2019-2020 Fall Chemistry Standards - Mastery Levels

Standard Description	Sub-Standard ("standards" for assessing)	Mastery Levels
1. Protocols (AL1-FL20)	1.A - Safety	4 - No violations; 90%+ on Safety Test, 8 right
		3 - 1 violation, 7 right
		2 - 2 violations, 5-6 right
		1 - Removed safety gear before being instructed to; multiple instances of same violation, 3-4 right
		0 - 0-2 right
	1.B - Lab Equipment	4 - Described proper use of tools including description of math concept involved (All 5 correct)
		3 - Described proper use of tool, vague explanation of math used (4 correct)
		2 - (3 correct)
		1 - (2 correct)
		0 - No proper use of tools indicated (1 correct)
2. Defining Matter (AL2-AL5)	2.A - Matter	4 - References mass AND volume, or stuff AND space, and explains how "not matter" doesn't meet both criteria
		3 - Refers to tangibility of matter AND mass OR volume, and explains that "not matter" doesn't fit those criteria
		2 - References mass OR volume, or stuff OR space, and explains how "not matter" doesn't meet that ONE criteria
		1 - Explains how matter OR not matter relates to mass OR volume, or stuff OR space Only references tangibility
		0 -
	2.B - Density	4 - Shows work with units, gets correct answer with units, and shows quantitative reasoning
		3 - Shows work that contains mistake or shows quantitative reasoning, shows correct answer with units
		2 - Conceptual explanation that is correct, shows qualitative reasoning
		1 - Conceptual explanation is correct but incorrect metal
		0 -

3. Elements (AL6-AL10)	3.A - Chemical Names & Symbols	4 - 4 correct interpretations (name, formula, phase, & description)
		3 - 3 correct interpretations (name, formula, description), “liquid” instead of “soln,”
		2 - 2 correct interpretations (name OR formula, AND phase)
		1 - 1 correct interpretation (name only)
		0 - 0 correct interpretations
	3.B - Periodic Table & Trends	4 - Correct identification & identifies that columns have similar properties| 4 groups
		3 - Correct identification, but mixed up row/period & column
		2 - Correct identification, but ambiguous explanation (could be correct, but poorly worded)
		1 - Correctly grouped based on metal/nonmetal/metalloid
		0 - Wrong element identified, or correct identification without reasonable explanation
4. Atomic Structure (AL11-AL14)	4.B - Atomic # & Mass	4 - Identified all components correctly (10 correctly completed answers)
		3 - 8-9 components correctly identified
		2 - 6-7 components correctly identified
		1 - 3-5 components correctly identified
		0 - 0-2 components correctly identified
	4.C - Isotopes	4 - Correctly name or give the symbol if given the other, with an explanation referencing the average atomic mass
		3 - Good explanation, but did not give name or symbol when provided with other
		2 - Correct name or symbol when given other, with an incomplete or internally inconsistent answer Provided one GOOD explanation
		1 - Provided the correct names or symbols when given the other, with no or wrong reasoning
		0 - Nothing correct
5. Nuclear Chemistry (AL15-AL16)	5.A - Nuclear Reactions	4 - Correct nuclear calculation, correct identification of type of nuclear change, with good reasoning
		3 - One correct equation with two good identifications and explanations
		2 - One good equation and one good identification and explanation No correct equations, both good identification and explanations
		1 - Two correct equations, bad or no identification and explanation One good equation, correct identifications, but no reasoning
		0 - Nothing correct One correct symbol only

6. Valence Electrons & Ions (AL17-AL24)	6.A - Ions	4 - Correct charge, ion symbol, reference to valence electrons or noble gases
		3 - Incorrect charge, correct explanation (forgot that electrons are negative)
		2 - Correct charges, references location on periodic table
		1 - Single correct ion charge, correct reference to location on periodic table
		0 - Only correct charges/correct symbols, without explanation
	6.B - Ionic Compounds	4 - Correct monatomic and polyatomic proof of rule of zero charge
		3 - Correct monatomic and polyatomic with small problem (i.e. incorrect polyatomic name, incorrect polyatomic formula)
		2 - Correct monatomic, but substituted monatomic for polyatomic (i.e. gave N, nitride, instead of NO3, nitrate) but rule of zero charge correctly applied.
		1 - Correct monatomic, showed rule of zero charge, nothing correct for polyatomic
		0 - No proof given, no indication where charges came from
7. Bonding (AL25-AL26)	7.A - Types of Bonds	4 - Identifies types of bonds correctly with good reasoning including referencing types of elements
		3 - Minor mistake in identification, correct reasoning includes types of elements
		2 - Correctly identifies types of bonds AND properties. No reasoning
		1 - Only type of bond. No other properties or reasoning
	7.B - Bond Characteristics	4 - Identifies correct location of electrons within bond, explains how location of electrons affects specific bond characteristic
		3 - Explains how locations of electrons affects specific bond type.
		2 -
		1 - References only descriptions of models
8. Structural & Lewis Dot Formulas (SL1-SL6)	8.A - Structural Formula	4 - 2 isomers with lone pairs | 2 structures with lone pairs, HONC followed
		3 - 2 isomers with no lone pairs OR 2 correct lewis dot structures AND HONC followed
		2 - 1 isomer with lone pairs OR 2 isomers with minor mistake | HONC followed correctly for 1 structure
		1 - 1 isomer correct with no lone pairs | HONC not followed
	8.B - Lewis Dot Symbols & Structures	4 - Correct Lewis Dot Symbol and structure
		3 - Correct Lewis Dot multiple bond structure but mistake in single dot locations
		2 - Correct Lewis Dot Symbol, but structure shows single bond (not multiple bond)
		1- Correct Lewis Dot Symbol, no octet rule for structure followed

9. Polarity & Electronegativity (SL16-SL17)	9.A - Polarity	4 - Correct rank AND shows math or conceptual understanding
		3 - Correct rank (incomplete explanation) OR reverse rank (correct explanation)
		2 - Reverse rank (incomplete explanation)
		1 - Correct rank and references EN scale (incorrect explanation, example: added EN values)
	9.B - Electronegativity	4 - Correct atom AND shows relationship between EN and partial negative charge (higher EN value)
		3 - Correct atom AND defines EN
		2 - Correct atom with vague explanation (references charge of the atom and not EN)
		1 - References charge only
10. Density & Phases of Matter (WL3, WL8)	10.A - Density	4
		3
		2
		1
11. Kinetic Theory of Gases (WL5, WL9, WL16)	11.A - Kinetic Theory of Gases	4 - References 1) Temperatures AND 2) Speed AND 3) Increase Collisions = Pressure|speed, volume, AND density
		3 - References speed AND defines pressure|volume OR density
		2 - References speed AND pressure|volume
		1 - References speed only

12. Gas Laws (WL6, WL10, WL11, WL13, WL17)	12.A - Charles' Law	4 - GFUPSA/work shown, correct answer with appropriate units, correct equation
		3 - GFUPSA/work shown, correct answer (NO units), correct equation -or- minor math error -or- mistake in temperature conversion
		2 - Plan step incorrect, substitution error that results in incorrect answer with units
		1 - GFU correct.
		0 - Incorrect equation
	12.B - Boyle's Law	(see above)
	12.C - Gay-Lussac's Law	
	12.D - Combined Gas Law	
	12.E - Ideal Gas Law	