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 of 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. _____

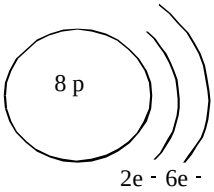
E. Make a Lewis notation and give the ion for each element

	Li	He	N	F	Be	Ar
Lewis						
Ion						

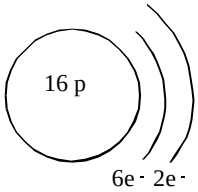
F. Multiple Choice

1. The study of the behaviour of matter has made it possible to develop simple models such as the Bohr-Rutherford model of the atom. If the atomic number of oxygen is 8 and its mass number is 16, which diagram represents the oxygen atom according to the Bohr-Rutherford model?

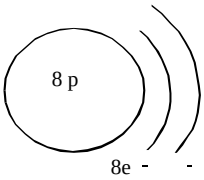
A)



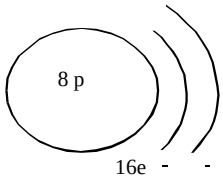
C)



B)



D)



2. When Rutherford carried out his famous gold foil experiment, he noticed that very few alpha particles were deflected back at an angle greater than 90°.

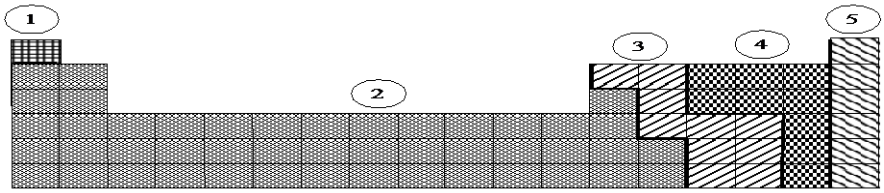
Which of the following statements is NOT consistent with this observation?

A) The atom is mostly empty space.
B) The nucleus is very small.
C) The nucleus has a positive charge.
D) Electrons move in orbitals.

3. After performing tests on several elements, you note that some of them have the following properties :

   1. They are ductile and malleable.
   2. They are good conductors of electricity.
   3. They react with acids.

In which region (1, 2, 3, 4 or 5) of the periodic table below are the elements with all these **three** properties located?



A) 2
B) 2 and 3
C) 1, 2 and 3
D) 4 and 5

4. Which of the following cannot be a property of a metal?

A) It conducts electricity
B) It reacts to acids
C) It has metallic luster
D) It has a low melting point

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

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

Li	**Be**							
						Cl	**Ar**	

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	C	N			
												Al	Si	P			
														Sb	Te		

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

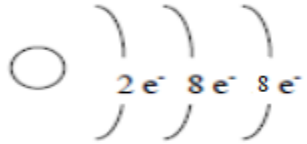
A) Al, N, Sb and Te
B) Al, C, P and Si
C) B, N, P and Te
D) B, Sb, Si and Te

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

G. Short Answer

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



Using the periodic table answer the following questions:
a) To what group does this element belong?
b) To what period does this element belong?
c) What is the name of this element?
d) What is its charge?
e) 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. Only do number three if you have time.
You are given a sample of the first 12 elements (A to L) of the periodic table. Each element is identified by a characteristic written on its label. The following information is what you read on the labels. Which element is identified by each label? You must use process of elimination until all 12 elements are found.

Unknown elements A- L	Characteristic	Element
Element A	Has 5 protons	
Element B	Is an inert gas	
Element C	Has 8 electrons	
Element D	Is an alkaline earth element	
Element E	Can place its electrons in two energy levels	
Element F	Has 2 valence electrons and a complete outermost energy level	
Element G	An alkali metal	
Element H	The most reactive metal from the 12 first elements	
Element I	Has an atomic number of 12	
Element J	It is found in the carbon family	
Element K	Is a halogen	
Element L	The only element which does not belong to a group	