

Name (PRINT) KEY-White Version

1. TRUE or FALSE

a) Magnesium (Mg) atoms have a *smaller* atomic radius than sulfur (S) atoms. [2 pts]

FALSE

b) Magnesium (Mg) atoms have a lower first ionization energy than sulfur (S) atoms. [2 pts]

TRUE

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

K₂X

3. Which element will display an unusually *large* jump in ionization energy values between I₄ and I₅, the fourth and fifth ionization energies? [3 pts]

a) Na b) Mg c) Al **d) Si *** e) P

4. Which of the following is **larger**? [6 pts]

a) S or S²⁻

S²⁻

b) Na or Na⁺

Na

c) Mg²⁺ or O²⁻

O²⁻

5. List the following bonds in order of *increasing* ionic character; i.e., from the most covalent to the most ionic. [3 pts]

Cs to F, Cl to Cl, and Br to Cl.

Cl to Cl < Br to Cl < Cs to Cl

6. Write the ground-state electron configuration for the following ions. You may use shorthand notation.
[4 pts]

a) Sb^{3-}

[Xe] or [Kr]5s²4d¹⁰5p⁶

b) Mn^{4+}

[Ar]3d³

7. Write the best Lewis structure for the following molecules:
[9 pts]

Molecule	No. of valence electrons	Lewis Structure
CCl_4	32	
NO_2^-	18	
OF_2	20	