Name _____

Chapter 3 Standardized Test Practice

Passage I

Use the following passage to answer questions 1–6.

Only a few of the 88 naturally occurring elements make up the majority of our bodies. A student researched the ten most common elements found in the human body (on a percentage mass basis). His findings are summarized in Table 1.

During the student's research he learned that Earth's crust, oceans, and atmosphere are also primarily made up of only a few elements. His findings on the elemental composition of Earth are summarized in Table 2.

Table 1		
Element	Mass of human body (%)	
Oxygen	65.0	
Carbon	18.0	
Hydrogen	10.0	
Nitrogen	3.0	
Calcium	1.4	
Phosphorus	1.0	
Magnesium	0.50	
Potassium	0.34	
Sulfur	0.26	
Sodium	0.14	

Table 2		
Element	Mass of Earth (%)	
Oxygen	49.2	
Silicon	25.7	
Aluminum	7.50	
Iron	4.71	
Calcium	3.39	
Sodium	2.63	
Potassium	2.40	
Magnesium	1.93	
Hydrogen	0.87	
Titanium	0.58	

1. Which is the most abundant element in the human body and in Earth's crust, oceans, and atmosphere?

	<u>A.</u> Carbon	<u>B.</u> Silicon	<u>C.</u> Oxygen	D. Hydrogen	
2.	Which element found in the human body is not diatomic?				
	<u>F.</u> Hydrogen	<u>G.</u> Oxygen	H. Nitrogen	$\underline{\mathbf{J}}$. none of the above	
3.	What percentage of the	e human body's mass d	o the three most abund	ant elements comprise?	
	<u>A.</u> 49.2%	<u>B.</u> 82.4%	<u>C.</u> 93.0%	<u>D.</u> 65.0%	
4.	• The second most abundant element in Earth's crust, oceans, and atmosphere is a:				
	<u>F.</u> metal.	<u>G.</u> nonmetal.	H. metalloid.	J. halogen.	

Name	Section	Date	

5. The forests on Earth produce oxygen as a byproduct of the photosynthesis reaction they use to produce food. Using this fact and the data provide in Table 2, which of the following is a reasonable conclusion about the possible effect of deforestation (a reduction in the land area covered by forests)?

- A. Earth's percentage composition of oxygen will exceed 49.2%.
- **B.** Earth's percentage composition of oxygen will be less than 49.2%.
- C. Earth's percentage composition of oxygen will exceed 65.0%.
- **<u>D.</u>** Earth's percentage composition of silicon will increase.
- 6. Which of the following statements is true?
 - **<u>F.</u>** The elements listed in Table 1 comprise 100% of the human body.
 - G. Iron, aluminum, and calcium are metals.
 - H. Oxygen is an ionic compound.
 - **J.** Sodium is an ionic compound.
- 7. Which of the following is a compound?

- 8. Which of the following is NOT part of Dalton's atomic theory?
 - **<u>F.</u>** All elements are composed of atoms.
 - **<u>G.</u>** Atoms of the same element are identical.
 - **<u>H.</u>** Atoms are in constant motion.
 - **<u>J.</u>** When atoms combine they do so in simple whole number ratios.
- 9. Which atom has the greatest number of neutrons in its nucleus?

A.
$$_{25}^{56}$$
Mn **B.** $_{26}^{56}$ Fe **C.** $_{27}^{57}$ Co **D.** $_{28}^{56}$ Ni

Use Table 3 to answer questions 10–11. The table lists the relative charge and mass of the subatomic particles.

Table 3			
Particle Relative mass		Relative charge	
Electron	1	1-	
Proton	1836	1+	
Neutron	1839	0	

- **10.** If an atom is made up of 8 protons, 8 electrons, and 3 neutrons, what is its overall charge? **F.** $8\pm$ **G.** 0 **H.** 1- **J.** 19+
- 11. Based on the data in Table 3, which particle has the greatest mass?
 - A. ElectronC. NeutronB. ProtonD. The proton and neutron both
have equal mass.

12.	• How many atoms are there in a molecule of sugar $(C_6H_{12}O_6)$?				
	<u>F.</u> 1	<u>G.</u> 3	<u>H.</u> 12	<u>J.</u> 24	
13.	How many elements a	re there in a molecule of	of sugar $(C_6H_{12}O_6)$?		
	<u>A.</u> 1	<u>B.</u> 3	<u>C.</u> 12	<u>D.</u> 24	
14.	The identity of an eler	nent is determined by i	ts:		
	<u>F.</u> mass number.		<u>H.</u> atomic number.		
	<u>G.</u> number of neutrons.		J. atomic mass.		
15.	Which of the following	g is most likely to form	a cation?		
	<u>A.</u> A metal	<u>B.</u> A nonmetal	<u>C.</u> A metalloid	D. A noble gas	
16.	What is the formula for	or the ionic compound	formed when Al^{3+} and	Br ⁻ ions combine?	
	<u>F.</u> Al ₃ Br	<u>G.</u> 3AlBr	H. AlBr ₃	<u>J.</u> Al ₃ Br	

17. What are the missing entries in Table 4?

	Table 4					
	Symbol	Atomic number	Number of neutrons	Number of electrons	Mass number	
	$^{23}_{11}$ Na	11	X	Y	23	
4	<u>A.</u> $X = 11, Y = 11$ <u>C.</u> $X = 12, Y = 23$					
	B. $X =$	11, $Y =$	= 12			D. $X = 12, Y = 11$

- **18.** An anion always contains:
 - **<u>F.</u>** equal numbers of protons and electrons.
 - <u>**G.**</u> equal numbers of protons and neutrons.
 - $\underline{\mathbf{H}}$. unequal numbers of protons and neutrons.
 - **<u>J.</u>** unequal numbers of protons and electrons.
- 19. To which group does the element lithium (Li) belong?
 - <u>A.</u> Halogens <u>C.</u> Alkaline Earth metals
 - **<u>B.</u>** Alkali metals <u>**D.**</u> Noble gases
- **20.** Which of the following statements is true?
 - $\underline{\mathbf{F}}$. Protons and neutrons have opposite charges.
 - **<u>G.</u>** Protons and electrons have opposite charges.
 - **<u>H.</u>** Electrons and neutrons are found in the nucleus.
 - \underline{J} . Atoms gain or lose protons when they form ions.