2018 Pre-comp Review chem 8

Native Exam

Electron Structure

a) Electron configuration (EC) periods 1-4. Include Noble gas abbreviations.

b) EC of valence e^- main groups

c) Zeff calculations main groups

d) core vs valence e^-

e) Zeff calculations for core vs valence e^-

f) electron counts of ions including EC of cations (+) and anions (-)

Periodic Trends

a) Size trends

b) ionization energy trends

c) Electronegativity and polar bonds: C-C vs C-F as example

Naming

covalent and Type I and Type II ionics

Lewis Formulas

1) Lewis Formula
2) Shape
3) hybridization
4) Determining # of unshared pairs on molecules: H_2O has 2 pairs unshared e^-.

Stoichiometry

a) Empirical Formula from moles, mass, % mass

b) Molecular Formula from Empirical Formula

c) % mass calculations

d) Theoretical yield, % yield, mass of other reactant used.

e) Assign limiting react.

f) Balance Equations

g) Molar Mass

h) mass-mole-molecule calculations

Mandatory Molecular Ions

see chemistry 8 (2018-2019)

Outline 2018 chem 8 Common Pre-comp

Topics / Cognitive Taxonomy		Cognitive Taxonomy Level 1 (KNOWLEDGE/COMPREHENSION)		Cognitive Taxonomy Level 2 (APPLICATION/ANALYSIS)		Cognitive Taxonomy Level 3 (SYNTHESIS/EVALUATION)	
		number of items	specific cognitive process	number of items	specific cognitive process	number of items	specific cognitive process
Topic 1 (Properties of Matter)	topic 1.1 (Types of Matter)	0 to 1	define element, compound, molecule	1 to 2	identity elements, molecules, compounds from formulas and/ or molecular representations		
	topic 1.2 (States of Matter)	1 to 2	recognize different states of matter	1 to 2	determine state of matter based on description of particle movement/volume or molecular representations		
	topic 1.3 (Mixtures)	1 to 2	recognize different types of mixtures	1 to 2	recognize mixtures based on molecular representations		
	topic 1.4 (Separation of Mixtures)			0 to 1	based on a description of a mixture, identify the best way to separate the components of the mixture		
Topic 2 (Periodic Table)	topic 2.1 (Organization of Periodic Table)	1 to 2	determine the identity of an unknown element based on its properties	1 to 2	determine the identity of an unknown element based on the formula given for an ionic compound it would form		
	topic 2.2 (Periodic Trends)			1 to 2	order elements according to their ionization energy, atomic radius, ionic radius, and/or electronegativity	1 to 2	when given 2 or more elements or ions, determine which one has the largest electronegativity, first ionization energy, or ionic radius and WHY

Topic 3 (Chemical Bonding)	topic 3.1 (Ionic Bonding)	2 to 4	name ionic compounds			1 to 2	apply electronegativity to explanation of why electrons are transferred in ionic compounds
	topic 3.2 (Covalent Bonding)	1 to 2	name covalent compounds				
	topic 3.3 (Metallic Bonding)					0 to 1	explain how "Electron Sea" leads to different properties of metals
	topic 3.4 (Lewis Structures)			1 to 2	apply idea of valence electrons to determine correct Lewis structures	1 to 2	apply electronegatity to bond polarity to recognize polar bonds v. non-polar bonds
	topic 3.5 (Properties of ionic, covalent, and metallic substances)			1 to 2	based on a description of its properties, identify if a substance posesses ionic, covalent, or metallic bonds		
Topic 4 (Molar Mass)	topic 4.1 (Mass-Mole Conversions)	1 to 2	calculate molar mass when given a chemical formula or name	1 to 2	given grams of a compound and the molar mass, calculate moles of the compound or vice versa		
	topic 4.2 (Percent Composition)	1 to 2	given a formula, determine the percent composition due to a specific element				
	topic 4.3 (Empirical Formula)	1 to 2	determine the molecular formula of a compound when given the mass and the empirical formula	1 to 2	calculate the empirical formula for a compound given percentages (or mass) of each element	1 to 2	calculate the molecular formula of a compound when given the molar mass and percentages of each element