

Chemistry II – Summer assignments

- Prerequisite knowledge: Honors chemistry topics

I.) Please prepare and organize the following: Have this ready for the first day of classes

- ✓ An interactive notebook – I usually do not reduce the size of worksheets and POGILS in chem 2. Here are some ideas that have been successful for other students in the past.
 - Take notes in a composition books with handouts organized by topics, chapters, and/or color-coding in a 3-ring binder.
 - Organize all things by chapter and color-coding in a 3-ring binder. This would be similar to last year only full-sized.
 - Your own ideas are always an inspiration!!
- ✓ A lab notebook – this can be a continuation of last year’s lab notebook (I would prefer this)
- ✓ You should also have your honors interactive notebook, a periodic table, molecular geometry charts, and final review guide available during this class.
- ✓ (Optional) If you are taking this for college credit you will be testing on ALL material from honors chemistry and advanced chemistry. Your final will be through the American Chemical Society (ACS) and you will get your credits through Saint Francis University.

II.) Review topics: short answer questions

Answer the following short answer questions in as much detail as possible.

- 1) Explain the following structures in relation to electron domain geometry, molecular geometry, polarity of the molecules, and intermolecular forces: XeF₄, PBr₅, CO₂, CH₃Cl.
- 2) Explain how high intermolecular forces affect viscosity, boiling point, melting point, vapor pressure, and volatility
- 3) Explain the difference between an ionic compound and a molecular compound. Give an example of each. Explain what types of bonds each form and explain how each is named.
- 4) Explain the four quantum numbers and how you would determine the exact “address” of an electron in chromium’s outermost shell.
- 5) Explain how both fluorine and cesium are reactive elements.
- 6) Explain the difference between a neutral element, an ion, and an isotope in relation to protons, neutrons, and electrons. Give examples to support your explanations.

- 7) Explain what happens when electrons absorb and emit energy. Explain how we can calculate energy when electrons are moving within an atom and describe how this is connected to the electromagnetic spectrum, the frequency, and the wavelength.
- 8) Explain stoichiometric conversions going from grams to moles, to molecules, to atoms. Give examples of each.
- 9) Give an example of a resonance structure and describe bond order, bond length and bond strength within this structure.
- 10) Describe when to use formal charge calculations. Give an example to support your answer.
- 11) Give three examples of electron configurations (include one exception). Explain valence electron, highest energy orbitals, and outermost shells. Describe the shapes and possible orientations for the s, p, d, and f orbitals.
- 12) Explain sigma and pi bonding. Draw a picture of methane using 3D drawings for sigma and pi.

III.) Memorize the following – Quiz on the first full day of classes

- ✓ All diatomic molecules
- ✓ All polyatomics given in honors chemistry
- ✓ All strong acids and strong bases – see the next page
- ✓ Molecular prefixes for naming
- ✓ Metals with multiple charges (iron, copper, lead, and tin) and Latin prefixes

7 Strong Acids	8 Strong
HCl – hydrochloric acid	LiOH – lithium hydroxide
HNO ₃ – nitric acid	NaOH – sodium hydroxide
H ₂ SO ₄ – sulfuric acid	KOH – potassium hydroxide
HBr – hydrobromic acid	RbOH – rubidium hydroxide
HI – hydroiodic acid	CsOH – cesium hydroxide
HClO ₃ - chloric acid	Ca(OH) ₂ – calcium hydroxide
HClO ₄ – perchloric acid	Sr(OH) ₂ – strontium hydroxide
	Ba(OH) ₂ – barium hydroxide

