objective:

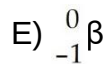
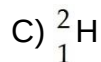
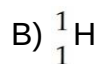
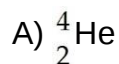
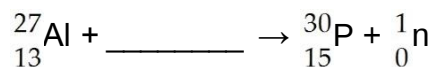
- To be able to write and balance equations for nuclear reactions
- To understand and be able to list the characteristics of the three common kinds of nuclear radiation
- To be able to explain half-life and calculate quantity of radioisotope remaining after a given number of half-lives

Practice Problems:

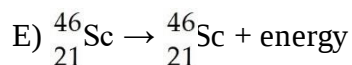
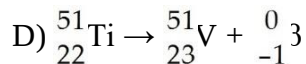
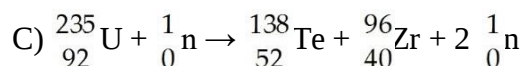
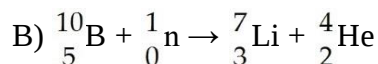
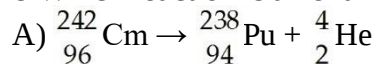
1. The emission of a particle from an unstable nucleus is called _____.
2. The change of element into another by the process of nuclear decay is called _____.
3. The term nucleon refers to _____.
4. Radioactivity is generally associated with which part of the atom?
A) nucleus
B) electrons
C) protons
D) neutrons
E) the entire atom
5. Which nuclear reaction is **not** balanced?
A) ${}^{10}_5\text{B} + {}^4_2\text{He} \rightarrow {}^{13}_7\text{N} + {}^1_0\text{n}$
B) ${}^{238}_{92}\text{U} + {}^4_2\text{He} \rightarrow {}^{241}_{95}\text{Am} + {}^1_0\text{n}$
C) ${}^{40}_{18}\text{Ar} + {}^1_1\text{H} \rightarrow {}^{40}_{19}\text{K} + {}^1_0\text{n}$
D) ${}^{14}_7\text{N} + {}^4_2\text{He} \rightarrow {}^{17}_8\text{O} + {}^1_1\text{H}$
6. Which product is formed by beta emission from phosphorus -32? The atomic number of phosphorus is 15.
A) ${}^{28}_{13}\text{Al}$
B) ${}^{30}_{13}\text{Al}$



7. What is the missing reactant in the reaction shown?



8. Which reaction is an example of a gamma emission?



9. Iodine-131 has a half-life of 8.0 days. If you originally have a 658 g sample of Iodine-131, how much will remain after 32 days?

10. Thallium-208 has a half-life of 3.053 min. How long will it take for 120.0 g to decay to 7.50 g?