

13. When $^{238}_{92}\text{U}$ becomes $^{234}_{90}\text{Th}$, what type of decay has taken place?
 - a. alpha
 - b. beta
 - c. gamma
 - d. positron
14. A(n) _____ is a high energy electron.
 - a. beta particle
 - b. helium nucleus
 - c. alpha particle
 - d. positron
15. Which type of radiation is most penetrating?
 - a. alpha
 - b. beta
 - c. gamma
 - d. They are equal.
16. Which is the only type of radiation that might penetrate the walls of a house?
 - a. alpha
 - b. beta
 - c. gamma
 - d. All will penetrate.
17. What is the source of the electrons produced in beta decay?
 - a. an outer energy level
 - b. a valence electron
 - c. a neutron
 - d. a proton
18. The radiation detector that uses detection of flashes of light is a _____.
 - a. bubble chamber
 - b. film badge
 - c. Geiger counter
 - d. scintillation counter
19. How much hydrogen-3 will remain after 60 years if the original sample had a mass of 80.0 g and the half-life of hydrogen-3 is 12 years?
 - a. 1.25 g
 - b. 2.50 g
 - c. 5.00 g
 - d. 10.0 g
20. Which of the following isotopes is not commonly used for dating objects?
 - a. carbon-14
 - b. phosphorus-32
 - c. potassium-40
 - d. rubidium-87
21. Which of the following could be dated using carbon-14?
 - a. ashes from a fire
 - b. a rock
 - c. glacial deposits
 - d. lava fields
22. When one large nucleus is split into two smaller nuclei, the process is nuclear _____.
 - a. decay
 - b. fission
 - c. fusion
 - d. tracing
23. To control a chain reaction, a moderator, such as _____ is used to slow down neutrons.
 - a. graphite
 - b. uranium
 - c. water
 - d. the core
24. Two or more nuclei combine to form one larger nucleus in the process of nuclear _____.
 - a. decay
 - b. fission
 - c. fusion
 - d. tracing
25. Which produces more energy--nuclear fission or nuclear fusion?
 - a. fission
 - b. fusion
 - c. They produce the same amount.
 - d. It depends on the reaction.
26. The greatest source of radiation most humans are exposed to is _____.
 - a. cosmic rays
 - b. medical X rays
 - c. radon
 - d. rocks and soil
27. Most radioactive waste is generated in _____.
 - a. hospitals
 - b. nuclear reactors
 - c. tokamaks
 - d. uranium mines

Name: _____

ID: A

- ____ 28. The radioisotope iodine-131 is used to determine the health of the thyroid gland. Iodine-131 is an example of ____.
- | | |
|-----------------|----------------|
| a. an allotrope | c. radiation |
| b. a tracer | d. a structure |

Matching

Match each item with the correct statement below.

- | | |
|-------------------|--------------------|
| a. alpha particle | g. nuclear fission |
| b. beta particle | h. nuclear fusion |
| c. deuterium | i. nuclear reactor |
| d. gamma ray | j. radioactivity |
| e. gray | k. sievert |
| f. half-life | l. tritium |

- ____ 29. The time required for half of a sample of a radioactive substance to undergo nuclear decay is called the ____.
- ____ 30. A(n) ____ consists of a helium nucleus.
- ____ 31. The unit of radiation used to measure the amount of radiation received by an organism is called the ____.
- ____ 32. ____ is the reaction that occurs when two small nuclei join together to form a larger nucleus.
- ____ 33. The spontaneous emission of radiation by a nucleus is known as ____.
- ____ 34. The isotope of hydrogen with a mass number of 2 is ____.
- ____ 35. ____ is the process by which a single large nucleus breaks apart into two smaller nuclei.
- ____ 36. A(n) ____ is a high-energy form of electromagnetic radiation commonly released during radioactive decay.
- ____ 37. The ____ is a unit of radiation that measures the amount of radiation absorbed by a tissue.
- ____ 38. The isotope of hydrogen with a mass number of 3 is ____.
- ____ 39. A(n) ____ is a device in which a nuclear reaction is used to generate energy.
- ____ 40. A(n) ____ is a high-energy electron released from a nucleus during radioactive decay.

=====