**Final Exam Study Guide and Checklist**

**Instructions:** The objective checklist is to help YOU determine what concepts you need to study on the exam. Read each objective out loud to yourself, and ask yourself if you can do what it says. If you can, then you check off that objective. If you can’t, you should look at your notes or in the textbook for help.

REMEMBER TO CHECK THE CLASS WEBSITE FOR VIDEOS AND PRACTICE PROBLEMS!

**www.blythevillechemistry.weebly.com**

For the final exam, you should be able to…

* Explain the difference between elements and compounds
* Explain the difference between atoms and molecules
* Analyze molecular formulas (ex: Mg(OH)2) or particle diagrams to determine the number and type of atoms in a molecule.
* Describe atomic structure in solids, liquids, and gases, and relate it to kinetic molecular theory
* Use the ideal gas law equation to calculate pressure and volume changes for gases
* Explain the difference between homogeneous and heterogeneous mixtures
* Explain how the discoveries of different scientists (Dalton, Thomson, Rutherford) led to our current understanding of atomic theory
* Describe the distribution of charge in an atom (in terms of protons, neutrons, and electrons)
* Calculate density from mass and volume
* Compare and contrast different types of phase changes (ex: freezing, melting, vaporization)
* Analyze a heating curve to determine melting and boiling points
* Compare and contrast physical and chemical changes
* Determine the name of a compound if given the molecular formula (ex: CO2 is carbon dioxide)
* Determine the formula of an ionic compound by balancing charges
* Analyze elements written in nuclear notation (ex: ) to determine the atomic number, atomic mass, or number of particles (protons, neutrons, and electrons) in the atom
* Describe electron orbitals using orbital diagrams or electron configuration notation.
* Understand periodic trends for electronegativity
* Understand ion formation tendencies for different groups on the periodic table
* Explain how the octet rule determines ion formation
* Draw Lewis dot diagrams to indicate the number of valence electrons in an atom or ion
* Compare and contrast ionic compounds and molecular (covalent) compounds based on electron arrangement
* Predict if a pair of elements will form an ionic or covalent compound
* Describe trends and patterns in the periodic table
* Understand how electronegativity and polarity are related, and be able to determine if a given compound is polar or nonpolar.
* Understand how polarity and solubility are related
* Describe characteristics of a combustion reaction
* Balance a chemical reaction equation, and use it to determine mole ratios between reactants and products
* Explain how pH is related to acids and bases
* Explain the process and purpose of calorimetry
* Explain the difference between exothermic and endothermic chemical reactions in terms of heat and in terms of enthalpy.
* Compare and contrast different radioactive particles and isotopes (α, β, gamma rays)
* Compare and contrast different isotopes of the same element
* Perform calculations related to half-life
* Explain the process of making biodiesel
* Recognize different organic functional groups (ex: alcohol, ketone, ester…)
* Explain the importance of using models in chemistry, and describe the pros and cons of different atomic or molecular models.

**Helpful resources to use:**

* Textbook chapters: 2 – 8.1, 9 – 11.1, 13.1, 13.2, 14, 15, 17
* Study your old tests!!! (I have some on file if you need them)
* Online resources:
* Khan Academy (search “Khan Academy chemistry” on YouTube or Google to find video lessons)
  + Khan Academy also has free podcasts on iTunes!
* [www.blythevillechemistry.weebly.com](http://www.blythevillechemistry.weebly.com)
* To get extra copies of notes from a particular unit, email me: [arosencrans@blythevilleschools.net](mailto:arosencrans@blythevilleschools.net)
* <http://www.sparknotes.com/chemistry/>
* <http://www.learnstuff.com/chemistry-study-guides-and-resources-for-high-schoolers>/
* <http://phet.colorado.edu/en/simulations/category/chemistry> 🡨 AWESOME chemistry simulations for hands-on learners
* [www.explorelearning.com](http://www.explorelearning.com) 🡨another good site with simulations for hands-on learners