

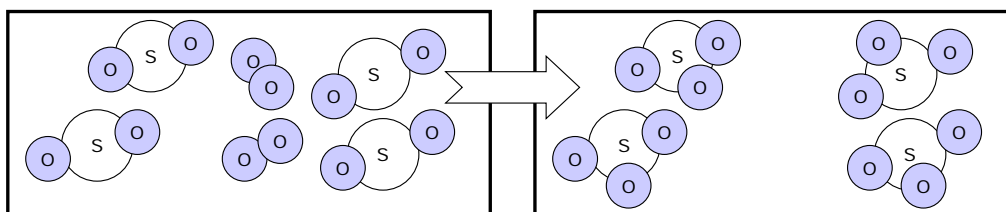
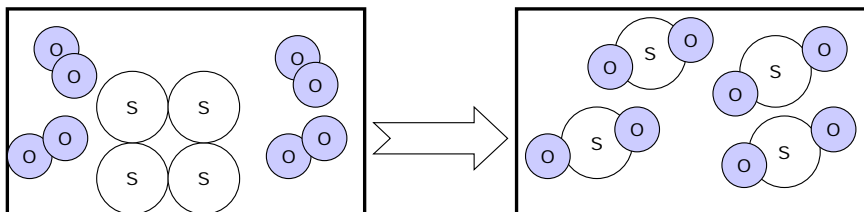
Exam: "Atomic Theory & Periodic Table" (Batxilergoa 1)

Name: _____

Classroom: _____

1. Classify the following systems (initial and final systems in each transformation) and decide if they are physical or chemical changes.

(TOTAL: 2)



2. Given the following atom / ion, determine

- the number of protons, electrons and neutrons
- the electron configuration (box-diagram)



(TOTAL: 2)

3. Given the following periodic table (NOTE: the symbols are not real).

(TOTAL: 2)

X	
Y	M
Z	R
Q	

T	V		D	G	
		J			L
			E		

- Decide which letter corresponds to this electron configuration: $1s^2 2s^2 2p^6 3s^2$ Which group does this element belongs to?
- Write the real symbols for X, Z, G, V, Z and decide if they are metals or non-metals
- Consider the following elements: "Z", "G", "V", "M" and do the following:
 - arrange those elements according to their size (in increasing order)
 - arrange them according to their electronegativity (in increasing order)

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4. The table below gives information about some atoms / ions.

Atom/ion	# of protons	# of neutrons	# of electrons
A	8	8	10
B	12	13	10
C	15	16	15
D	5	6	5
E	15	15	15
F	16	18	16

- Which ones are cations? Which ones are anions? Write their Lewis notations
- Which ones are isotopes? Why?
- Draw a complete picture of the atom D (nucleus and orbits)
- Calculate the mass of each atom/ion (in "u" units)
- Give the ionic and covalent valences of the "F" element

(TOTAL: 2)

5. Let's suppose that we have a sample of hydrogen atoms and that the electrons are placed in the excited state $n=4$.

- draw the energy levels from $n=1$ to $n=4$ (considering that the origin is when the electron is out of the atom)
- draw the emission spectrum, giving
 - their placement in the IR, visible and UV regions
 - their arrangement according to their energies

(TOTAL: 2)