

Competitive Exams: Chemistry MCQs (Practice-Test 24 of 31)

1. Which of the following nuclides is used medicinally to treat hyperthyroidism?

Translate

- a. uranium-238
- b. americium-241
- c. carbon-14
- d. iodine-131
- e. thorium-232

2. In lecture, the use of radiation to treat food and other consumer products was discussed. Which of the following radioactive nuclides is currently being used for food irradiation?

- a. uranium-238
- b. radon-222
- c. carbon-14
- d. cobalt-60
- e. americium-241

3. Carbon-14 radioactively decays via the emission of a beta particle. Which of the following is the product nuclide of this decay?

- a. beryllium-10
- b. boron-14
- c. carbon-13
- d. carbon-14
- e. nitrogen-14

4. In fluorine-18, the neutron-to-proton ratio is too low and this nuclide undergoes radioactive decay. Which of the following decay processes would be expected to produce a nuclide with a neutron-to-proton ratio GREATER THAN that for fluorine-18?

- a. alpha decay

- b. beta decay
 - c. gamma decay (only)
 - d. positron decay
 - e. None of these.
5. Thorium-232 decays in a series of steps to produce the unstable nuclide, radon-220. Which of the following series of decays would produce radon-220 from thorium-232?
- a. 3 alpha + 2 beta
 - b. 4 alpha + 2 beta
 - c. 5 alpha + 2 beta
 - d. 2 alpha + 3 beta
 - e. 1 alpha + 2 beta
6. The radioactive nuclide, radon-222, is a problem in the basements of many homes. Calculate how long (in days) it would take for a 3.65 g sample of radon-222 to decay to 1.34 g? Radon-222 decays by a first-order process with a half-life of 3.82 days.
7. An archeologist unearths a bone sample and wants to know the age of the bone. Her chemist friend determines that 45.3% of the initial amount of carbon-14 is present in the bone sample. If the half-life of carbon-14 is 5730 years, calculate the age (in years) of the bone.
8. The following are produced by radioactive decay processes. Which one has the GREATEST mass?
- a. alpha particle
 - b. beta particle
 - c. gamma ray
 - d. neutron
 - e. positron
9. In lecture, you observed an instrument gauge from a World War II vintage aircraft which had been painted with a radioactive element. Which of the following elements was used in the paint?
- a. uranium
 - b. plutonium

- c. radium
 - d. polonium
 - e. neptunium
10. Naturally occurring uranium-238 decays in a series of steps to produce the stable nuclide, lead-206. Which of the following series of decays would produce lead-206 from uranium-238?
- a. 3 alpha + 4 beta
 - b. 4 alpha + 3 beta
 - c. 5 alpha + 2 beta
 - d. 2 alpha + 5 beta
 - e. 8 alpha + 6 beta
11. One of the factors that determines how effective a particular type of radiation will be in causing biological damage is the mass of the particle. Which of the following has the GREATEST mass?
- a. alpha particle
 - b. beta particle
 - c. positron
 - d. gamma ray
 - e. neutron
12. In this reaction?
- a. alpha particle
 - b. beta particle
 - c. positron
 - d. neutron
 - e. gamma ray