

Questions about the structure of an atom

Question 1

Why does an atom have no overall electric charge? A. The number of electrons equals the number of neutrons. B. The number of neutrons equals the number of ions. C. The number of protons equals the number of electrons. D. The number of protons equals the number of ions. E. The number of protons equals the number of neutrons.

Question 2

An isotope of radium is ${}_{88}^{226}\text{Ra}$. Which statement about the nucleus of this isotope is correct? A. The number of protons is 88. B. The number of neutrons is 88. C. The number of protons is 226. D. The number of neutrons is 226. E. The number of electrons is 226.

Question 3

A fast moving particle passes close to the nucleus of an atom but is not affected by it. What is the particle most likely to be? A. a proton B. an alpha particle C. a negative ion D. an electron E. a neutron

Questions on Sources of radiation

Question 4

The nuclei of carbon-14 atoms decay by emitting beta radiation. Which one of these statements is correct? A. The carbon-14 nuclei split in two. B. The carbon-14 nuclei emit hydrogen atoms. C. A smaller nucleus of carbon is produced. D. The atomic mass number of the carbon nuclei increases. E. The carbon-14 nuclei emit electrons.

Question 5

A student suggests that background radiation can come from: 1. Outer space 2. Rocks in the ground 3. Human beings themselves

Which of the suggestions is/are correct? A. 1 and 2 B. 2 only C. 1 and 3 only D. 1 only E. 1, 2 & 3

Questions about Half life

Question 6

The count rate of a radioactive source decreases from 1600 counts per minute to 400 counts per minute in 12 hours. What is the half-life of the source? A. 1.5 hours B. 3 hours C. 4 hours D. 12 hours E. 6 hours

Question 7

Iodine-131 is a radioactive material with a half-life of 8 days. A sealed box holds 16 mg of iodine-131. How much iodine-131 will be left after 24 days? A. 2 mg B. 4 mg C. 8 mg D. 12 mg E. 16 mg