Evidence Portfolio
2nd Extraordinary Opportunity

Matter and its Transformations

Student's Name: _____

_____

ID Number: _____ Date: _____/ _____ / 2022

Teacher: _____Group: _____

This portfolio is part of the 60% of the grade. This value will be obtained as long as it complies with the following requirements:

1. Follow **the instructions provided by the teacher** for the filling out of this portfolio.
2. Write your **full identification data**.
3. **Upload and send** this portfolio **in PDF format**, the **day** and **time** the **teacher assigns it** in the team **Tasks section** of the corresponding **subject team in MS Teams**, where your teacher will check it.
4. **PLEASE ADD YOUR NAME ON EACH PAGE.**

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Instructions: Answer what is asked

STAGE 1 "COMPOSITION AND PROPERTIES OF MATTER"

1. **Chemistry focuses on the study of:**
   a) The structure of matter
   b) The changes occurring in matter
   c) The composition of matter
   d) All of the above are correct
2. **This person proposed the theory of the four elements, according to which the whole universe was composed of four main elements: water, earth, air, and fire:**
   a) Aristotle
   b) Democritus
   c) Empedocles
   d) Galileo Galilei
3. **They postulated the theory of atomism, which stated that matter could be subdivided into smaller and smaller parts until it reached a minimum size:**
   a) Leucippus and Democritus
   b) Democritus
   c) Empedocles y Aristotle
   d) Galileo Galilei

4. Match correctly the following columns.

( ) Matter	a) Any portion of matter that has a definite chemical composition that does not vary, even if the physical conditions in which it is found change.
( ) Pure substance	b) Combinations of two or more elements, which are joined together in a fixed and defined proportion by means of chemical bonding
( ) Element	c) Variable combination of two or more pure substances that do not combine chemically and retain their individual properties.
( ) Compound	d) Type of mixture that is formed from two or more phases, i.e., its components can be easily distinguished.
( ) Mixture	e) Everything that occupies a place in space, possesses mass and has the property of inertia.
( ) Homogeneous mixture	f) Type of matter constituted by the same type or class of atoms.
( ) Heterogeneous mixture	g) Type of mixture in which the components that form it are uniform, in other words, they form a single phase.

5. Classified the following examples as: Element, Mixture or Compound:

1.	Sugar cube	A.	Element
2.	Iron rod	B.	Mixture
3.	Gasoline	C.	Compound
4.	Zinc powder		

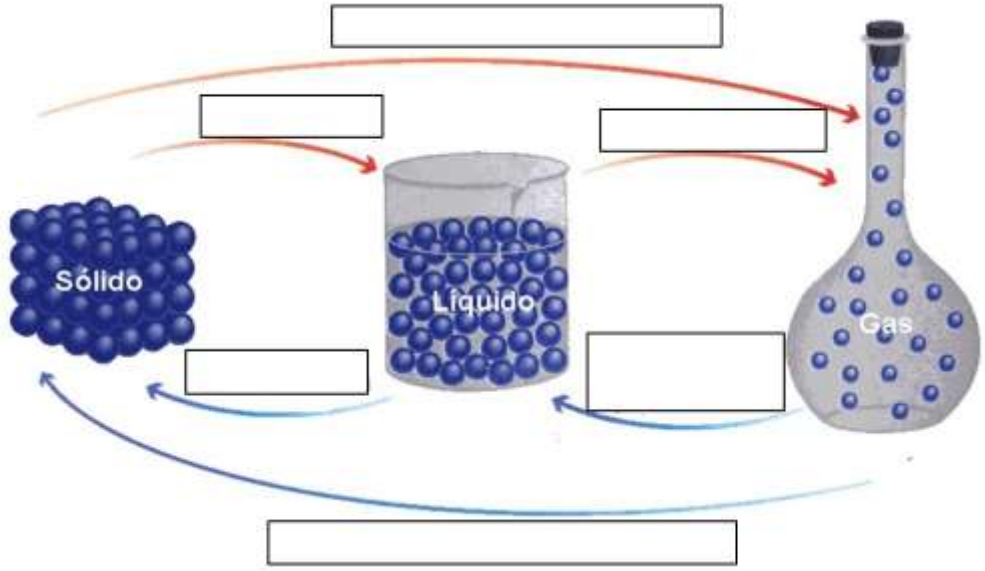
a) 1C, 2C, 3B, 4C
b) 1A, 2B, 3C, 4D
c) 1C, 2A, 3B, 4A
d) Ninguna es correcta

7. Match both columns classifying the Homogeneous and Heterogeneous mixtures

1.	Homogeneous	A.	Marble
2.	Heterogeneous	B.	Red wine
		C.	Wood
		D.	Steel

a) 1AD, 2BC
b) 1BD, 2AC
c) 1DC, 2BA
d) 1CA, 2BD

8. Fill in the boxes with the correct answer according to the change of state of aggregation of matter indicated:

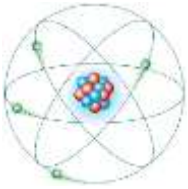
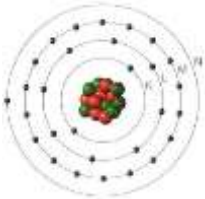
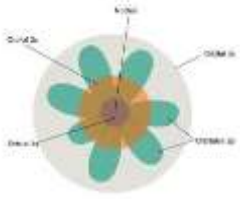


9. It is defined as the resistance of the entire material body or any change in its position or velocity.

a) Inertia
b) Melting
c) Viscosity
d) Density

STAGE 2: MATTER AT THE ATOMIC LEVEL

Complete the following table with the missing information about atomic models.

Year in which the model was proposed	Name of the scientist	Model	Description	Model representation
1808		Dalton's atomic theory		
1904			Considers the atom as a compact, homogeneous, and indivisible positively charged sphere in which electrons were embedded like raisins in a pudding.	
	Ernest Rutherford	Planetary model		
1913	Niels Bohr	Bohr's atomic model		
1926		Electron cloud model		

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They are atoms of the same chemical element that have the same number of protons and electrons but differ in the number of neutrons present in the nucleus, in other words, same atomic number, but different mass number.

a) Atom
b) Isotope
c) Element
d) Neutron

Fill in the missing information about isotopic notation and define:

Match the option that correctly describes the relationship between the type of subatomic particle and its characteristics.

I. Particle with charge +1 is located in the nucleus.
II. Neutral particle, located in the nucleus.
III. Particle with charge -1 is located around the nucleus.

A – Proton
B – Electron
C – Neutron

Complete the following table with the missing information:

Element	Isotopic notation	Atomic number	Mass number	Protons	Neutrons	Electrons
Cobalt			59			27
		8			9	
	$^{56}_{26}Fe$		56			
Mercury				80	122	
Chromium					26	24

STAGE 3: CHEMICAL ELEMENTS AND THE PERIODIC TABLE

¿What is an element?

_____
_____
_____

¿ What are the chemical symbols?

_____
_____
_____

These are the horizontal rows of the periodic table and indicate the energy levels of the atoms in their structure.

_____

These are the columns in the periodic table and indicate the electrons of each atom in its last energy level (valence electrons).

_____

Write the corresponding chemical symbol for each of the following elements and classify them into metals, nonmetals, and metalloids:

Element	Chemical symbol	Type
Silicon		
Mercury		
Boron		
Neon		
Calcium		
Chlorine		
Iron		

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Identify to which class of elements the following characteristics correspond:

( ) They have a metallic luster ( ) They are good conductors of heat and electricity. ( ) They are solid at room temperature (except mercury). ( ) They are not conductors of heat and electricity ( ) They have intermediate properties between metals and nonmetals. ( ) They form cations (positive ions). ( ) Their atoms form metallic bonds with each other. ( ) They have low melting and boiling points. ( ) They have a high melting point. ( ) They form anions (negative ions). ( ) They are malleable and ductile. ( ) They are semiconductors.	a) Metals b) No metals c) Metalloides

Match correctly the following columns:

( ) It is the distance that exists between the nucleus and the outermost orbital of an atom. ( ) It is the number of elements that form the updated periodic table. ( ) The property of the atom of an element to attract the electrons of another element when it forms a chemical bond in a molecule. ( ) Corresponds to the number of protons in the nucleus of the atom and is responsible for its positive nuclear charge. ( ) It reflects the capacity of an atom to accept an electron. ( ) It is the minimum energy required to remove an electron from a gaseous atom and convert it into a positive gaseous ion.	a) 118 elements b) Atomic number c) Electronic affinity d) Atomic radius e) Ionization energy

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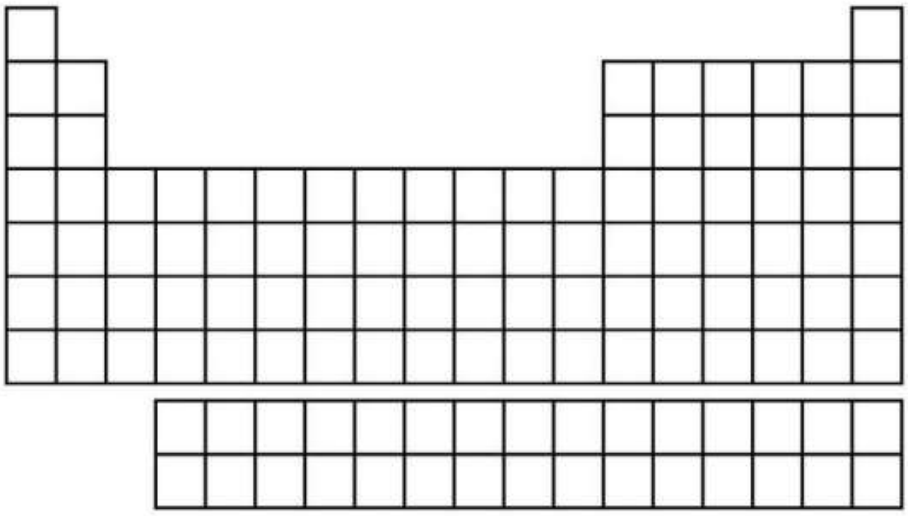
Indicate, with arrows, in the following periodic table the behavior of the periodic properties, in other words, how the values of atomic radius, ionization energy, electronic affinity, electronegativity and metallic character increase or decrease through the periodic table.



Match correctly the following columns according to the distribution of the elements in life and the environment:

( ) The most abundant elements are hydrogen (85%) and helium (15%). ( ) It is the most external part of the planet, it is a gaseous layer that reaches approximately 11 kilometers from sea level; the most abundant elements are nitrogen, oxygen and argon. ( ) The most abundant elements are oxygen, silicon, iron, aluminum and calcium. ( ) The most abundant elements (in their ionic form) are chlorine, sulfur, sodium, magnesium and calcium. ( ) The most abundant elements are oxygen, carbon, hydrogen, nitrogen, phosphorus, sulfur (CHONPS).	a) Terrestrial atmosphere b) Earth's crust c) Oceans and rivers d) Human body e) Solar System

STAGE 4: INORGANIC CHEMICAL COMPOUNDS

1. Chemical compounds can be formed naturally or artificially. Write 3 examples of each.

Natural compounds	Artificial compounds

2. According to the number of elements that constitute them, compounds are classified as binary, ternary and polyatomic. Write two examples of each.

binary	
ternary	
polyatomic	

3. Answer the following questions correctly:
   Refers to the ability of the nucleus of an atom to attract electrons when forming a chemical bond: _____
   They are the subatomic particles that we pay most attention to during chemical bonding between two or more atoms: _____

4. Match correctly the characteristics to the type of chemical bond.

( ) It is established by the sharing of electron pairs between atoms of similar electronegativities.	A) Covalent Polar B) Metallic C) Ionic D) Non-polar Covalent
( ) It is formed by electrostatic attraction between ions of opposite charges.	
( ) It is established by unequal sharing of electron pairs between atoms of different electronegativities.	
( ) It is the bond present in materials such as aluminum, copper, brass, among others.	

5. What is an anion? _____

6. What is a cation? _____

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Analyze carefully the following table and select the answer option that links the compounds to their classification. In the parenthesis you must write the element number and the letter of the classification by chemical function.

Some compounds around us		Classification by number of elements	Classification by chemical function
7.	Carbon dioxide, CO2, which provides effervescence to carbonated drinks ( )	1. Binary 2. ternary 3. Polyatomic	A. Acid B. Base C. Salt D. Oxid
8.	Sodium bicarbonate, NaHCO3, toothpaste component ( )		
9.	Potassium hydroxide, KOH, used in the manufacture of soaps. ( )		

Remember that when two elements combine, the difference in their electronegativities determines the type of chemical bond that is established between them. Using the electronegativity values in the following table, determine the type of bond established between the elements in the following questions.

Element	H	Cl	F	K	Br
Electronegativity	2.1	3.0	4.0	0.8	2.8

10. ( ) H-F
11. ( )K-Br
12. ( )H-H

a) Metallic
b) Ionic
c) Non-Covalent Polar
d) Covalent Polar

Determine the type of bond present in the following substances

13. ( ) KCl
14. ( ) CO
15. ( ) Br_2
16. ( ) KF

A) Covalent Polar
B) Ionic
C) Non-Covalent Polar

Element	C	Cl	F	K	Br	O
Electronegativity	2.5	3.0	4.0	0.8	2.8	3.5

17. Match the following columns:

A. Nomenclature stock B. Systematic method C. Chemical nomenclature D. Traditional method	( ) It is the way of writing the names and formulas of chemical compounds, so that everyone in the world can know what the compound is. ( ) It uses prefixes and suffixes to indicate the oxidation states of the atoms involved in a chemical formula for elements that have more than one oxidation number. ( ) Use numerical prefixes to indicate the number of atoms of the elements involved in a chemical formula. ( ) Use ionic compounds and indicate with Roman numerals, the oxidation number of the metal cations involved in a chemical formula.

18. Write the main characteristics of acids, oxides, salts, and bases.

Acids	
Oxides	
Salts	
Bases	

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RÚBRICA

	Nivel Muy Bueno **60 PUNTOS**	**Nivel Bueno** **45 PUNTOS**	**Nivel Suficiente** **30 PUNTOS**	**Nivel Insuficiente** **15 PUNTOS**
Criterio: -Integra todos los conceptos solicitados. -Contesto correctamente las actividades solicitadas. -Lo elaboró a mano, según lo solicitado en la actividad. -Incluyó una portada con los datos solicitados y fue entregado a tiempo.	Integra **todas las actividades solicitadas**. -Todas las actividades contestadas correctamente y tomadas del libro de texto. -Elaborado a mano según lo solicitado en la actividad. -Cuenta con portada con los datos solicitados y fue entregado a tiempo.	Integra la **mayoría** las actividades solicitadas. - Casi todas las actividades contestadas correctamente y tomadas del libro de texto. -Elaborado a mano y cumplen la mayoría de lo solicitado en la actividad. -Cuenta con portada con los datos solicitados y fue entregado a tiempo.	Integra la **mitad** las actividades solicitadas. - Solo algunas actividades contestadas correctamente y tomadas del libro de texto. -Elaborado a mano y cumplen con algo de lo solicitado en la actividad. -Cuenta con portada con los datos solicitados y fue entregado a tiempo.	**No logra integrar la mitad** las actividades solicitadas. -La mayoría de las actividades no fueron contestadas correctamente y algunas no fueron tomadas del libro de texto. -Elaborado a mano y no cumplen lo solicitado en la actividad. -Cuenta con portada con los datos solicitados y fue entregado a tiempo.

Bibliografía:

La Materia y sus Transformaciones. Editorial Laurel, 1ra edición, México 2019.