

Name _____

1. Rank the following in terms of size of atomic radii. 4 is biggest, 1 is smallest. Looking at the periodic table should be enough. [2 pts]

<input type="text"/>	<input type="text"/>	Rn
<input type="text"/>	<input type="text"/>	Cs
<input type="text"/>	<input type="text"/>	Tl
<input type="text"/>	<input type="text"/>	Ba

2. Pick the **atom** that is isoelectronic with the ion for the two ions below. [4 pts]

<input type="text"/>	<input type="text"/>	S ⁻
<input type="text"/>	<input type="text"/>	Na ⁺

Is the ionic radius (size) of S⁻ larger or smaller than the parent atom (S)?

Is the ionic radius (size) of Na⁺ larger or smaller than the parent atom (Na)?

3. Consider the ionization energies (in kJ/mol) listed for the fictitious element FF. Use the energies to answer the following questions.

	I_1	I_2	I_3	I_4	I_5	I_6
FF	1,086	2,353	4,621	6,223	38,000	47,261

- a) How many valence electrons does FF have? [2 pts]

- b) Choose the correct electron configuration for element FF. [2 pts]

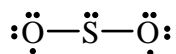
- 1) [noble gas] ns^2np^1 2) [noble gas] ns^2np^4 3) [noble gas] ns^2np^2
4) [noble gas] nd^4 5) [noble gas] ns^2np^3

4. Order the following from lowest **electronegativity** (1) to highest **electronegativity** (4). [2 pts]

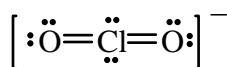
<input type="text"/>	<input type="text"/>	Mg
<input type="text"/>	<input type="text"/>	Na
<input type="text"/>	<input type="text"/>	B
<input type="text"/>	<input type="text"/>	Al

5. Decide whether the drawings, shown below, are acceptable Lewis diagrams for the species indicated. Answer **yes** for acceptable, **no** for unacceptable. [4 pts]

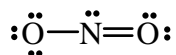
Lewis structure of SO₂?



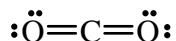
Lewis structure of ClO₂⁻?



Lewis structure of NO₂?



Lewis structure of CO₂?



6. Consider an element (X) with a valence electron configuration of $ns^2 np^4$. What is the most likely formula of the ionic compound formed between this element and potassium (K)? **SHOW WORK** [3 pts]

7. **True or False** [5 pts]

- a) A Na–Cl bond has more ionic character compared to a Na–F bond.
- b) The bond in O₂ would be classified as pure covalent (nonpolar covalent).
- c) Nitrogen (N) has a larger ionization energy than oxygen (O).
- d) Ca²⁺ has a larger radius than P³⁻.
- e) The electron configuration for Ti²⁺ is [Ar]4s².

8. Write the best Lewis structure for the following molecules:
[6 pts]

Molecule	No. of valence electrons	Lewis Structure
PCl ₃		
CO ₃ ²⁻		