Ch.11-Q4W3-Nuclear chemistry H.W.

Multiple Choice

Identify the choice that best completes the statement or answers the question.

	1.	Materials that continue to glow in the dark		y have been exposed to light are said to be	
		a. radioactive	с.	phosphorescent	
		b. unstable	d.	incandescent	
	2.	The first person to recognize the existence of radioactivity was			
		a. Marie Curie	c.	Albert Einstein	
		b. Henri Becquerel	d.	Lise Meitner	
	3. The correct nuclear notation for the isotope oxygen-15 is				
		a. ${}^{15}_{8}$ O		¹⁵ O ₂	
		·		ð	
		b. ${}^{8}_{15}$ O	d.	₈ O ¹⁵	
	4.	The ratio of protons to neutrons in stable	isotopes c	f the lighter elements tends to be approximately	
		a. 1:1	-	2:1	
		b. 1:2	d.	unpredictable	
	5.	The most difficult radiation to block out is	s.		
		a. alpha particles		gamma rays	
		b. beta particles	d.	visible light rays	
	6. A particle released during the fission of uranium-235 is a(n)				
	-	a. alpha particle		gamma ray	
		b. beta particle	d.		
	7. If a neutron begins a nuclear chain reaction, then one product of that reaction must be				
		a. a uranium-235 nucleus		a uranium-238 nucleus	
		b. a neutron		a gamma ray	
				6 2	
	8	In a reactor nuclear energy is produced in	the		
	8.	In a reactor, nuclear energy is produced in a moderator			
	8.	a. moderator	с.	fuel rods	
	8. 9	a. moderatorb. coolant	c. d.		
	8. 9.	a. moderatorb. coolantCompared to an electron, a positron has _	c. d.	fuel rods turbine	
	8. 9.	a. moderatorb. coolantCompared to an electron, a positron has _a. the same mass and charge	c. d. c.	fuel rods turbine the same charge, but a different mass	
		 a. moderator b. coolant Compared to an electron, a positron has a. the same mass and charge b. different mass and charge 	c. d. c. d.	fuel rods turbine the same charge, but a different mass the same mass, but a different charge	
	8. 9. 10.	 a. moderator b. coolant Compared to an electron, a positron has a. the same mass and charge b. different mass and charge materials absorb light energy, then 	c. d. c. d. release it	fuel rods turbine the same charge, but a different mass the same mass, but a different charge	
		 a. moderator b. coolant Compared to an electron, a positron has a. the same mass and charge b. different mass and charge materials absorb light energy, then a. Nuclear 	c. d. c. d. release it c.	fuel rods turbine the same charge, but a different mass the same mass, but a different charge Radioactive	
	10.	 a. moderator b. coolant Compared to an electron, a positron has a. the same mass and charge b. different mass and charge materials absorb light energy, then a. Nuclear b. Phosphorescent 	c. d. c. d. release it c. d.	fuel rods turbine the same charge, but a different mass the same mass, but a different charge Radioactive Transuranium	
	10.	 a. moderator b. coolant Compared to an electron, a positron has a. the same mass and charge b. different mass and charge materials absorb light energy, then a. Nuclear b. Phosphorescent Who of the following was not important in 	c. d. c. d. release it c. d. n the disc	fuel rods turbine the same charge, but a different mass the same mass, but a different charge Radioactive Transuranium overy of radiation?	
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	10. 11.	 a. moderator b. coolant Compared to an electron, a positron has a. the same mass and charge b. different mass and charge materials absorb light energy, then a. Nuclear b. Phosphorescent Who of the following was not important in a. Neils Bohr b. Marie Curie 	c. d. c. d. release it c. d. n the disc	fuel rods turbine the same charge, but a different mass the same mass, but a different charge Radioactive Transuranium overy of radiation?	
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	a. alpha	с.	gamma			
	b. beta	d.	positron			
1	4. A(n) is a high energy electron	l.				
_	a. beta particle	с.	alpha particle			
	b. helium nucleus	d.	positron			
1	5. Which type of radiation is most pene	etrating?				
	a. alpha	с.	gamma			
	b. beta	d.	They are equal.			
1	. Which is the only type of radiation that might penetrate the walls of a house?					
	a. alpha	с.	gamma			
	b. beta	d.	All will penetrate.			
1	7. What is the source of the electrons p	roduced in beta	a decay?			
	a. an outer energy level	с.	a neutron			
	b. a valence electron	d.	a proton			
1	. The radiation detector that uses detection of flashes of light is a					
	a. bubble chamber	с.	Geiger counter			
	b. film badge	d.	scintillation counter			
1	9. How much hydrogen-3 will remain a	after 60 years if	f the original sample had a mass of 80.0 g and the half-life			
	of hydrogen-3 is 12 years?	-				
	a. 1.25 g	c.	5.00 g			
	b. 2.50 g	d.	10.0 g			
2	0. Which of the following isotopes is n	ot commonly u	used for dating objects?			
	a. carbon-14	c.	potassium-40			
	b. phosphorus-32	d.	rubidium-87			
2	1. Which of the following could be dat	. Which of the following could be dated using carbon-14?				
	a. ashes from a fire	c.	glacial deposits			
	b. a rock	d.	lava fields			
2	. When one large nucleus is split into two smaller nuclei, the process is nuclear					
	a. decay	с.	fusion			
	b. fission	d.	tracing			
2	3. To control a chain reaction, a moder	ator, such as	is used to slow down neutrons.			
	a. graphite	c.	water			
	b. uranium	d.	the core			
2	4. Two or more nuclei combine to form	n one larger nu	cleus in the process of nuclear			
-	a. decay	с.	fusion			
	b. fission	d.	tracing			
2	5. Which produces more energynucle	ar fission or nu	clear fusion?			
	a. fission	с.	They produce the same amount.			
	b. fusion	d.	It depends on the reaction.			
2	6. The greatest source of radiation mos	t humans are e	<u>^</u>			
_	a. cosmic rays		radon			
	b. medical X rays	d.	rocks and soil			
2	/ Most radioactive waste is generated.	in in				
_ 2	 Most radioactive waste is generated a. hospitals 	ⁱⁿ c.	tokamaks			

Name:

28. The radioisotope iodine-131 is used to determine the health of the thyroid gland. Iodine-131 is an example of

- a. an allotrope c. radiation
- b. a tracer d. a structure

Matching

Match each item with the correct statement below.

nuclear fission alpha particle a. g. beta particle nuclear fusion b. h. deuterium nuclear reactor c. i. d. gamma ray j. radioactivity sievert gray k. e. f. half-life 1. tritium

29. The time required for half of a sample of a radioactive substance to undergo nuclear decay is called the

- 30. A(n) _____ consists of a helium nucleus.
- 31. The unit of radiation used to measure the amount of radiation received by an organism is called the _____.
- 33. The spontaneous emission of radiation by a nucleus is known as _____.
- _____ 34. The isotope of hydrogen with a mass number of 2 is _____.
- _____ 35. _____ is the process by which a single large nucleus breaks apart into two smaller nuclei.
- _____ 36. A(n) ______ is a high-energy form of electromagnetic radiation commonly released during radioactive decay.
- _____ 37. The ______ is a unit of radiation that measures the amount of radiation absorbed by a tissue.
- 38. The isotope of hydrogen with a mass number of 3 is _____.
- _____ 39. A(n) ______ is a device in which a nuclear reaction is used to generate energy.
- 40. A(n) _____ is a high-energy electron released from a nucleus during radioactive decay.
