

## Chemistry: Fall Semester- Final Exam Review Part 2

### KEY CONCEPTS:

- Periodic Table Development - Mendeleev & Moseley
- Periodic Table Organization - Periodic Law, Metals, Nonmetals, & Metalloids
- Families - Alkali Metals, Alkaline Earth Metals, Halogen, & Noble Gases
- Periodic Trends - Atomic Radius, Electronegativity, Ionization Energy, & Reactivity
- Ions - Cations & Anions ( know the predominant ion charge )
- Ionic Compounds - Identification, Properties, & Bonding
- Covalent Compounds - Identification, Properties, & Bonding ( single, double, triple, strength vs length )
- Lewis Dot Structures - Geometry & Symmetry ( polarity and electronegativity )
- Moles – conversions from moles/grams/formula units (representative particles)/atoms

### SAMPLE PROBLEMS:

1. How did Mendeleev organize the periodic table?
2. How did Moseley organize the periodic table?
3. Where are the metals located on the periodic table?
4. What are the physical properties that define a metal?
5. Where are the nonmetals located on the periodic table?
6. What are the physical properties that define a nonmetal?
7. What is the trend in atomic radius across a period? Explain.
8. What is the trend in atomic radius down a group/family? Explain.
9. What is the trend in electronegativity across a period? Explain.
10. What is the trend in electronegativity down a group/family? Explain.
11. What is the trend in ionization energy across a period? Explain.
12. What is the trend in ionization energy down a group/family? Explain.
13. Rank the following elements in order of atomic radius from smallest to largest: Na, Si, Cl
14. Which element would have a larger atomic radius: fluorine (F) or bromine (Br)? Explain.
15. Rank the following elements in order of electronegativity from smallest to largest: O, Se, Po
16. Which element would have a larger electronegativity value: magnesium (Mg) or chlorine (Cl)? Explain.
17. Rank the following elements in order of ionization energy from smallest to largest: Be, Ca, Ra
18. Which element would have a larger ionization energy value: Sr or I? Explain.



34. Methane gas is produced from rotting garbage. Methane is represented by the molecule  $\text{CH}_4$ . What is the mass of a sample of methane that contains  $9.04 \times 10^{24}$  molecules of methane