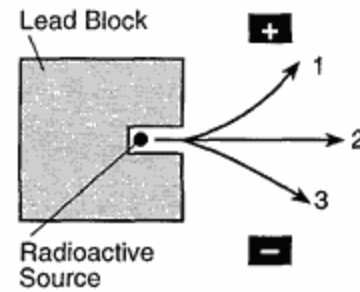


- _____ 1) Which list of nuclear emissions is arranged in order from the *least* penetrating power to the greatest penetrating power?
- 1) alpha particle, beta particle, gamma ray
 - 2) alpha particle, gamma ray, beta particle
 - 3) gamma ray, beta particle, alpha particle
 - 4) beta particle, alpha particle, gamma ray
- _____ 2) What is the mass number of an alpha particle?
- 1) 1 2) 2 3) 0 4) 4
- _____ 3) When an atom of the unstable isotope Na-24 decays, it becomes an atom of Mg-24 because the Na-24 atom spontaneously releases
- 1) an alpha particle 3) a neutron
 - 2) a beta particle 4) a positron
- _____ 4) Which particle is emitted from a hydrogen-3 nucleus when it undergoes radioactive decay?
- 1) α 2) β^- 3) β^+ 4) γ
- _____ 5) What is the decay mode of ^{37}K ?
- 1) β^- 2) β^+ 3) γ 4) α
- _____ 6) Which equation represents positron decay?
- 1) $^{87}_{37}\text{Rb} \rightarrow ^0_{-1}\text{e} + ^{87}_{38}\text{Sr}$
 - 2) $^{277}_{92}\text{U} \rightarrow ^{223}_{90}\text{Th} + ^4_2\text{He}$
 - 3) $^{27}_{13}\text{Al} + ^4_2\text{He} \rightarrow ^{30}_{15}\text{P} + ^1_0\text{n}$
 - 4) $^{11}_6\text{C} \rightarrow ^0_{+1}\text{e} + ^{11}_5\text{B}$
- _____ 7) Which nuclear decay emission consists of energy, only?
- 1) alpha particle 3) gamma radiation
 - 2) beta particle 4) positron
- _____ 8) Which radioisotope has the fastest rate of decay?
- 1) ^{14}C 2) ^{37}Ca 3) ^{53}Fe 4) ^{42}K
- _____ 9) What is the mass of an original 5.60-gram sample of iron-53 that remains unchanged after 25.53 minutes?
- 1) 0.35 g 3) 1.40 g
 - 2) 0.70 g 4) 2.80 g

- _____ 10) The diagram below represents radiation passing through an electric field.



Which type of emanation is represented by the arrow labeled 2?

- 1) alpha particle 3) positron
 - 2) beta particle 4) gamma radiation
- _____ 11) What fraction of a Sr-90 sample remains unchanged after 87.3 years?
- 1) $\frac{1}{2}$
 - 2) $\frac{1}{3}$
 - 3) $\frac{1}{4}$
 - 4) $\frac{1}{8}$
- _____ 12) What mass of a 60.0-gram sample of ^{16}N will remain unchanged after 28.8 seconds?

- 1) 3.75 g 3) 15.0 g
- 2) 7.50 g 4) 30.0 g