



EVIDENCE PORTFOLIO

2nd EXTRAORDINARY OPPORTUNITY

MATTER AND ITS TRANSFORMATIONS

Student Name: _____

Group: _____

Student ID: _____ Date: _____

Teacher: _____

This portfolio is worth **50%** of your final grade. This value will be obtained as long as the following requirements are met:

1. Write your complete identification information.
2. The portfolio must be submitted in printed form on the day of the exam.

FOLLOW THE INSTRUCTIONS PROVIDED BY YOUR TEACHER FOR COMPLETING THIS PORTFOLIO.

ATTENTION!!!

Plagiarism and the sale of academic material contained in this portfolio will be sanctioned according to University Regulations.

Learning Unit Objective

The primary objective of the Learning Unit (LU) on Matter and Its Transformations is the study, understanding, and application of the basic principles that govern the behavior of matter. This will provide a solid foundation that helps explain certain chemistry-related events or phenomena occurring in our environment. To achieve this, the following theoretical content is covered within the LU:

- **Fundamentals of Chemistry.** This section covers the most relevant aspects related to matter, energy, and the relationship between chemistry and other sciences.
- **Atomic structure and chemical elements.** This section analyzes the main atomic theories, the components of an atom's structure, and the various associated theoretical concepts. In addition, the interaction between matter and energy, the development of electronic configuration, and the main chemical elements present in the environment are studied.
- **Periodic Table and Chemical Bonds.** The course examines the key historical developments that led to the creation of the periodic table and the organization of the modern periodic table. Furthermore, the classification and properties of chemical elements are addressed, as well as the main types of chemical bonds.
- **Formulation of inorganic chemical compounds.** The main types of inorganic compounds are identified and classified. Additionally, the analysis and application of the different rules of chemical nomenclature for inorganic compounds are included.

General policies proposed by the faculty
for the Learning Unit

1. The student will perform each of the activities embodied herein in accordance with the instructions included herein.
2. The student must deliver the corresponding activities on the date and in the format requested by the teacher.
3. Only the teacher who taught the learning unit in the first opportunity will be responsible for assigning the corresponding points to the portfolio of activities. No other teacher can modify the number of points assigned in the second Chance portfolio.
4. Submitting all the activities is not a guarantee that the student will obtain the total of the corresponding points. This is because the teacher must review and evaluate the activities using an assessment instrument; this is in order to assign the points corresponding to the portfolio of activities.
5. If the student incurs plagiarism of all portfolio activities, then the latter will be invalidated. Likewise, if you plagiarize some sections of the portfolio, then these will be invalidated.
6. The delivery of a different version of the portfolio will be cause for automatic nullity of the document delivered.
7. Failure to read the policies of the academy, as well as the instructions for the resolution and preparation of this portfolio, does not take away the responsibility of the student and the impact that this could generate on the grade obtained.
8. It is the student's responsibility to contact the instructor in advance to clarify any questions they may have regarding the portfolio assignments, the due date, and the submission format. It should be noted that the instructor, to the extent of their availability, must provide guidance to the student, provided the student requests it in advance.
9. Failure to read the academy's policies, as well as the instructions for completing this portfolio, does not relieve the student of their responsibility or mitigate the impact this may have on their final grade.

Student's full name or signature

**Signature of the student's father, mother,
or legal guardian**

General instructions

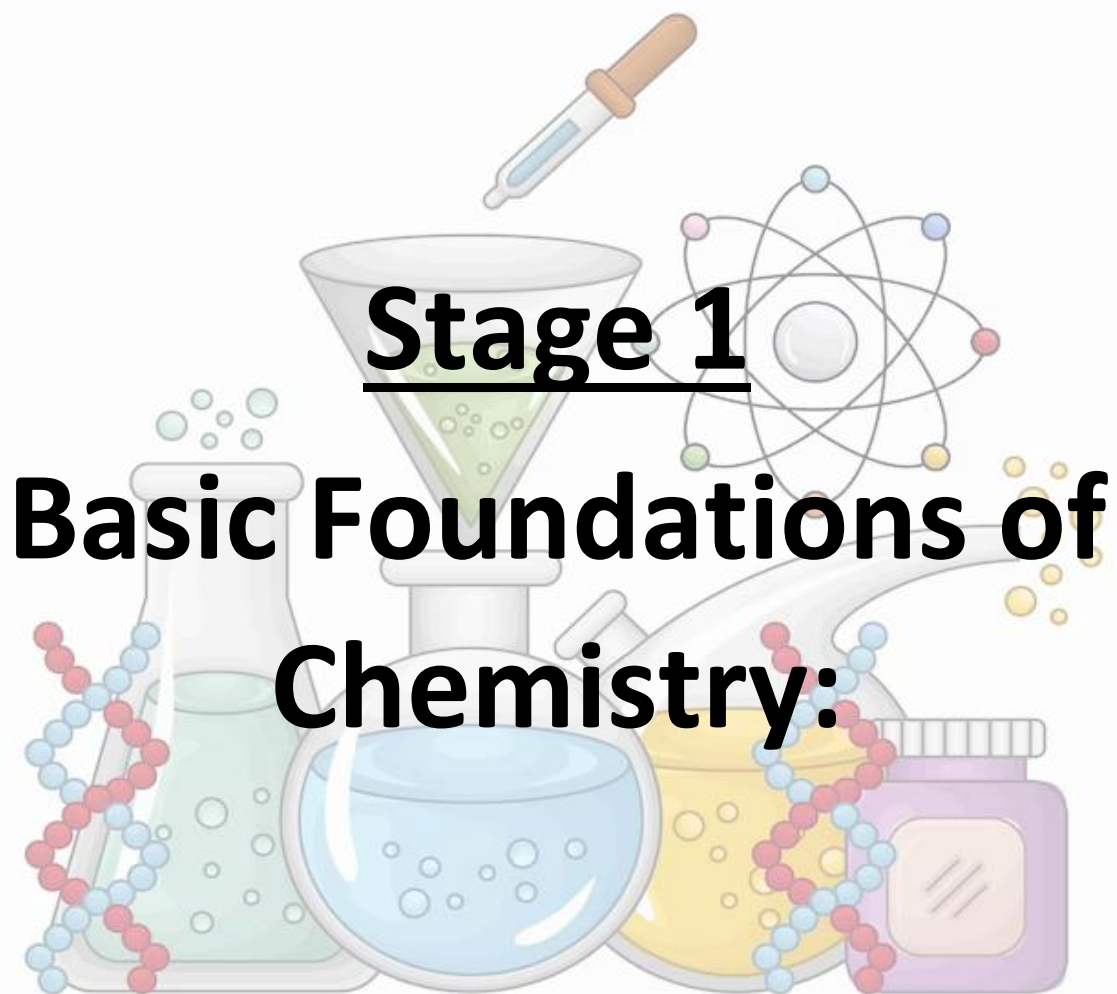
Please read the following instructions very carefully.

- The portfolio must be completed entirely by hand using a blue ink pen. In addition, students must write their full name on every page of the portfolio.
- Each section of the portfolio contains an assessment rubric, which the student must read to meet all assessment criteria.
- The portfolio will only be accepted in the format specified by the academic department. To this end, the student must consult with the instructor or the Department of Academic Development (DECA).
 - a) If the academic department requests the portfolio in physical format, the student must submit it on the day of the make-up exam to the instructor administering the exam.
 - b) If the academic department requests the portfolio in digital format. The student must submit it on the day of the second-chance exam to a folder in MS Teams that the instructor must create.
 - c) If the portfolio is requested in digital format, the file name must follow the following format.

Port2aOp_LMyT_Initials of the student's full name.
- Students must follow the instructions, meet the deadline, and submit the portfolio in the required format.

Activity Portfolio Scoring

STAGE	POINTS
Stage 1	12.5 points
Stage 2	12.5 points
Stage 3	12.5 points
Stage 4	12.5 points
Total	50 points



Stage 1

Basic Foundations of Chemistry:

Dimension 1

Instructions: As a diagnostic activity, answer each of the following questions about the basic principles of chemistry.

1-What is the basis or foundation upon which chemistry makes its claims?

A=

2-What is the difference between a pure substance and a mixture?

A=

3-What are the chemical properties of matter?

A=

4-List at least three examples of non-renewable energy sources found in the environment.

A =

Dimension 2

Instructions: Correctly define each of the following concepts.

Chemistry

Matter

Pure substance

Mixture

Homogeneous mixture

Heterogeneous mixture

Element

Compound

Physical properties

Chemical Properties

Physical changes

Chemical changes

Solid

Liquid

Gas

Plasma

Energy

General properties

Specific properties

Renewable energy

Porosity

Weight

Mass

Volume

Inertia

Density

Dimension 3

Part I:

Instructions: Create a hand-drawn concept map on the classification of matter. The concept map should include the various states of matter found in the environment, along with their corresponding definitions and at least three examples for each state of matter.

Part II:

Instructions: Carefully analyze each of the following examples and indicate whether it corresponds to a general property or a specific property, as appropriate. If it is a specific property, indicate whether it is a physical or chemical property.

Example	General or specific property	Physical or chemical property
Density		
Oxidation		
Weight		
Reactivity		
Melting point		
Boiling point		
Mass		
Volume		
Combustion		
Sublimation		
Basicity		
Hardness		
Impermeability		
Solubility		
Inertness		
Porosity		
Color		

Part III:

Instructions: Complete the following comparison chart on the relationship between chemistry and other sciences. In addition, you must include at least two examples from everyday life for each science.

Science	Relationship with chemistry and examples from everyday life
Physics.	
Biology	
Mathematics	
Engineering	
Agricultural	
Medicine	

Dimension 4

Part I:

Instructions: Create drawings by hand or, if applicable, include images that depict or refer to changes in the state of matter. Each drawing or image must include the name of the change in state and a corresponding description. Additionally, you must indicate whether each change is endothermic or exothermic, as appropriate.

Part II:

Instructions: Read the following questions carefully and write the correct answers, as appropriate.

1- What is the difference between renewable and non-renewable energy and include at least three examples for each type of energy?

R=

2- What is the difference between electrical energy and light energy?

R=

3- Mention the main examples of basic or fundamental energies.

R=

4- Describe the interaction between matter and energy in order to carry out the development of a physical or chemical change.

R=

5- Describe the main environmental consequences derived from the use of non-renewable energies.

R=

Part III:

Instructions: Hand-draw concept maps for each of the topics listed below. Each concept map must include the corresponding definitions.

Topics for the concept maps

- Physical states or states of matter
- Methods for separating mixtures

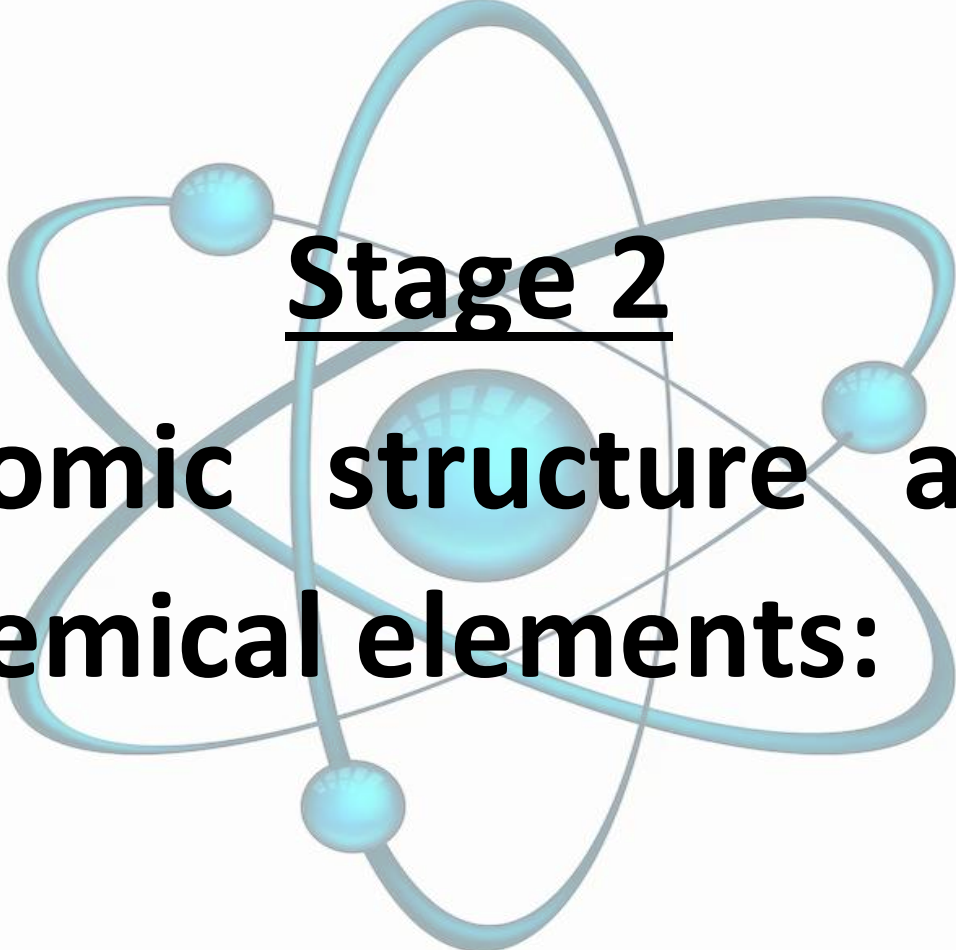


Academy of Chemistry
Matter and its Transformations
Stage 1



Evaluation instruments:

General activities			
Criteria	Conforms	Does Not Meet	Score
Student correctly defined all requested concepts.			2 point
The student made the graphic organizer regarding the overall classification of the subject. He included the most relevant concepts related to the topic and included the definitions of each of the concepts.			1 point
The student correctly ranked general, specific, physical, and chemical properties in each of the examples provided.			2 point
The student completed the comparative table about the main sciences that have a relationship with chemistry and included the requested examples.			1 point
The student drew or placed images alluding to the main changes in the physical state of the subject. Each image contains the name of the type of change, is consistent or relevant, and correctly indicated whether each change is of an endothermic or exothermic type, as appropriate.			1 point
Student answered all requested questions correctly.			1 point
The student developed the conceptual map on the main physical states of matter. In addition, all information is correct.			1 point
The student developed the concept map on the main methods of separation of mixtures. In addition, all information is correct.			1 point
All activities were carried out following specific instructions, in order, with cleanliness and were delivered in a timely manner.			2.5 points
			Total score 12.5 points



Stage 2

**Atomic structure and
chemical elements:**

Dimension 1

Instructions: As a diagnostic activity, answer each of the following questions about atoms and chemical elements.

1-What is the difference between an atom and a molecule?

R=

2-What is Dalton's atomic theory?

R=

3-What is radioactivity and who first coined the concept?

R=

Dimension 2

Part I:

Instructions: Draw by hand or place images referring to the main theories and atomic models that are indicated to you. In addition, it is necessary to make the corresponding description of each atomic theory or model, including the name of the scientist who proposed it.

Main atomic theories and models:

- Dalton's Atomic Theory
- JJ Thompson's Atomic Model
- Bohr's Atomic Model.
- Rutherford's Atomic Model

Part II:

Instructions: Draw a drawing of the electromagnetic spectrum by hand, indicating the main regions that make up it and also including the main examples of the types of radiation that can be found in each area of the electromagnetic spectrum. It will also indicate in which regions the high and low energy radiation is located.

Part III:

Instructions: Complete the following comparison chart about the main parts that make up atoms.

	Location	Mass	Electrical load
Proton			
Neutron			
Electron			
Orbital			

Dimension 3

Part I

Instructions: Determine the electronic configuration for each of the following chemical elements.

a) I

b) Mg

c) Pb

d) Fe

e) Cr

f) Hg

Part II

Instructions: Solve each of the following problems correctly. **You must include the mathematical steps;** failure to do so will result in the assignment being invalidated.

The atom of a recently discovered element has an atomic number of 115 and a total of 65 neutrons. Determine the mass number and the number of electrons in the atom.

An atom of the element iodine has a mass number of 127 and a total of 53 electrons. Calculate the atomic number and the total number of neutrons present in the iodine atom.

The element palladium has a total of 46 electrons and a total of 60 neutrons. Determine the mass number and atomic number of this chemical element.

An atom of the chemical element chromium has a mass number of 53 and an atomic number of 24. Calculate the total number of neutrons and electrons in the chromium atom.

Silicon is a chemical element that has a total of 14 electrons and 14 neutrons. Determine the values for the mass number and atomic number of this element.

An atom of the element astatine has a total of 125 neutrons and a mass number of 210. Determine the total number of electrons, as well as its corresponding atomic number.

Dimension 4



Part I

Instructions: Create a concept map on the topic of radioactivity. The concept map should include the following points:

- Concept and definition of radioactivity
- Major scientific discoveries related to radioactivity, as well as the scientists who made them
- Concept and definition of alpha, beta, and gamma rays

Part II

Instructions: Write a summary by hand about the origin of the chemical elements. In addition, the summary should also discuss the main chemical elements found in the atmosphere, the Earth's crust, and the human body. Finally, the summary should include a reflection on the importance of chemical elements in everyday life. The summary must be at least one full page long and should be pasted into this section.

 Academy of Chemistry Matter and its Transformations Stage 2 			
Evaluation instruments:			
General activities			
Criteria	Conforms	Does Not Meet	Score
The student placed or made images alluding to the main theories and atomic models. In addition, drawings or images are relevant and include the information requested in the instructions.			1 point
The student made the drawing of the electromagnetic spectrum, which contains all the information requested regarding its main regions, examples of radiation in each region and the types of radiation depending on the amount of energy.			1 point
The student completed the comparison table about the main parts that make up the atoms.			1 point
Student successfully performed electronic configuration for all requested chemical elements.			2 points
The student correctly resolved all problems related to mass number, atomic number, and subatomic particle calculation. In addition, all problems included the corresponding mathematical procedure.			2 points
The student made the graphic organizer related to the topic of radioactivity and the information captured is correct.			2 points
The student made the chemical summary. The summary was prepared by hand, has a minimum length of one full sheet and all the information it contains agrees with what was requested.			1 point
All activities were carried out following specific instructions, in order, with cleanliness and were delivered in a timely manner.			2.5 points
			Total score 12.5 points

Stage 3

**Periodic Table and
Chemical Bonds**

1	2																	18																		
1	H																	He																		
2	3	Li	4	Be											5	B	6	C	7	N	8	O	9	F	10	Ne										
3	11	Na	12	Mg											13	Al	14	Si	15	P	16	S	17	Cl	18	Ar										
4	19	K	20	Ca	21	Sc	22	Ti	23	V	24	Cr	25	Mn	26	Fe	27	Co	28	Ni	29	Cu	30	Zn	31	Ga	32	Ge	33	As	34	Se	35	Br	36	Kr
5	37	Rb	38	Sr	39	Y	40	Zr	41	Nb	42	Mo	43	Tc	44	Ru	45	Rh	46	Pd	47	Ag	48	Cd	49	In	50	Sn	51	Sb	52	Te	53	I	54	Xe
6	55	Cs	56	Ba	57-71	72	Hf	73	Ta	74	W	75	Re	76	Os	77	Ir	78	Pt	79	Au	80	Hg	81	Tl	82	Pb	83	Bi	84	Po	85	At	86	Rn	
7	87	Fr	88	Ra	89-103	105	Rf	106	Db	107	Sg	108	Bh	109	Hs	110	Mt	111	Ds	112	Rg	113	Cn	114	Nh	115	Fl	116	Mc	117	Lv	118	Og			
						57	La	58	Ce	59	Pr	60	Nd	61	Pm	62	Sm	63	Eu	64	Gd	65	Tb	66	Dy	67	Ho	68	Er	69	Tm	70	Yb	71	Lu	
						89	Ac	90	Th	91	Pa	92	U	93	Np	94	Pu	95	Am	96	Cm	97	Bk	98	Cf	99	Es	100	Fm	101	Md	102	No	103	Lr	

Dimension 1

Instructions: As a diagnostic activity, answer each of the following questions about the periodic table and chemical bonds.

1-What is the periodic table?

A=

2-What are the main periodic properties of chemical elements?

A=

3-What is a chemical bond?

A=

4-What is the difference between a covalent bond and an ionic bond?

A=

Dimension 2

Part I

Instructions: Draw a periodic table by hand, highlighting the following points:

- s, p, d, and f blocks
- Representative element groups (IA through VIIA)
- Location of the metalloids
- Location of the noble gases

Part II

Instructions: Draw a periodic table by hand that includes the following elements.

- Highlight in blue the groups or families of the periodic table where the metallic elements are located.
- Highlight in yellow the groups or families of the periodic table where the nonmetallic elements are located.
- Highlight in pink the periods that make up the periodic table.

Dimension 3

Part I:

Instructions: Complete the following comparison table on the main types of chemical bonds.

Chemical Bond Type	Description	Electronegativity values
Ionic bond		
Covalent bond non-polar		
Polar Covalent Bond		

Part II

Instructions: For each of the following cases, determine the type of chemical bond based on the calculation of the electronegativity values. You must include the mathematical procedure used to calculate the electronegativity values. **If you do not do so, the assignment will not be considered valid.**

If a chemical bond is formed between a carbon atom (2.5) and an oxygen atom (3.5), calculate the bond electronegativity based on the assigned electronegativity values and specify the type of chemical bond that is formed.

If a sulfur atom (2.5) reacts with or bonds to a hydrogen atom (1.0), based on the calculation of the electronegativity values, indicate what type of bond holds the atoms of both chemical elements together.

When a nitrogen atom (3.0) bonds with a sodium atom (0.9) through a chemical bond, what type of chemical bond will form based on the calculation of the electronegativity values?

In a laboratory, chlorine atoms (3.0) react with hydrogen atoms (1.0). Using the electronegativity values, determine the type of chemical bond that will form to hold these elements together.

When iron atoms (1.8) react with oxygen atoms (3.5), a chemical compound called ferric oxide is formed. Applying the electronegativity calculation, what type of bond will hold the iron and oxygen together in the new compound?

If a bromine atom (2.8) bonds with another bromine atom, based on the calculation of electronegativity, what type of chemical bond would have formed to hold the bromine atoms together?

Dimension 4**Part I**

Instructions: Match each of the following concepts with its corresponding statement.

1. Dimitri Mendeleev
2. Periodic Table
3. Hydrogen Bond
4. Chemical Bond
5. Metals
6. Halogens
7. Hydrogen Bond
8. Noble Gases
9. Atomic Radius
10. Semimetals or metalloids
11. Electronegativity
12. Groups or families
13. Periods
14. Electron affinity
15. Blocks of the periodic table
16. Nonmetals
17. Ionization energy

It is defined as an organized system that groups or classifies chemical elements. ()

It refers to the average distance between the nuclei of atoms of the same element. ()

Elements in the periodic table that have properties intermediate between those of a metal and a nonmetal. ()

The name given to the horizontal columns that make up the periodic table. ()

A bond formed by the interaction between an oxygen atom and a hydrogen atom. ()

A scientist considered the father or pioneer of the modern periodic table. ()

The amount of energy required to remove an electron from the atom of an element in the gaseous state. ()

Elements that exist in the environment as solids, liquids, and gases; they do not conduct heat or electricity. Furthermore, they are not lustrous and are not malleable. ()

The force responsible for holding the atoms of elements together in a compound. ()

The name given to the vertical columns that make up the periodic table. ()

s, p, d, f ()

These are chemical elements that exist in a solid state; they are malleable, ductile, lustrous, and conduct heat and electricity. ()

This is the ability or ease with which an atom of an element can attract electrons from an atom of another element. ()

Helium, neon, argon, krypton, xenon, and radon. ()

A property that describes an atom's ability to accept or retain electrons from an atom of another element. ()

A type of bond formed by the interaction between an oxygen atom and a hydrogen atom. ()

Fluorine, chlorine, bromine, and iodine. ()

Part II

Instructions: Carefully read each of the following scenarios and answer the questions based on the different periodic properties of the chemical elements.

- 1- If you have lithium, potassium, sodium and hydrogen atoms. Which of them will have the highest electronic affinity?

R=

- 2- If you have atoms corresponding to the elements chlorine, fluorine, iodine and bromine. Which of them is most electronegativity?

R=

- 3- If you have atoms of the elements boron, fluor, cabon and nitrogen. Which of these elements will have the least ionizing energy?

- 4- If you have atoms corresponding to the elements carbon, germanium, silicon, strontium and germanium. Which of these elements will have the greatest atomic radius?

R=

- 5- If you have atoms of the elements calcium, barium, strontium and radium. Which of these items will have less electronegativity?



R=

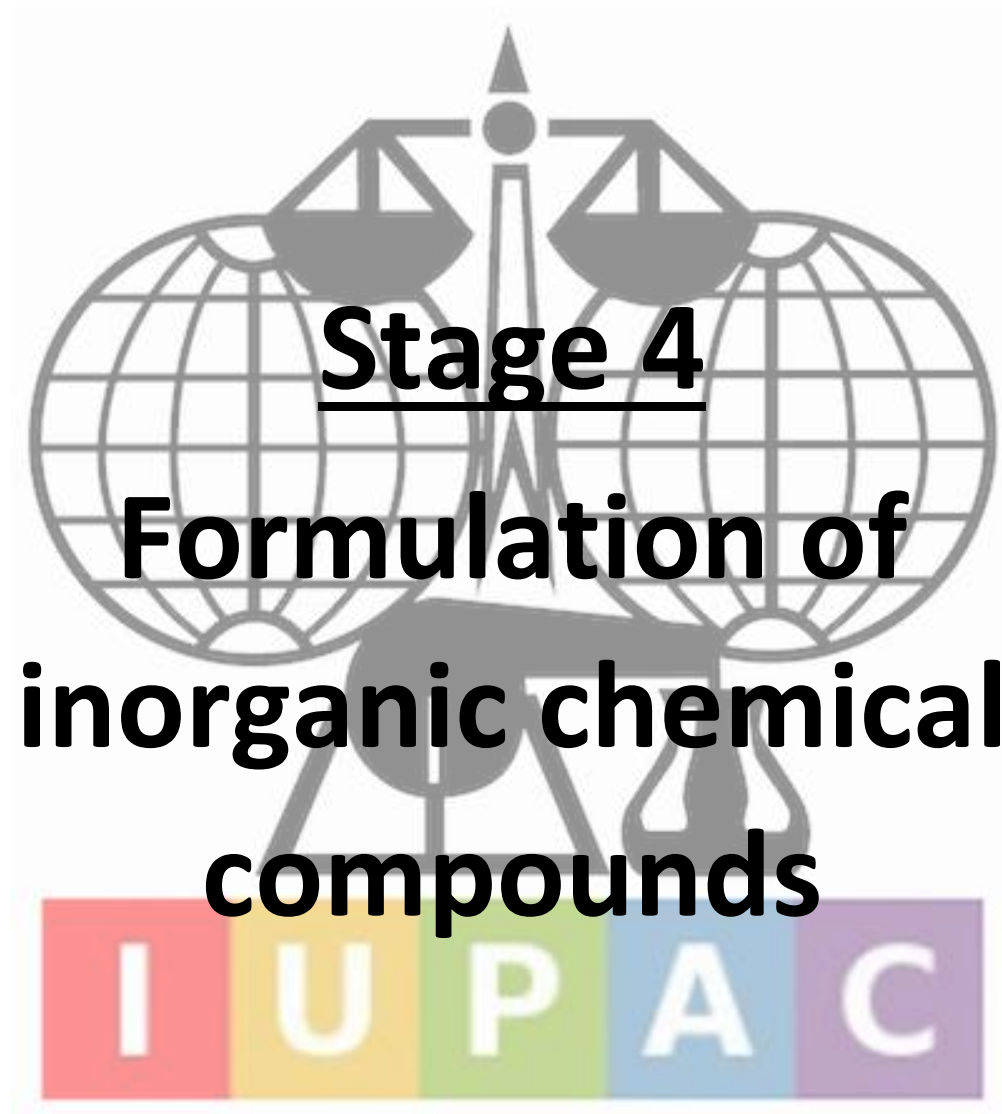
- 6- If you have atoms of the elements oxygen, sulfur, selenium, tellurium and polonium. Which of these chemicals will have the greatest electronegativity?

R=

- 7- If you have atoms belonging to the gallium, Indian, thallium and arsenical elements. Which of the aforementioned chemical elements will have the lowest electron affinity?

R=

 Academy of Chemistry Matter and its Transformations Stage 3 			
Evaluation instruments:			
General activities			
Criteria	Conforms	Does Not Meet	Score
The student drew the periodic table, which indicates the main blocks of the periodic table, the location of the semimetals and the noble gases.			1 point
The student drafted the periodic table, indicating the families or groups in which the metals and non-metals are located. It also indicated the location of the main periods that are part of the periodic table.			1 point
The student completed the comparison chart about the classification of the main chemical bonds. In addition, the data corresponding to the main electronegativity values for each type of link was included.			1 point
The student correctly performed each of the requested calculations regarding electronegativity values and their relationship to chemical bonds. In addition, each of the problems includes the corresponding mathematical operations.			2 points
The student correctly matched each of the concepts to their respective statement.			2 point
The student correctly resolved each of the exercises related to the major periodicals of the chemicals.			2 points
All activities were carried out following specific instructions, in order, with cleanliness and were delivered in a timely manner.			3.5 points
			Total score 12.5 points



Stage 4

Formulation of inorganic chemical compounds

Dimension 1

Instructions: As a diagnostic activity, answer each of the following questions about inorganic chemical compounds.

1-What is an inorganic chemical compound?

A=

2-Name the main international organization responsible for enforcing the rules of chemical nomenclature.

A=

3-What is the difference between an acid and a base?

A=

4-What is the difference between a salt and an oxide?

A=

Dimension 2

Instructions: Create a graphic organizer related to the classification of chemical compounds, based on their chemical function or activity and also on the number or quantity of elements they contain. The graphic organizer must include definitions and at least three examples of each type of compound in each of the requested classifications.

Dimension 3**Part I**

Instructions: Carefully analyze each of the following compounds and indicate whether they are binary, tertiary, or polyatomic compounds.

Chemical compound	Type of compound based on the number of chemical elements it contains
NaHCO ₃	
CaF ₂	
H ₃ PO ₄	
H ₂ O	
PO ₄	
H ₂ O ₂	
LiOH	
CuSO ₄	
NaI	
ZnO	
KMnO ₄	
NH ₄ OH	

Part II

Instructions: Carefully analyze each of the following compounds and indicate whether they are acids, bases, salts, or oxides.



Chemical compound	Type of compound based on chemical activity (acid, base, salt, oxide)
AsO ₃	
FeCl ₂	
HNO ₃	
Ca(OH) ₂	
MnO ₂	
NaCO ₃	
Al(OH) ₃	
HClO ₄	
CuF ₂	
CO ₂	
H ₃ PO ₄	
NH ₄ OH	

Dimension 4

Instructions: Write a handwritten summary of at least one page on inorganic chemical compounds, emphasizing the following points.

- Definition of an inorganic chemical compound.
- Binary, ternary, and polyatomic compounds (classification and examples of their chemical formulas).
- Classification of chemical compounds based on their chemical activity (acids, bases, salts, and oxides).
- Importance of inorganic chemical compounds in everyday life.

The summary should be included in this section of the activity portfolio.

 Academy of Chemistry Matter and its Transformations Stage 4 			
Evaluation instruments:			
General activities			
Criteria	Conforms	Does Not Meet	Score
The student developed the graphic organizer about the classification of chemicals. In addition, the information included corresponds to the established indications.			3 points
The student correctly classified all chemical compounds based on the number of elements that make them up.			3 points
The student correctly classified all chemical compounds based on their chemical function or activity (acids, bases, salts, and oxides).			3 points
The student prepared the summary on inorganic chemicals, which has an extension of one quartile and the information corresponds to what was requested in the instructions.			1 point
All activities were carried out following specific instructions, in order, with cleanliness and were delivered in a timely manner.			2.5 points
			Total score 12.5 points

Prepared by: MC. Eduardo López Martínez (Coordinator)

Approved by: Members of the Chemistry Department

Verified by: Teaching Support and Development Office

Validated by: ME. Nancy Elvira Tenorio Garza (Academic Secretary)