Chemistry H Final Exam Semester 1 Study Guide

YOU WILL NEED A CALCULATOR & PERIODIC TABLE

**Need to know or be able to do;**

**Chapter 1 & 2:**

Identify and describe the States of matter

Identify physical and chemical changes

Identifying Elements, compounds and Mixtures

Identify Units of Measurement

Know the difference between Accuracy vs. Precision

Identify Significant Figures and use in calculations

Identify Derived units, such as Density

Convert between different units using Dimensional Analysis

**Vocabulary: accuracy, precision, percentage error, significant figures, scientific notation, directly proportional, inversely proportional, density, mass, matter, atom, element, compound, extensive properties ,intensive properties, physical property, physical change, change of state, solid, liquid, gas, plasma, chemical change, chemical reaction, reactant**

**Chapter 3:**

Define the atom

Identify the particles that make-up an atom and their properties

Identify Atomic numbers, mass numbers, ions, and isotopes

Calculate the Numbers of protons, neutrons, electrons

Calculate moles, molar mass and atoms

**Vocabulary: Law of conservation of mass, Law of definite proportions, Law of multiple proportions, atomic number, isotope, mass number, nuclide, atomic mass unit, average atomic mass, mole, Avogadro’s number, molar mass**

**Chapter 4:**

Understand the Dual nature of light

Identify the General trend of wavelength/frequency of electromagnetic spectrum. Frequency = speed of light/ wavelength

Identify and calculate Quanta of light E = h/v

Produce Orbital diagrams

Produce Electron Configurations

**Vocabulary: Electromagnetic radiation, Electromagnetic spectrum, wavelength, frequency, photoelectric effect, quantum, photon, ground state, excited state, line-emission, continuous spectrum, Heisenberg uncertainty principle, orbital, electron configuration, Aufbau principle, Pauli exclusion principle, Hund’s rule, noble gas, noble-gas configuration**

**Chapter 5:**

Identify Periods & Groups

Give specific or general Group names

Identify and locate Valence electrons

Identify s, p, d, and f – block elements

Describe Atomic radii trends

Describe Periodic trends such as Ionic size and what ions tend to form, electronegativity, and ionization energy and electron affinity

**Vocabulary: Periodic law, periodic table, lanthanide actinide, alkali metals, alkaline earth metals, transition metals, halogens, representative elements, atomic radius, ion, ionization energy, cation, anion, valence electrons, electronegativity**

**Chapter 6 & 7:**

Describe Properties of ionic compounds

Explain how ions tend to form

Describe the Octet rule

Identify the Common ions formed by group of elements

Describe and Identify Covalent bonding

Describe multiple bonds

Produce Lewis Structures

Describe the VSEPR theory as related to the shapes of molecules

Identify Shapes and bond angles

Know shapes and bond types of common molecules such as methane CH4, water H2O, ammonia NH3, and carbon dioxide CO2.

Identify and describe Polar bonds

Determine the overall Polarity of Molecules

**Vocabulary: Chemical bond, ionic bond, covalent bond, nonpolar-covalent bond, polar, polar-covalent bond, Lewis structure, structural formula, single bond, multiple bond, resonance, ionic compound, formula unit, lattice energy, polyatomic ion, VSEPR theory, dipole.**

**Chapter 8:**

Determine the Chemical Names and Formulas of acids, ionic, and molecular substances

Calculate the Formula Mass/molar mass of compounds

Determine the oxidation states of elements in a compound and or polyatomic ion

Calculate Percent Composition

Calculate Empirical & Molecular Formulas

**Vocabulary: Monatomic ion, binary compound, nomenclature, salt, oxidation number, formula mass, percentage composition, empirical formula**