Name_____ Date _____

Mark: ___/65 = ____ %

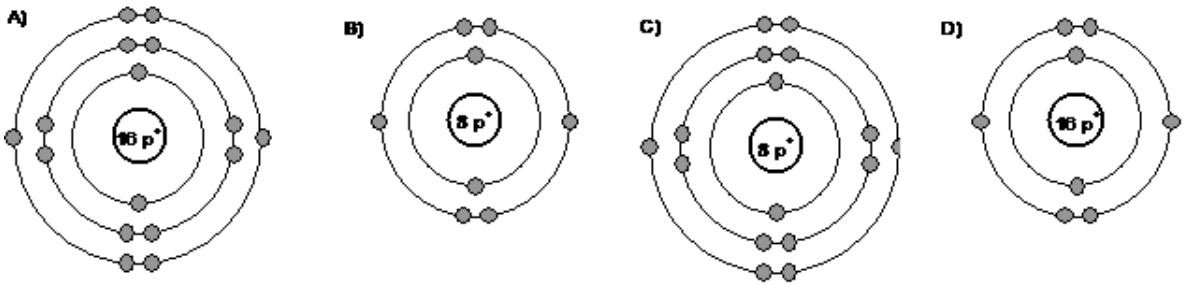
PRETEST ON CHAPTER 1 ***ANSWERS***

"ATOMIC STRUCTURE &THE PERIODIC TABLE OF ELEMENTS"

Part 1 – MULTIPLE CHOICES

Answer all the questions on the multiple choice sheet provided at the end

1) Oxygen is a gas important for life and it represents about 21% of the Earth's atmosphere. ***Which of the illustrations below best represents a Rutherford-Bohr diagram of an oxygen atom?***



ANSWER: B

2) Listed below are the characteristics of an element from the periodic table:

- It is a non metal
- Its outermost level has 7 electrons
- It is used to purify and disinfect water

To which group in the periodic table does this element belong?

A) Alkali metals B) Alkaline earth metals ***C) Halogens*** D) Inert gases

3) Listed below are the characteristics of an element from the periodic table:
- It is a metal
- It has only one valence electron
- It is stored in oil due to its high chemical reactivity

To which group in the periodic table does this element belong?

A) ***Alkali metals*** B) Alkaline earth metals C) Halogens D) Inert gases

4) Listed below are the characteristics of an element from the periodic table:
- Its outermost level has 8 electrons
- It does not react with any other elements
- It is often used in the manufacturing of light fixtures

To which group in the periodic table does this element belong?

B) Alkali metals B) Alkaline earth metals C) Halogens D) ***Inert gases***

5) What do the elements situated on the same period have in common?

A) The same number of valence electrons
B) The same chemical reactivity
C) The same number of electron shells
D) The same number of electrons

6) What do the elements situated in the same group have in common?

A) The same number of valence electrons
B) The same number of protons
C) The same number of electron shells
D) The same number of electrons

7) Listed below is information pertaining to the Rutherford-Bohr model of an atom of a chemical element.

1 – The positive charges
2 – The negative charges
3 – The electron shells (energy levels)
4 – The valence electrons

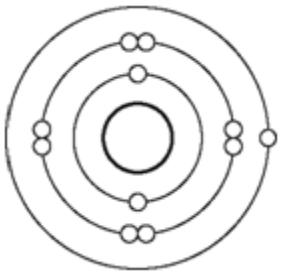
Which table correctly illustrates the position of each of them?

A	Inside the nucleus	Outside the nucleus
	1, 2, and 3	4

B	**Inside the nucleus**	**Outside the nucleus**
	1	**2, 3 and 4**
C	Inside the nucleus	Outside the nucleus
	1and 2	3 and 4

D	Inside the nucleus	Outside the nucleus
	2 and 3	1 and 4

8) The following diagram is a Rutherford-Bohr diagram of one element from the periodic table:



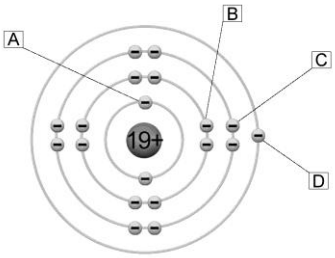
To which group and period does this element belong?

A) Period 3 group 4
B) Period 4 group 4
C) Period 3 group 1
D) Period 1 group 3

9) Complete the following sentence with one of the options given: ***"The valence electrons are those electrons situated _____ of the atom".***

A) on the first energy level
B) on the second energy level
C) on the third energy level
D) on the last energy level

10) In the atomic model of potassium below, ***which letter represents a valence electron?***



Potassium

ANSWER: D

11) Which one of the following Lewis structures is NOT a CORRECT representation?

a) boron 

b) sodium 

c) oxygen 

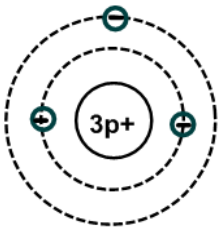
d) ***fluorine*** 

12) Elements situated in the same group display similar chemical properties because:

A) They have similar sizes
B) They have the same number of electron shells
C) They have the same number of valence electrons
D) They belong to the same period

13) The diagram on the right represents the Rutherford-Bohr atomic model of an element. ***Which of the following is true?***

A) The element is located in period 1 and is an alkaline earth metal.
B) The element is located in period 1 and is an alkali metal.
C) The element is located in period 2 and is an alkali metal.
D) The element is located in period 2 and is an alkaline earth metal.



14. To which chemical family do the following elements belong?

At, Br, I

a) inert gases b) alkaline earth ***c) halogens*** d) alkali metals

15. Which of the following series of elements represents the alkali metals family?

a) Fe, Co, Ni, Cu, Zn ***b) Li, Na, K, Rb, Cs*** c) F, Cl, Br, I, At d) Li, Be, C, N, O

Mark: ___ /20

PART 2 – EXTENDED ANSWERS

Answer all the questions in the space provided below. Show all your work

1) The lab technician in your school's Chemistry lab needs a sample of potassium (K) for an upcoming experiment; however, she does not have enough of the metal. Instead of cancelling the lab, she decides to find an alternative in her supply cupboard. After searching, she finds four possible substitutes:

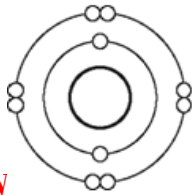
argon (Ar); calcium (Ca); fluorine (F); sodium (Na)

a) ***Which one of the elements listed above could she use as a substitute?***
Answer: ***SODIUM*** *(1p)*

b) ***Justify your answer.*** *(3p)*
SODIUM BELONGS TO THE SAME GROUP AS POTASSIUM, GROUP 1 A, BOTH ELEMENTS HAVE ONLY ONE VALENCE ELECTRON WHICH WILL EASILY DONATE IN CHEMICAL REACTIONS.
THEREFORE, BOTH ELEMENTS DISPLAY SIMILAR CHEMICAL BEHAVIOUR.

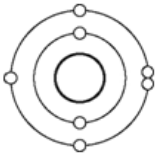
2) Four different elements are represented below according to the Rutherford-Bohr atomic model.
Write the name of each of the four elements on the line under the model.

A. *(1p)*



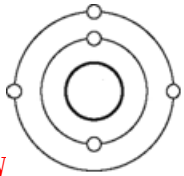
NEON

C. *(1p)*



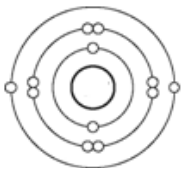
NITROGEN

B. *(1p)*



BORON

D. *(1p)*



MAGNESIUM

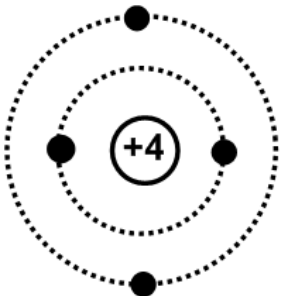
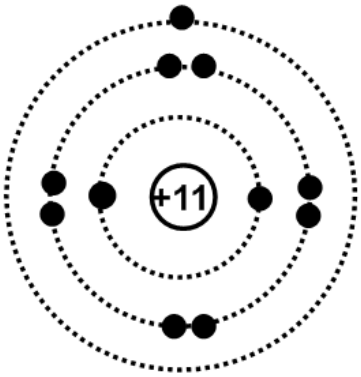
3) Where in the periodic table can you find the following: *(4p)*
(Specify the number of the group)

a) an alkaline earth metal? *(1p)* ***GROUP 2***
b) a noble gas? *(1p)* ***GROUP 8***
c) a halogen? *(1p)* ***GROUP 7***
d) an alkali metal? *(1p)* ***GROUP 1***

4) ***Draw a Lewis structure*** for each of the following elements. Remember to write the names of the elements.

a)I am a noble gas belonging to the third period. *(2p)*	b)I am the lightest halogen. *(2p)*
	
Name of element: ***ARGON***	Name of element: ***FLUORINE***

5) ***Draw a Rutherford-Bohr atomic model for each of the following elements. Write the names of the elements in the space provided.*** *(4p)*

a) I am the first element in the group of alkaline earth metals	b) I am an alkali metal with three electron shells.
	
Name of element: ***BERYLLIUM***	Name of element: ***SODIUM***