**Chemistry NC Final Exam MUST HAVES – MEMORIZE!!**

1. **Unit 1 - SI Units/Measurements/Metric Conversions**
	1. Metric Line (Conversions): Giga (G) 🡪 pico (p)
	2. Dimensional Analysis (factor labeling) set up
	3. Scientific Notation
	4. Significant Figures rules
2. **Unit 2 – Atomic Theory & Structure**
	1. Mass #, #p+ , #n0 , #e-
	2. Isotopes
	3. Ions – Cations vs Anions
	4. Wave Calculations
		1. C = λν 🡪 C = 3.00 x 108 m/s (speed of light constant)
		2. E = hν 🡪 h = 6.626 x 10-34 J/s (Planck’s Constant)
	5. Tail-to-Tip Chart for ALL electron configurations
		1. Long-Hand (standard/full)
		2. Orbital Notation
		3. Noble Gas Notation (short-hand)
	6. Valence Electron counts
3. **Unit 3 – Periodic Table**
	1. History & Groups/Families of the PT
	2. Periodic Trends – Atomic Radius/Ionization Energy/Electronegativity & reasons
4. **Unit 4 – Nomenclature & Bonding**
	1. ALL nomenclature rules – Ionic/Covalent (Molecular)/Acids & Bases
	2. Ionic vs Covalent bonding
	3. Draw Lewis Structures
		1. Molecular Geometry (MG) shapes & VSEPR: Linear 🡪 Tetrahedral
5. **Unit 5 – Chemical Reactions**
	1. Balance chemical equations
	2. 5 major reaction types & special (complex) cases 🡪 Reference sheet
		1. Predicting products
	3. Net Ionic Equations
6. **Unit 6 – Moles**
	1. Molar mass
	2. Mole conversions via dimensional analysis
		1. Mole <--> Particles
		2. Mole <--> Mass
		3. Particles <--> Mass
	3. Empirical Formula (EF) vs Molecular Formula (MF) & Hydrates
7. **Unit 7 – Stoichiometry**
	1. Stoich calculations via dimensional analysis
		1. Mole <--> Mole
		2. Mole <--> Mass
		3. Mole <--> Particles
		4. Mass <--> Mass
		5. Particles <--> Particles
	2. Limiting Reactants (LR) vs Excess Reactants (ER)
	3. % Yield & % Error
8. **Unit 8 – Gases**
	1. ALL gas laws & relationships
		1. Kinetic Molecular Theory (KMT)
		2. Boyle’s/Charles’s/Gay-Lussac’s/Combined/Ideal Gas/Partial Pressure
		3. Gas Stoichiometry calculations
		4. Phase Changes & Phase diagrams
		5. Heating curves
	2. Intermolecular Forces (IMF)
9. **Unit 9 – Solutions & Equilibrium**
	1. Solubility Rules 🡪 Reference Sheet
	2. Molarity calculations 🡪 M=mol/L
	3. Dilution calculations 🡪 M1V1=M2V2
	4. Solubility Curves & calculations
	5. Equilibrium Constant expressions K = [P]/[R] & LeChatelier’s Principle
10. **Unit 10 – Acids & Bases**
	1. A/B Definitions – Lewis/Arrhenius/Bronsted-Lowry
	2. pH calculations (pH box)
	3. Titrations & calculations
11. **Unit 11 – Thermochemistry**
	1. Specific Heat calculations 🡪 q=mCpΔT
	2. Phase Change heat calculations 🡪 q=mΔH
	3. Potential Energy diagrams