

Chemistry Mid-Term Exam Review Topics - Fall 2017

UNIT 1 – MEASUREMENT & MATH (8 questions)

- Accuracy & Precision (recognizing given lab data)
- Reading measuring devices to correct # of SFs
- Number of SFs in a measurement
- Reporting answers to problems to correct # of SFs (+/- rule vs. \times/\div rule)
- Percent Error
- Unit conversion in metric system
- Density calculation

UNIT 2 – MATTER & CHANGES (11 questions)

- Classification of elements (metal, nonmetal, metalloid, noble gas)
- Physical vs. chemical changes
- Location and properties of metals, nonmetals, metalloids, noble gases
- Elements vs. compounds
- Mixtures vs. pure substances
- Periods & groups (definitions, names, locations)

UNIT 3 – ATOMS (14 questions)

- Determining number of protons, neutrons, electrons in an isotope
- Grams \longleftrightarrow moles \longleftrightarrow atoms or molecules conversions
- Isotopes (definition, calculation of average atomic mass)
- Mass number & atomic number
- Results of gold foil experiment

UNIT 4 – ELECTRONS (11 questions)

- Aufbau principle
- Proportionality relationships between frequency, wavelength, and energy/EM spectrum
- Determine location on periodic table given an electron configuration
- Dot diagrams, valence electrons, HOELs
- Energy calculations in the hydrogen atom
- Lowest to highest energy orbitals, sublevels, energy levels
- Possible vs. impossible designations of orbitals

UNIT 5 – PERIODIC TABLE (13 questions)

- History of periodic table (Mendeleev, Moseley)
- Main group elements (valence e^- , lose vs. gain e^- , size difference between atom & ion, oxidation #)
- Periodic law
- Periodic trends (atomic radius, ionization energy, electronegativity, metallic & nonmetallic character)

UNIT 6 – BONDING (17 questions)

- Definitions of ionic and covalent bonding – types of elements involved
- Intermolecular forces (what types of compounds exhibit each force)
- Molecular polarity (determining from drawing, difference vs. bond polarity)

- Properties of ionic and molecular substances
- Why atoms bond together/PE of atoms as they bond
- Metallic bonding, Bond length vs. bond strength
- Lewis structures that also represent correct shape

UNIT 7 – CHEMICAL FORMULAS (5 questions)

- Writing formulas (Greek prefix type vs. other type)
- Naming compounds (binary vs. tertiary, Roman numeral vs. no Roman numeral)
- Use the formula of one compound to determine the formula of another compound
 - Example: potassium thiosulfate's formula is $K_2S_2O_3$. What is the formula for zinc thiosulfate?