

Quiz 3_PHYS 111

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1. An atom has a mass number of 23 and an atomic number of 11. The numbers of protons is:

- A) 23 B) 11 C) 6 D) 20

2- The half life of a specific element was calculated to be 5200 years. The decay constant is

- A) $1.33 \times 10^{-4} \text{ yr}^{-1}$ B) $5.6 \times 10^{-4} \text{ yr}^{-1}$ C) $6000 \times 10^{-4} \text{ yr}^{-1}$ D) $43 \times 10^{-4} \text{ yr}^{-1}$

3- The energy required to excite an electron from $n = 2$ to $n = 4$ in a Bohr hydrogen atom is:

- A) $8.9 \times 10^{-19} \text{ J}$ B) $6.5 \times 10^{-19} \text{ J}$ C) $1.9 \times 10^{-19} \text{ J}$ D) $4.08 \times 10^{-19} \text{ J}$

4- The lowest penetrating power of the three common types of nuclear radiation is:

- A) α B) β^{-1} C) β^{+1} D) γ

5- Isotopes are atoms of the same element that have different:

- A) mass numbers B) atomic numbers C) electron numbers D) proton number

6- The decay of $^{14}_6\text{C}$ into $^{14}_7\text{N}$ is:

- A) α B) β^{-1} C) β^{+1} D) γ

7- the most typical fuel used in a fission reactor is:

- A) $^{14}_6\text{C}$ B) $^{235}_{92}\text{U}$ C) ^4_2He D) ^1_1H

8- The total mass of uranium undergoes fission reaction is-----the total mass of the material after the event.

- A) less than B) same as C) halved D) larger

9- The decay constant of radioisotope is found $\lambda = 2.95 \times 10^{-5} \text{ s}^{-1}$. The time interval required for the activity of this isotope to decrease to 30% of its original value is:

- A) 12000 s B) 40813 s C) 9800 s D) 60400 s

10- When a radioactive nucleus emits a gamma ray the number of

- A) protons increases by one while the number of neutrons decreases by one.
B) protons decrease by one while the number of neutrons increases by one.
C) protons and neutrons each decrease by two.
D) protons and neutrons remain unchanged.