

Name: _____

Period: _____

Ch. 10 HW Packet

Nuclear Decay (pages 292–293) #1

1. Describe radioactivity. _____

2. A radioisotope is any atom that contains an unstable _____.
3. Describe what happens to radioisotopes during nuclear decay. _____

Types of Nuclear Radiation (pages 293–296)

4. Nuclear radiation is charged particles and energy that are emitted from the _____ of radioisotopes.
5. Circle the letters that identify each common type of nuclear radiation.
 - a. X-rays
 - b. alpha particles
 - c. beta particles
 - d. gamma rays
6. Circle the letters that identify which groups of particles make up an alpha particle.
 - a. two electrons
 - b. two protons
 - c. two neutrons
 - d. four neutrons
7. Circle the letters that identify each event that takes place during beta decay.
 - a. A proton decomposes into a neutron and an electron.
 - b. A neutron decomposes into a proton and an electron.
 - c. An electron is emitted from the nucleus.
 - d. A neutron is emitted from the nucleus.
8. Why are beta particles more penetrating than alpha particles?

10. What is a gamma ray? _____

11. How fast do gamma rays travel through space?

Effects of Nuclear Radiation (pages 296–297)

12. How does nuclear radiation affect atoms? _____

Detecting Nuclear Radiation (page 297)

15. Name two devices that are used to detect nuclear radiation.
 - a. _____
 - b. _____

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Half-life (pages 299–300)

#2

1. Is the following sentence true or false? All radioisotopes decay at the same rate. _____
2. Describe a half-life. _____

3. Circle the letter that describes a sample of a radioisotope after two half-lives.
 - a. One eighth of the original sample is unchanged.
 - b. One quarter of the original sample is unchanged.
 - c. Half of the original sample is unchanged.
 - d. Three quarters of the original sample is unchanged.
4. Circle the letter of the correct answer. Iodine-131 has a half-life of 8.07 days. What fraction of a sample of iodine-131 is left unchanged after 16.14 days?
 - a. $\frac{1}{2}$
 - b. $\frac{1}{4}$
 - c. $\frac{1}{8}$
 - d. $\frac{1}{16}$

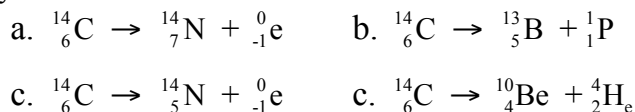
Use the following table to answer questions 7 and 8.

Half-Lives of Selected Radioisotopes	
Isotope	Half-life
Radon-222	3.82 days
Iodine-131	8.07 days
Thorium-234	24.1 days
Radium-226	1620 years
Carbon-14	5730 years

5. Circle the letter that identifies which sample would be the most unchanged after 100 years.
 - a. iodine-131
 - b. radium-226
 - c. radon-222
 - c. thorium-234
6. Circle the letter of the correct answer. How much of a 1.00 gram sample of radium-226 is left unchanged after 4860 years?
 - a. 0.500
 - b. 0.250 g
 - c. 0.125 g
 - c. 0.050 g

Radioactive Dating (pages 300–301)

10. Circle the letter that identifies the correct equation for the beta decay of carbon-14.



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