Name: _____ **Class:** _____ **Date:** _____ **ID: C**

Ch.11-Q4W3-Nuclear chemistry- Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. What is the source of the electrons produced in beta decay?
a. an outer energy level
b. a valence electron
c. a proton
d. a neutron

____ 2. The ratio of protons to neutrons in stable isotopes of the lighter elements tends to be approximately _____.
a. unpredictable
b. 1:1
c. 1:2
d. 2:1

____ 3. A particle released during the fission of uranium-235 is a(n) _____.
a. gamma ray
b. alpha particle
c. neutron
d. beta particle

____ 4. The first person to recognize the existence of radioactivity was _____.
a. Marie Curie
b. Henri Becquerel
c. Lise Meitner
d. Albert Einstein

____ 5. A(n) _____ is a high energy electron.
a. helium nucleus
b. positron
c. beta particle
d. alpha particle

____ 6. Compared to an electron, a positron has _____.
a. different mass and charge
b. the same charge, but a different mass
c. the same mass and charge
d. the same mass, but a different charge

____ 7. Which produces more energy--nuclear fission or nuclear fusion?
a. fusion
b. They produce the same amount.
c. It depends on the reaction.
d. fission

____ 8. _____ materials absorb light energy, then release it.
a. Radioactive
b. Transuranium
c. Phosphorescent
d. Nuclear

____ 9. Most radioactive waste is generated in _____.
a. tokamaks
b. uranium mines
c. hospitals
d. nuclear reactors

____ 10. To control a chain reaction, a moderator, such as _____ is used to slow down neutrons.
a. uranium
b. water
c. graphite
d. the core

____ 11. Materials that continue to glow in the dark after they have been exposed to light are said to be _____.
a. radioactive
b. phosphorescent
c. incandescent
d. unstable

____ 12. Which type of radiation is most penetrating?
a. alpha
b. They are equal.
c. gamma
d. beta

____ 13. 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. 10.0 g
b. 1.25 g
c. 2.50 g
d. 5.00 g

____ 14. If a neutron begins a nuclear chain reaction, then one product of that reaction must be _____.
a. a gamma ray
b. a neutron
c. a uranium-235 nucleus
d. a uranium-238 nucleus

____ 15. Who of the following was not important in the discovery of radiation?
a. Henri Becquerel
b. Neils Bohr
c. Pierre Curie
d. Marie Curie

____ 16. $^{235}_{92}\mathrm{U}$ and $^{238}_{92}\mathrm{U}$ are examples of _____.
a. particles of radiation
b. allotropes
c. isotopes
d. tracers

____ 17. When $^{238}_{92}\mathrm{U}$ becomes $^{234}_{90}\mathrm{Th}$, what type of decay has taken place?
a. positron
b. beta
c. alpha
d. gamma

____ 18. Which of the following isotopes is not commonly used for dating objects?
a. rubidium-87
b. phosphorus-32
c. carbon-14
d. potassium-40

____ 19. In a reactor, nuclear energy is produced in the _____.
a. turbine
b. fuel rods
c. coolant
d. moderator

____ 20. Which of the following could be dated using carbon-14?
a. glacial deposits
b. lava fields
c. ashes from a fire
d. a rock

____ 21. The most difficult radiation to block out is _____.
a. beta particles
b. visible light rays
c. alpha particles
d. gamma rays

____ 22. 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.

____ 23. The greatest source of radiation most humans are exposed to is _____.
a. medical X rays
b. rocks and soil
c. radon
d. cosmic rays

____ 24. The correct nuclear notation for the isotope oxygen-15 is _____.
a. $^{15}_{8}\mathrm{O}$
b. $^{15}\mathrm{O}_{8}$
c. $_{8}\mathrm{O}^{15}$
d. $^{8}_{15}\mathrm{O}$

____ 25. When one large nucleus is split into two smaller nuclei, the process is nuclear _____.
a. decay
b. fusion
c. tracing
d. fission

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