



# PORTAFOLIO DE EVIDENCIAS

2DA OPORTUNIDAD EXTRAORDINARIA

## Matter and its Transformations

**Nombre del estudiante:** \_\_\_\_\_

**Matrícula:** \_\_\_\_\_ **Grupo:** \_\_\_\_\_

**Docente:** \_\_\_\_\_

**Fecha:** \_\_\_\_\_

El presente portafolio forma parte del 50% de tu calificación. Este valor se obtendrá siempre y cuando cumpla con los siguientes requisitos:

1. Escribe tus datos de identificación completos.
2. Adjunta el portafolio en la Plataforma Ms Teams en formato PDF, el día y hora que el docente asigne la tarea correspondiente a la segunda oportunidad; no olvides agregar tu nombre completo en cada hoja.
3. Verifica el envío correcto del portafolio.

**SIGUE LAS INSTRUCCIONES BRINDADAS POR TU MAESTRO PARA EL LLENADO DE ESTE PORTAFOLIO.**

**¡ADVERTENCIA!**

**El plagio y comercio de material académico contenido en este portafolio será sancionado en los términos de la Legislación Universitaria.**

## Learning Unit Objectives

The main objective of the Learning Unit (LU) of Matter and its Transformations is the study, understanding, and application of the basic principles that govern the behavior of matter. This will allow us to have solid bases that contribute to provide explanations for certain events or phenomena that occur in our environment related to Chemistry. In order to comply with the above, the following theoretical contents are addressed within the LU:

- **Basic fundamentals of chemistry:** The most relevant aspects related to matter, energy and the relationship between chemistry and other sciences are addressed.
- **Atomic structure and chemical elements:** The main atomic theories, the parts that make up the structure of an atom and associated theoretical concepts are analyzed. In addition, the interaction of matter and energy, the development of the electronic configuration and the main chemical elements present in the environment are studied.
- **Periodic table and chemical bonds:** The main historical antecedents that led to the emergence of the modern periodic table and the organization of the periodic table are studied. On the other hand, the classification and properties of the chemical elements are discussed, as well as the main types of chemical bonds.
- **Formulation of inorganic chemical compounds:** The main inorganic compounds are identified and classified. In addition, the analysis and application of the different rules of chemical nomenclature for inorganic compounds is included.

**General policies proposed by the academy**  
**for the Learning Unit**

1. The student will perform each of the activities embodied in this document in accordance with the instructions included in this document.
2. The student must submit the corresponding activities on the date and in the format requested by the teacher.
3. Submitting all the activities is not a guarantee that the student will obtain the total of the corresponding points. This is due to the fact that the teacher must review and evaluate the activities by applying an evaluation instrument and, based on this, the points obtained in each stage will be established.
4. If the student incurs in the plagiarism of all the activities of the portfolio, then the latter will be invalidated. Likewise, if the student plagiarizes some sections of the portfolio, these will be invalidated.
5. Submitting a different version of the portfolio will be cause for automatic invalidation of the submitted document.
6. It is the student's responsibility to ensure that the portfolio is correctly uploaded to the digital platform.
7. Failure to read the policies of the academy, as well as the instructions for the resolution and elaboration of this portfolio, does not remove the responsibility of the student and the impact that this could generate in the grade obtained.

## General Instructions

Read the following instructions carefully and attentively:

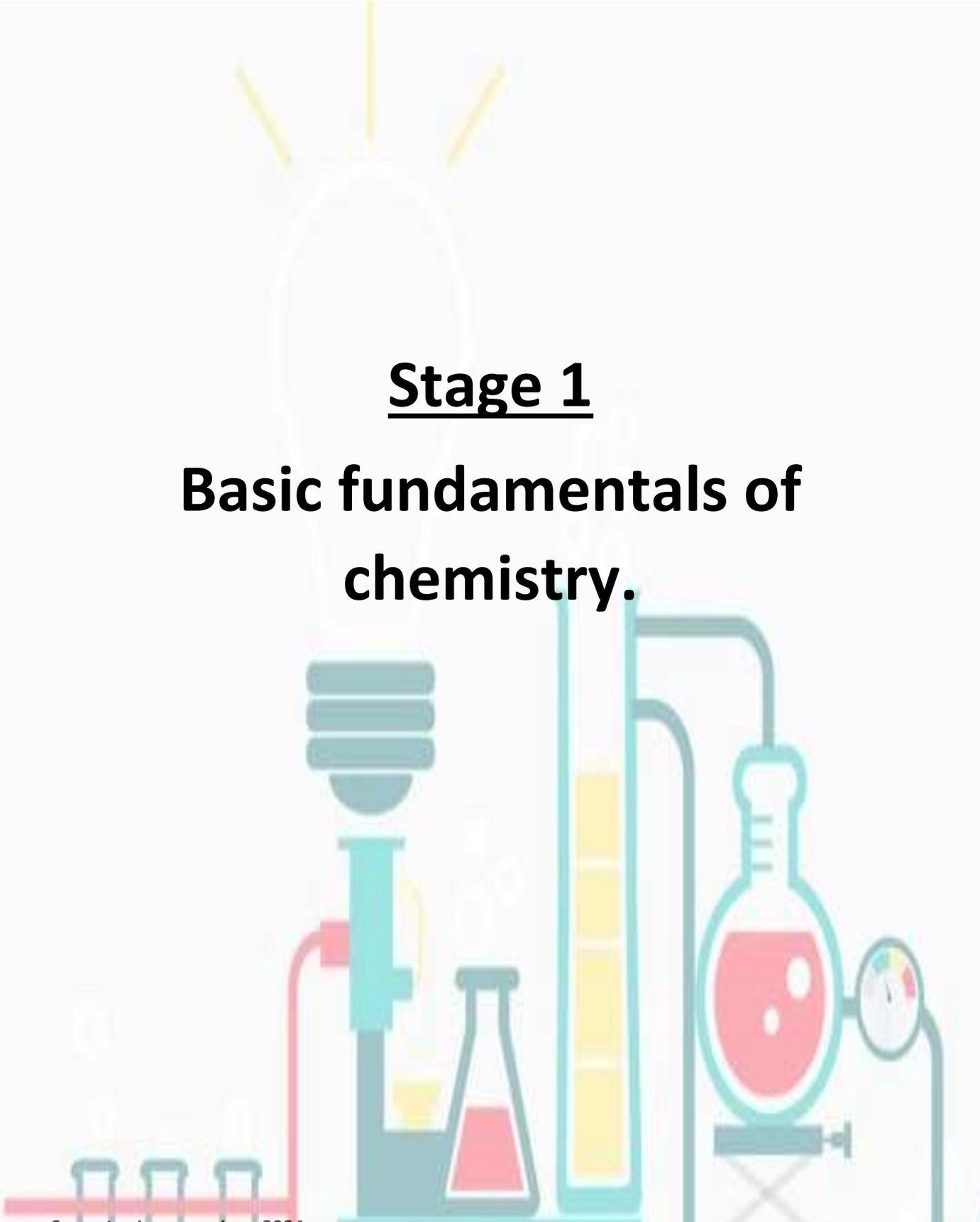
- ✓ The portfolio is to be answered entirely by hand with blue ink pen and the student must write on each page his/her full name and the name of the teacher who will perform the evaluation.
- ✓ The portfolio will be uploaded to the MS Teams group in the section created by the teacher responsible for the evaluation.
- ✓ Each section of the portfolio contains a rubric, which the student must read in order to fulfill all the evaluation criteria.
- ✓ The student will deliver this portfolio of activities in pdf format and the file name will be the following:

**Port2a\_LMyT\_Initials of the student's full name.**

- ✓ The student must respect the date, instructions and format in which the portfolio will be delivered.

### Weighting of the portfolio of activities

Stage	Weighting
Stage 1	<b>12.5 points</b>
Stage 2	<b>12.5 points</b>
Stage 3	<b>12.5 points</b>
Stage 4	<b>12.5 points</b>
<b>Total</b>	<b>50 points</b>



# Stage 1

## Basic fundamentals of chemistry.

Semester January - June 2024

**Dimension 1**

**Instructions:** As a diagnostic activity, answer each of the following questions about the composition of matter.

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

R=

2- What is an element and mention at least three examples?

R=

3- What are the main sciences with which Chemistry is related?

R=

4- What is energy and mention at least two examples?

R=

**Dimension 2**

**Instructions:** Correctly define the following concepts.

Chemistry

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Matter

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Scientific method

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Pure substance

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Mixture

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Element

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Compound

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Homogeneous mixture

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Heterogeneous mixture

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Energy

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Physical change

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Chemical change

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Mass

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Physical properties

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Chemical properties

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Wind energy

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Potential energy

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**Dimension 3****Part 1**

**Instructions:** Complete the following comparative table about the main physical states or phases of matter.

Physical state	General description	Microscopic characteristics
Solid		
Liquid		
Gas		
Plasma		

**Part II**

**Instructions:** Complete the following comparative table about the relationship between Chemistry and other sciences.

Science	Relationship with Chemistry
Medicine	
Biology	
Physics	
Mathematics	
Agriculture	

**Dimension 4**

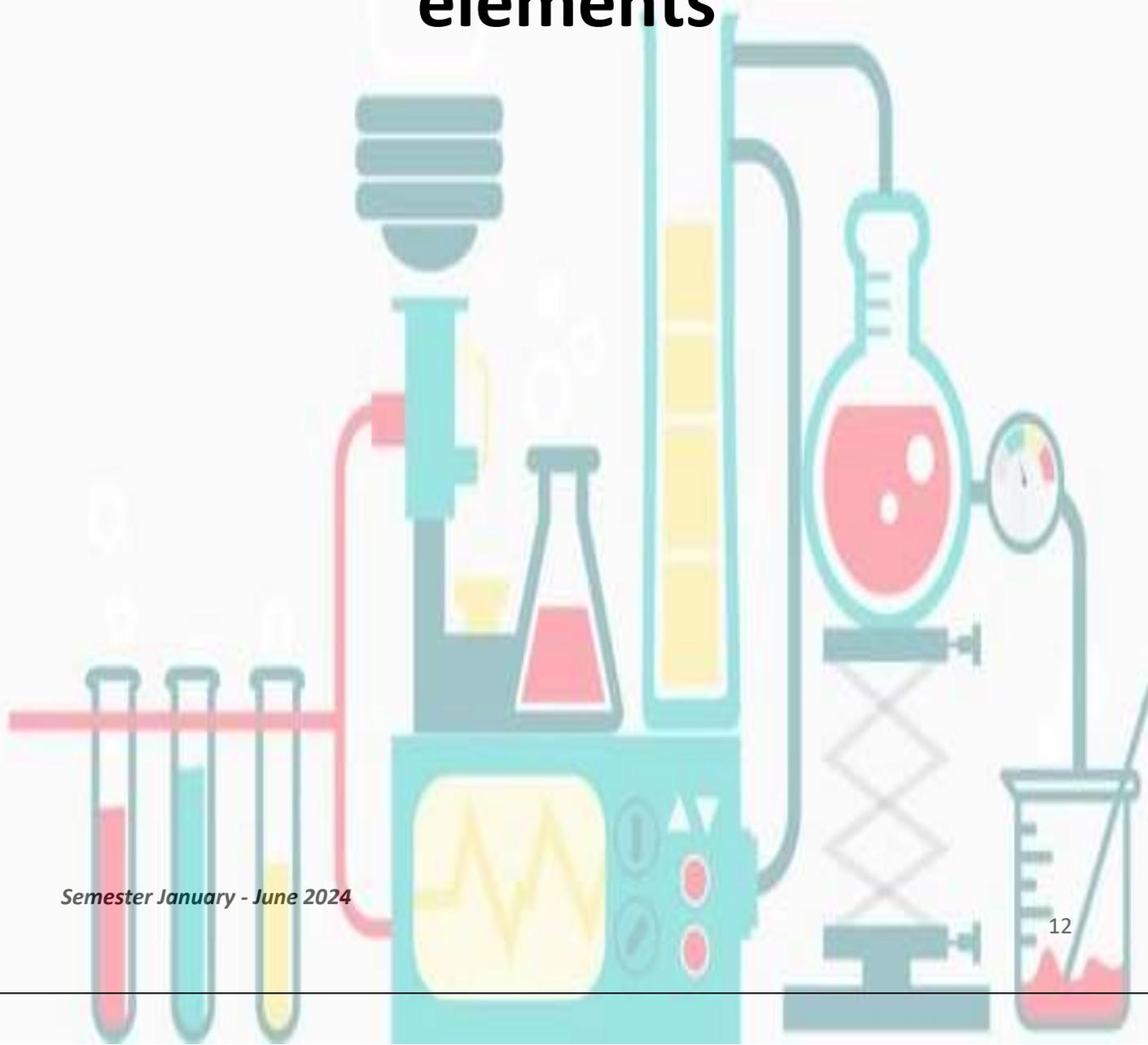
**Instructions:** For each of the following cases indicate whether it is a physical or chemical change.

Event	Physical change/Chemical change
Photosynthesis	
Cutting a tree	
Evaporation of water	
Combustion	
Hydrolysis	
Oxidation	
Melting a piece of metal	
Sublimation of solid CO <sub>2</sub>	
The reduction of a metal	
Reflecting sunlight	
Fermentation	
Digestion	

		Academy of Chemistry 		
Rubric for Stage 1 Activities				
Evaluation Criteria	<b>Excellent Level</b> <b>5 POINTS</b>	<b>Good Level</b> <b>4 POINTS</b>	<b>Sufficient Level</b> <b>3 POINTS</b>	<b>Insufficient Level</b> <b>0 POINTS</b>
<b>The activities were completed by hand using blue ink, with legible handwriting and cleanliness.</b>	The activities were completed by hand using blue ink, with legible handwriting and cleanliness.	The activities were almost entirely completed by hand using blue ink, with legible handwriting and cleanliness.	Half of the activities were completed by hand using blue ink, with legible handwriting and cleanliness.	The activities were not completed by hand using blue ink, the handwriting is not legible, and cleanliness is not observed.
<b>The student correctly defined each of the requested concepts.</b>	All concepts were defined correctly.	The student correctly defined 12 out of the 17 requested concepts.	The student correctly defined 8 out of the 17 requested concepts.	None of the concepts were defined correctly.
<b>The student correctly completed the comparative table about the main physical states of matter.</b>	The student fully completed the comparative table about the main physical states of matter.	The student only completed the information regarding 3 out of the 4 physical states of matter.	The student only completed the information regarding 2 out of the 4 physical states of matter.	The student did not complete the comparative table or the information it contains is incorrect.
<b>The student completed the comparative table about the relationship between Chemistry and other sciences.</b>	The student correctly completed the comparative chart about the relationship between Chemistry and other sciences.	The student only correctly described the relationship between Chemistry and 4 out of the 5 requested sciences.	The student only described the relationship between Chemistry and 3 out of the 5 requested sciences.	The student did not complete the comparative table of Chemistry with other sciences.
<b>The student correctly classified each of the examples related to physical and chemical changes of matter.</b>	The student correctly classified all the examples related to physical and chemical changes of matter.	The student correctly classified 9 out of the 12 examples related to physical and chemical changes of matter.	The student correctly classified 6 out of the 12 examples related to physical and chemical changes of matter.	None of the examples about the classification of physical and chemical changes were correctly resolved.
Grade		<b>Total rubric</b>	<b>Weighting (Portfolio points)</b>	<b>Scale from 0-100</b>

## Stage 2

# Atomic structure and chemical elements



**Dimension 1**

**Instructions:** As a diagnostic activity, answer each of the following questions about matter at the atomic level.

1- What is the difference between a proton and an electron?

R=

2- What is the difference between the mass number and the atomic number?

R=

3- Who were the first individuals to propose the concept of the atom?

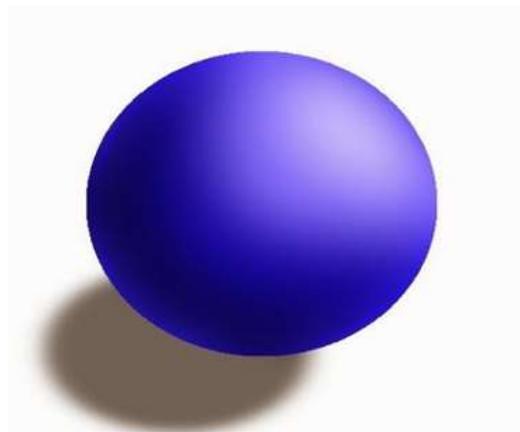
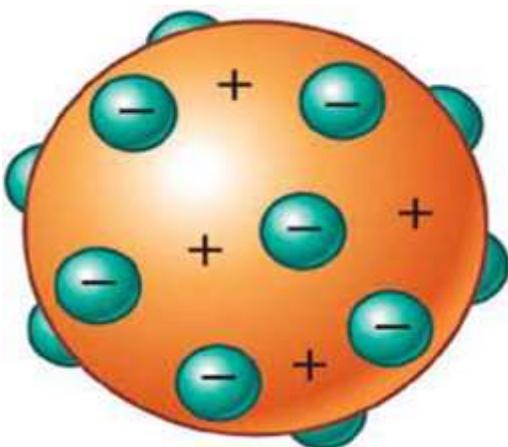
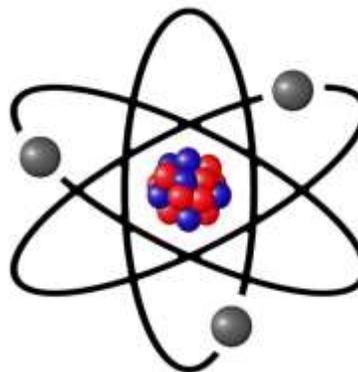
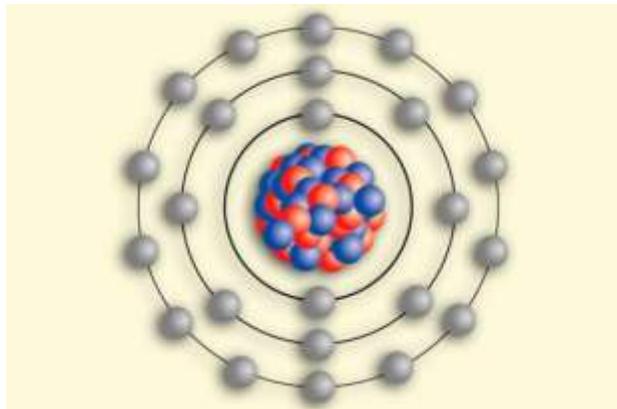
R=

4- What are the main chemical elements in the atmosphere?

R=

**Dimension 2**

**Instructions:** Carefully analyze each of the following representations and indicate which atomic model it represents.



### Dimension 3

**Instructions:** Carefully read each of the following questions and write the correct answer or answers, as appropriate.

1- Subatomic particle located inside the nucleus of the atom, which has mass and also its electric charge is positive.

R= \_\_\_\_\_

2- Concept defined as the sum of the number of protons and neutrons present in an atom and is generally represented by the letter A.

R= \_\_\_\_\_

3- Concept referring to the total number of protons present in an atom and is represented by the letter Z.

R= \_\_\_\_\_

4- Subatomic particle present inside the nucleus of an atom, which has mass but no electric charge.

R= \_\_\_\_\_

5- Known as the region or area in which it is most likely to find an electron.

R= \_\_\_\_\_

6- Concept that describes the smallest form of matter that can be found in the universe.

R= \_\_\_\_\_

7- Concept defined as the systematic way of representing the location of electrons in the energy levels and sublevels or atomic orbitals.

R= \_\_\_\_\_

8- Known as the phenomenon through which atoms emit high-energy radiation, which can be harmful or dangerous to living beings and the environment.

R= \_\_\_\_\_

9- English scientist who bombarded boron atoms and thereby discovered what we know today as neutrons.

R= \_\_\_\_\_



- d) Gold is an element with 118 neutrons and 79 electrons. Based on this information and using the formula  $A = Z + N$ , determine the number of protons and the mass number that a gold atom has.
- e) Calcium is an element with 8 protons and a mass number of 40. Based on this information and using the formula  $A = Z + N$ , determine the number of electrons and the atomic number that an oxygen atom has.

**Part II:**

**Instructions:** Using the Moeller diagram, develop the electron configuration for each of the following elements.

a) Na (Z= 11)

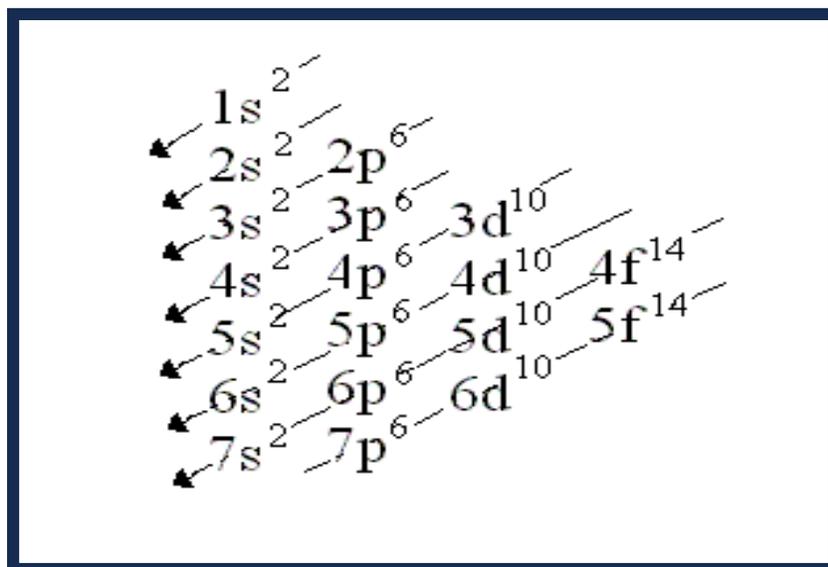
b) Sb (Z= 51)

c) Ga (Z= 31)

d) F (Z= 9)

e) As (Z= 33)

f) K (Z= 19)

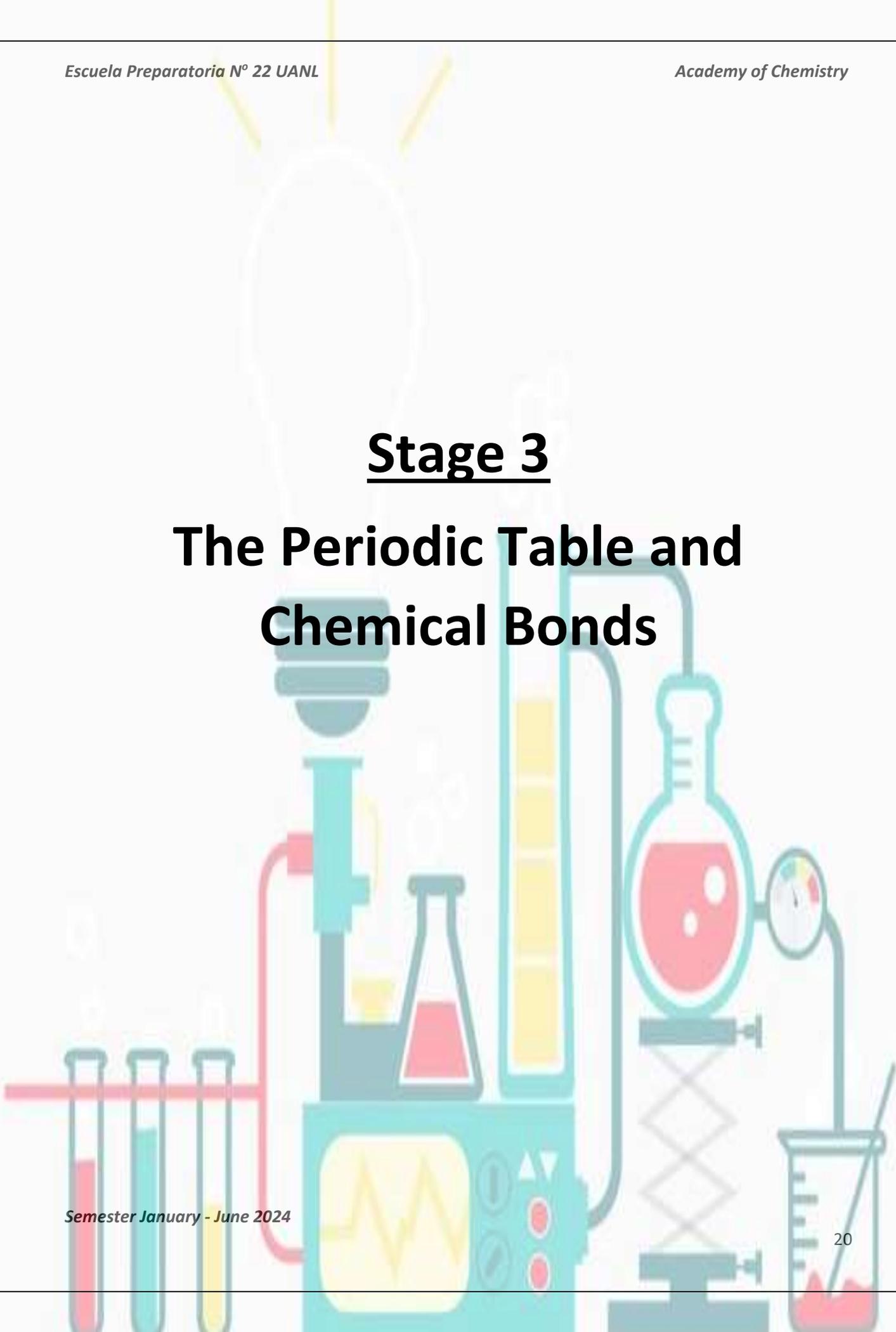


Moeller Diagram (electron configuration diagram)

		Academy of Chemistry Stage 2 Activity Rubric			
Evaluation Criteria	Level Excellent 5 POINTS	Level Good 4 POINTS	Level Sufficient 3 POINTS	Level Insufficient 0 POINTS	
The activities were completed by hand using blue ink, with legible handwriting and cleanliness.	The activities were completed by hand using blue ink, with legible handwriting and cleanliness.	The activities were almost entirely completed by hand using blue ink, with legible handwriting and cleanliness.	Half of the activities were completed by hand using blue ink, with legible handwriting and cleanliness.	The activities were not completed by hand using blue ink, the handwriting is not legible, and there is no cleanliness.	
The student correctly identified the requested atomic models.	The student correctly identified all four requested atomic models.	The student correctly identified 3 of the 4 requested atomic models.	The student correctly identified 2 of the 4 requested atomic models.	The student did not correctly identify the requested atomic models.	
The student correctly answered the requested questions.	The student correctly answered all the requested questions.	The student correctly answered only 7 of the 10 requested questions.	The student correctly answered only 5 of the 10 requested questions.	The student did not correctly answer any of the requested questions.	
The student correctly solved each of the requested problems and included the procedure.	The student correctly solved all the requested problems and included the procedure.	The student correctly solved 3 of the 5 requested problems and included the procedure.	The student correctly solved 2 of the 5 problems and included the procedure.	The student did not correctly solve any of the problems and did not include the procedure.	
The student correctly performed the electron configuration for the requested elements.	The student correctly performed all the electron configuration exercises for the requested elements.	The student correctly performed 5 of the 6 electron configuration exercises for the requested elements.	The student correctly performed 3 of the 4 electron configuration exercises for the requested elements.	The student did not perform the electron configuration exercises for the requested elements.	
Grade		Total Rubric	Weighting (Portfolio points)	Scale from 0-100	

## Stage 3

# The Periodic Table and Chemical Bonds



**Dimension 1**

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

1- What are the most abundant elements in the periodic table?

R=

2- What is a chemical bond and mention at least two examples of bonds?

R=

3- Mention at least three characteristics of non-metallic elements.

R=

## **Dimension 2**

**Instructions:** Create a graphic organizer related to the classification of the main chemical bonds. The graphic organizer should include the following concepts and their respective definitions.

- a) Chemical bond
- b) Ionic bond
- c) Polar covalent bond
- d) Non-polar covalent bond
- e) Metallic bond



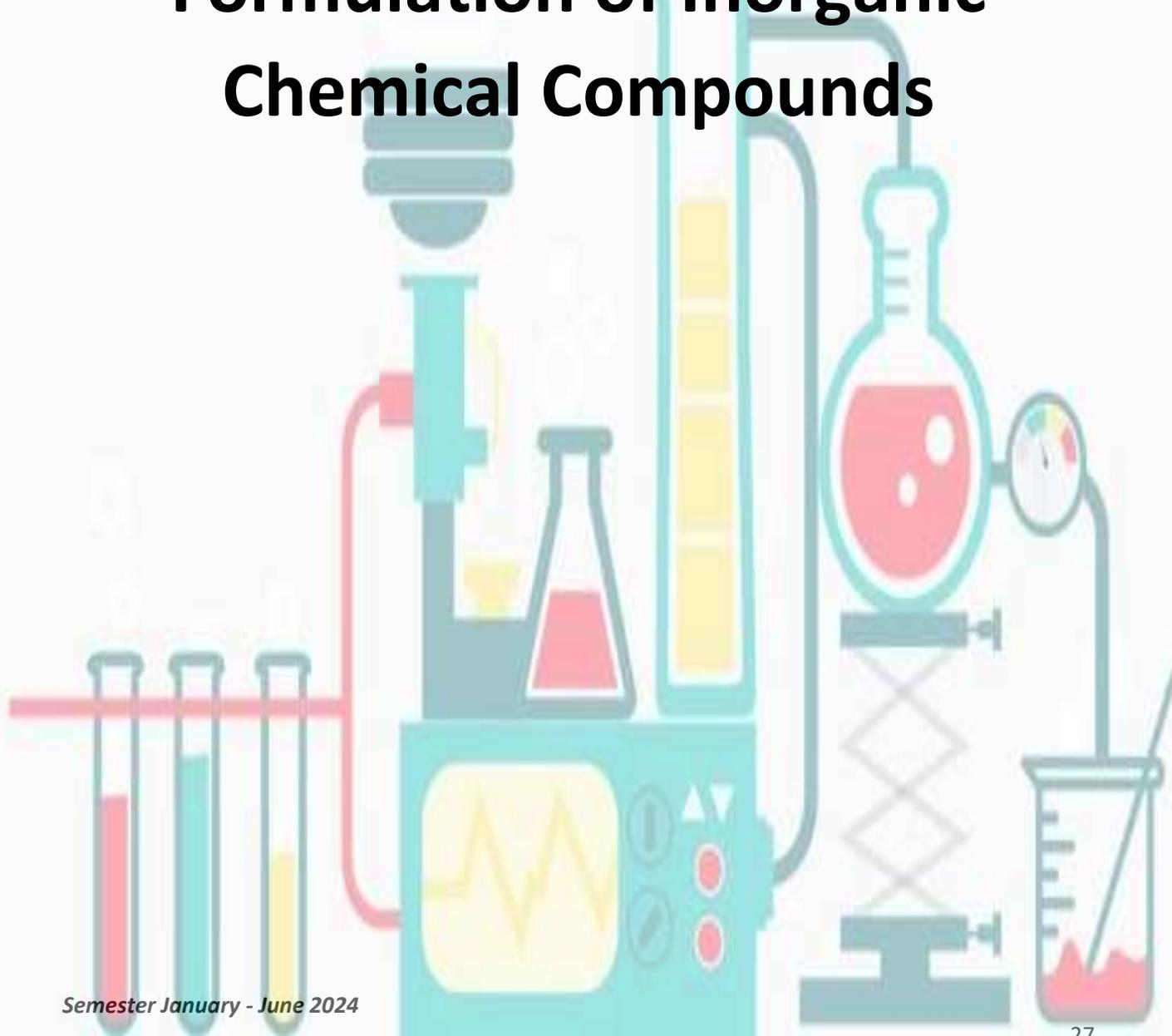




		Academia de Química 		
Rúbrica de las actividades de la Stage 3				
Evaluation Criteria	<b>Level Excellent</b> <b>5 POINTS</b>	<b>Level Good</b> <b>4 POINTS</b>	<b>Level Sufficient</b> <b>3 POINTS</b>	<b>Level Insufficient</b> <b>0 POINTS</b>
<b>The activities were completed by hand using blue ink, with legible handwriting and neatness.</b>	The activities were completed by hand using blue ink, with legible handwriting and neatness.	The activities were almost entirely completed by hand using blue ink, with legible handwriting and neatness.	Half of the activities were completed by hand using blue ink, with legible handwriting and neatness.	The activities were not completed by hand using blue ink, the handwriting is not legible, and neatness is not observed.
<b>The student created the graphic organizer related to the classification of chemical bonds.</b>	The graphic organizer includes all the requested concepts, as well as the respective definitions of each concept.	The graphic organizer includes only 4 of the 5 requested concepts, as well as the respective definitions of each concept.	The graphic organizer includes only 4 of the 5 requested concepts, as well as the respective definitions of each concept.	The student did not create the graphic organizer or it is completely incomplete.
<b>The student wrote the requested summary about the periodic table of elements.</b>	The summary contains the requested information and is one page long.	The summary contains most of the requested information and is one page long.	The summary contains only half of the requested information and is almost one page long.	The student did not write the summary or it does not meet any of the requested aspects.
<b>The student correctly solved each of the requested problems and included the procedure.</b>	The student correctly solved all the requested problems and included the calculations.	The student correctly solved 3 of the 4 requested problems and included the calculations	The student correctly solved 2 of the 4 requested problems and included the calculations.	The student did not solve any of the requested problems.
<b>Grade</b>		<b>Total rubric</b>	<b>Weighting (Portfolio points)</b>	<b>Scale from 0-100</b>

## Stage 4

# Formulation of Inorganic Chemical Compounds



**Dimension 1**

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

1- What are the main types of chemical compounds present in the environment?

R=

2- Mention at least 3 examples of inorganic chemical compounds.

R=

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

R=

4- What is the difference between a hydride and an oxyacid?

R=

**Dimension 2**

**Instructions:** Correctly define each of the following concepts.

Chemical compound

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Inorganic compound

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Organic compound

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Binary compound

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Tertiary compound

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Polyatomic compound

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IUPAC

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Acids

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Bases

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Salts

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Oxides

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Ion

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Cation

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Anion

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Chemical nomenclature

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**Dimension 3**

**Instructions:** Classify each of the following compounds as acids, bases, salts, or oxides. Also, indicate whether the compounds would be classified as binary, tertiary, or polyatomic.

a)  $\text{H}_2\text{S}$

b)  $\text{Fe}(\text{OH})_3$

c)  $\text{CaO}$

d)  $\text{NaHCO}_3$

e)  $\text{KF}$

f)  $\text{HNO}_2$

g)  $\text{LiOH}$

h)  $\text{CO}_2$

### **Dimension 4**

**Instructions:** Create a graphic organizer about the classification of chemical compounds, which should include the definitions. The graphic organizer should contain the following concepts:

- a) Chemical compounds
- b) Organic chemical compounds
- c) Inorganic chemical compounds
- d) Acid
- e) Base
- f) Salt
- g) Oxide
- h) Binary compound
- i) Tertiary or ternary compound
- j) Polyatomic compound

Academy of Chemistry				
 UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN	<b>Rubric for Stage 4 activities</b>			
Evaluation criteria	Level Excellent <b>5 POINTS</b>	Level Good <b>4 POINTS</b>	Level Sufficient <b>3 POINTS</b>	Level Insufficient <b>0 POINTS</b>
<b>Activities were handwritten using blue ink, with legible and neat handwriting.</b>	Activities were handwritten using blue ink, with legible and neat handwriting.	Activities were almost entirely handwritten using blue ink, with legible and neat handwriting.	Half of the activities were handwritten using blue ink, with legible and neat handwriting.	Activities were not handwritten using blue ink, the handwriting is illegible, and there is no neatness.
<b>The student correctly defined the requested concepts.</b>	All concepts were correctly defined.	The student correctly defined 13 out of 15 requested concepts.	The student correctly defined 8 out of 15 requested concepts.	None of the concepts were defined correctly.
<b>The student correctly classified each chemical compound as acids, bases, salts, or oxides. Additionally, they classified them as binary, tertiary, or polyatomic.</b>	All compounds were classified based on their chemical activity classification and the number of elements they contain.	6 out of 8 compounds were classified based on their chemical activity classification and the number of elements they contain.	4 out of 8 compounds were classified based on their chemical activity classification and the number of elements they contain.	None of the compounds were classified correctly.
<b>The student created the graphic organizer using the requested concepts.</b>	The student created the graphic organizer and included all requested concepts and definitions.	The student created the graphic organizer but only included 8 out of 10 requested concepts and definitions.	The student created the graphic organizer but only included 5 out of 10 requested concepts and definitions.	The student did not create the requested graphic organizer.
<b>Grade</b>		<b>Total rubric</b>	<b>Weighting (Portfolio points)</b>	<b>Scale from 0-100</b>

**Realizó:** M.C. Eduardo López Martínez

**Aprobó:** Miembros de Academia

**Verificó:** Apoyo y Desarrollo de Clase

**Validó:** ME. Nancy Elvira Tenorio Garza (Secretaria Académica)