

## Atomic Model and Periodic Table Test Review

### A. Give the family name for each description.

1. I have 1 electron on my outer shell. \_\_\_\_\_
2. One of the elements has 35 protons. \_\_\_\_\_
3. I have 2 electrons on my outer orbit. \_\_\_\_\_
4. We are unreactive stable elements. \_\_\_\_\_
5. I can be used as a disinfectant. \_\_\_\_\_
6. I have 1 valence electron. \_\_\_\_\_

### B. What element is described for each statement?

1. I am found in period 2 and have 3 valence electrons. \_\_\_\_\_
2. I am found in family III A and use 3 orbitals. \_\_\_\_\_
3. I have 20 protons. \_\_\_\_\_
4. I have 2 energy levels and each is full. \_\_\_\_\_
5. I am a metalloid with three energy levels. \_\_\_\_\_
6. I am an inert gas and have 1 energy level. \_\_\_\_\_
7. I do not have a group I belong to. \_\_\_\_\_
8. I have a +3 charge and 3 energy levels. \_\_\_\_\_
9. I have a -2 charge and 4 orbits. \_\_\_\_\_

### C. State whether the following are metals, non-metals or metalloids.

Element A	Malleable	Conducts electricity	Not ductile	
Element B	Conducts heat	Reacts with acids	Shiny	
Element C	3 states of matter	Accepts electrons	No conduction	

### D. True or False

1. Elements in the same period have the same number of valence electrons. \_\_\_\_\_
2. Elements in the same group have the same number of valence electrons. \_\_\_\_\_
3. Aluminum is a metalloid. \_\_\_\_\_
4. Na, Mg and Al all have the same number of energy levels. \_\_\_\_\_
5. Cl has three valence electrons. \_\_\_\_\_
6. Li and Be have the same number of ions. \_\_\_\_\_
7. Mg has a charge of +2. \_\_\_\_\_

### E. Make a Lewis notation and give the ion for each element

	Li	He	N	F	Be	Ar
Lewis						
Ion						



5. Consider the five elements given in the simplified periodic table below.

IA							VIIIA
1							18
	IIA		IIIA	IVA	VA	VIA	VIIA
	2		13	14	15	16	17
	2	.....					4
1		.....		3			5
		.....					

Which of the following statements is completely true?

- A) Element 1 is an alkali metal and element 5 is a chemically active gas.
- B) Element 1 is an alkali metal and element 4 is a metal.
- C) Element 2 is an alkaline earth metal and element 3 is a metalloid.
- D) Element 4 is a halogen and can combine chemically with element 5.

6. Consider the four elements shown in the simplified periodic table below.

<b>Li</b>	<b>Be</b>					
					<b>Cl</b>	<b>Ar</b>

Which of the following statements is completely true?

- A) Lithium (Li) is an alkaline earth metal, and beryllium (Be) is an alkali metal.
- B) Chlorine (Cl) is an inert gas, and argon (Ar) is a halogen.
- C) Lithium (Li) is an alkali metal, and argon (Ar) is an inert gas.
- D) Beryllium (Be) is an alkali metal, and chlorine (Cl) is a halogen.

7. The table below shows eight elements from the periodic table.

											<b>B</b>	<b>C</b>	<b>N</b>			
											<b>Al</b>	<b>Si</b>	<b>P</b>			
													<b>Sb</b>	<b>Te</b>		

Which of the following groups of elements consists of metalloids only?

- A) Al, N, Sb and Te
- B) Al, C, P and Si
- C) B, N, P and Te
- D) B, Sb, Si and Te

8. An element in the halogen family has four electron shells. What is the name of this chemical element?

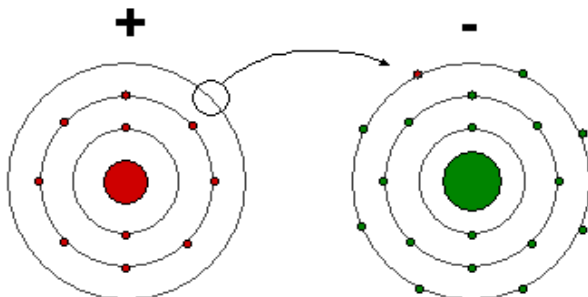
- A) Beryllium
- B) Bromine
- C) Iodine
- D) Potassium

9. Which element below has the following properties?

- Has electrons in 2 electron shells
- Is completely non-reactive or is inactive

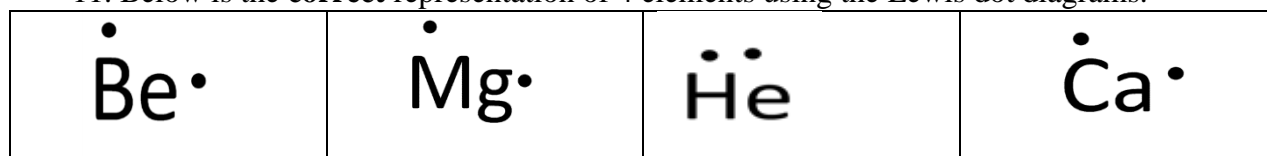
A) Li                      B) F                      C) He                      D) Ne

10. Choose the answer that correctly identifies the element name of the positively and negatively charged ions formed during the reaction shown below.



	Name of positive ion formed	Name of negative ion formed
A	Sodium	Chlorine
B	Sodium	Florine
C	Lithium	Chlorine
D	Lithium	Florine

11. Below is the **correct** representation of 4 elements using the Lewis dot diagrams.

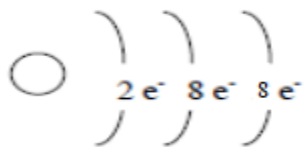


Which statement correctly explains which group the elements belong to?

- A) All 4 elements are Alkaline Earth metals because they all have 2 valence electrons.
- B) Be, Mg, and Ca are Alkaline Earth metals because they have 2 valence electrons, but He belongs to group 1 because it only has 1 energy level.
- C) Be, Mg, and Ca are Alkaline Earth metals because they have 2 valence electrons, but He belongs to group 8 because the outermost energy levels of the Noble gases are filled when they have 2 electrons.
- D) Be, Mg, and Ca are Alkaline Earth metals because they have 2 valence electrons, but He belongs to group 8 because it only has one energy level and it is filled with 2 electrons.

### G. Short Answer

1. The following diagram shows the Rutherford-Bohr model of an atom.



Using the periodic table answer the following questions:

- To what group does this element belong?
- To what period does this element belong?
- What is the name of this element?
- What is its charge?
- Make a Lewis notation for this element.

2. The chemical symbols of four elements are given in the table below. Fill the table.

Element	Number of valence electrons	Family name	Number of orbits	Ion charge
Br				
Ca				
Na				
Ne				

3. The properties of four elements are listed below.

Element	Property
A	It has seven valence electrons.
B	Its outermost energy level (orbit) contains two electrons.
C	It exists in the gaseous state and it does not react with other elements.
D	It has 11 protons and it is highly reactive.

To which chemical group does each of these elements belong? **Give full name**

4. Consider the alkali metal in period 4 of the periodic table of the elements.
- Name the element
  - Draw a diagram of the element according to the Rutherford- Bohr model