Chemistry Worksheet: Transmutation

Short Answer

1. Identify the new element when an alpha particle is emitted from In-115.
2. Identify the new element when a neutron decays in Te-128.
3. The half-life of $^{115}_{51}Sb$ is 32 minutes. How much of a 16.0-g sample of this isotope will remain at the end of 3.0 hours?
4. Which radioactive substance travels fastest?
5. How does the nucleus of an atom change after a gamma irradiation?
6. Identify the new element when an alpha particle is emitted from Pu-244.
7. Lists nuclear radiation from most massive to least massive?
8. What is the product of β-ray emission from a radioactive isotope of lead?
9. Identify the new element when a neutron decays in Pt-195.
10. The most penetrating form of nuclear radiation is ____.
11. The half-life of an isotope is the time required for half the nuclei in a sample to
12. What is true about half-lives of each radioactive isotope?
13. The energy released in a nuclear reaction comes from
14. The isotope strontium-90 is produced during the testing of nuclear weapons. If 100.0 mg of strontium-90 was released in the atmosphere in 1960, how much of the radioisotope remains 85 years later? The half life of strontium-90 is 29 years.
15. In an atom, the strong nuclear force acts on ____.
16. In an artificial transmutation, what is required to bombard nuclei with positively charged alpha particles, protons, and other ions?
17. A radioactive compound cbalt-60 has a half-life of 5272.0 years. What will be the amount remaining in a 10.0-g sample after 1600.0 years?
18. The radioisotope technetium-99 is often used as a radiotracer to detect disorders of the body. It has a half-life of 6.01 hours. If a patient received a 25.0-mg dose of this isotope during a medical procedure, how much would remain 48.0 hours after the dose was given?
19. Identify the new element when an alpha particle is bombarded into Sg-266.
20. Identify the new element when an alpha particle is bombarded into Cd-112.
21. The process(es) that changes the identity and number of protons in a nucleus is
22. Which particle(s) has the same mass as an electron but a positive charge and is sometimes emitted from the nucleus during radioactive decay?
23. Which form of nuclear radiation generally has the lowest penetrating ability?
24. Which element on bombarding with an alpha particle gives $^{17}_{8}O$?
25. The half-life of calcium-47 is about 5 days. Starting with 64 g of this isotope, what would be the amount remaining after 20 days?