Chemistry CP Mid-Year Final Topics

Name _____ Final Date _____

Unit One:

- **Matter & Change (Chapter 1)**
  - ☐ Technology / pure science
  - ☐ Matter classifications / physical & chemical changes / physical & chemical properties
  - ☐ States of Matter
  - ☐ Branches of Chemistry

- **Measurements & Calculations (Chapter 2)**
  - ☐ SI / metric system / prefixes / 7 base units
  - ☐ Unit conversions
  - ☐ Scientific notation
  - ☐ Significant figures
  - ☐ Accuracy (percent error) / precision (percent difference)

Unit Two:

- **Atoms: The Building Blocks of Matter (Chapter 3)**
  - ☐ History of the Atom
  - ☐ Atomic Theory (Dalton's / Modern)
  - ☐ Law of Conservation of Mass / Law of Definite Proportions / Law of Multiple Proportions
  - ☐ Atomic Structure: protons / neutrons / electrons (what / where in atom / who found)
  - ☐ Mass Number / Atomic Number / Isotopes
  - ☐ Periodic table (atomic number / mass number / average atomic mass)
  - ☐ Mole / Avogadro's constant
  - ☐ Formula mass / Molar mass of elements
  - ☐ Mass (grams) to amount (moles) and # of particles (atoms) conversions

- **Nuclear Chemistry (Chapter 22)**
  - ☐ Focus on nucleus / nucleon / nuclide
  - ☐ Nuclear stability / radioactivity
  - ☐ Nuclear decay / nuclear radiation & types / half-life / units / uses
  - ☐ Nuclear reactions (set up & balance)
  - ☐ Fission / Fusion

Unit Three:

- **Arrangement of Electrons in Atoms (Chapter 4)**
  - ☐ Electromagnetic radiation / types / wavelength / frequency / speed / energy / units
  - ☐ Quantum / photon
  - ☐ Ground state / excited state
  - ☐ Spectrum / continuous / emission / absorption
  - ☐ Bohr / De Broglie / Heisenberg / Schrödinger
  - ☐ Quantum numbers (each type) / energy level / sublevel / orbital
  - ☐ Aufbau / Pauli Exclusion / Hund's Rule
  - ☐ Notations: orbital / electron configuration / noble gas / electron dot diagrams

Unit Four:

- **The Periodic Law (Chapter 5)**
  - ☐ Periodic table (Canizzaro/Berzelius/Prout/Dobereiner/Newlands/Mendeleev/Moseley)
  - ☐ Periodic law / groups / periods / blocks
  - ☐ Valence electron / group configuration
  - ☐ Metals / Nonmetals / Metalloids
  - ☐ Periodicity for atomic radius / ionic radius / ionization energy / electron affinity / electronegativity / shielding effect / metallic character / overall reactivity

Unit Five:

- **Chemical Bonding (Chapter 6)**
  - ☐ Metallic bonding
  - ☐ Ions (monatomic / polyatomic)
  - ☐ Chemical bonds: ionic bonds / polar covalent bonds / nonpolar covalent bonds (what elements are in them / how they form / electronegativity difference)
  - ☐ Molecule / formula unit / chemical formula / diatomic molecules
  - ☐ Octet Rule /Lattice structure
  - ☐ Electron Dot Diagrams: ionic bonds / covalent bonds / polyatomic ions
  - ☐ Resonance / Hybridization
  - ☐ Bond Length / Bond Angle / Bond Energy
  - ☐ VSEPR (structures / effect on polarity)
  - ☐ Intermolecular forces (London dispersion / dipole-dipole / hydrogen bonding)
  - ☐ Compound properties: ionic / polar covalent / nonpolar covalent

Unit Six:

- **Chemical Formulas & Chemical Compounds (Chapter 7)**
  - ☐ Write ionic compound formulas & names – Stock system
  - ☐ Oxidation numbers for monatomic & polyatomic ions (used in ionic compounds)
  - ☐ Write covalent compound formulas & names – Prefix system
  - ☐ Formula mass / Molar mass for compounds
  - ☐ Mass (g/kg/mg) to amount (moles) to # of particles (molecules/formula units) conversions
  - ☐ Percent (%) composition
  - ☐ Acids & Salts
  - ☐ Empirical & Molecular formulas