

	Knowledge, 1	Comprehension, 2	Apply LOC, 3	Apply HOC, 3.5	Analysis, 4	Synthesis, 5	Evaluation, 6
Key Skills Assessed	Identify, recall, list, recognize, label, choose, count, duplicate, find, identify, match, name, order	Describe, explain, convert, define, interpret, summarize, translate	Predict an outcome using few complicating steps, apply, calculate, chart, determine, use	Predict an outcome using several complicated steps, apply, calculate, chart, determine, use	Infer, understand how components relate to each other, diagram, categorize, compare	Create something new using sources, appraise, evaluate, judge, rank, validate	Determine, critique, adapt, formulate, model, make, devise
General examples of chemistry problem types	counting valence e-, identifying catalysts or intermediates in a mechanism, formula from name of compound, matching colors to wavelength or frequency, atomic symbols, charge from periodic table, simple periodic trends, electron configuration of a neutral atom, quantum numbers, orbital information and shape, definition of quantization	Balancing by inspection, VSEPR structures, direction of dipole, LDS, Bond order, resonance structures, Determining formal charge, qualitative energy changes of excited electrons in an atom, net ionic eqn from molecular equation, using reaction order given rate law or concentration/rate change, molar mass calculations, ion electron config., using solubility rules, Ionization energy trends, particulate nature of reactions (pictures of reaction), qualitative mass spectroscopy, determining reaction type, ratio of ions, relative rate of reaction, reading reaction coordinate diagrams, Apply Hund's rule and PEP, density comparisons, diffusion distributions, units of rate constant (graphical or not), identify red/ox agents	Predicting effusion of gas molecules, plug and chug single equation calculations, frequency to wavelength or energy, counting # ions in a compound, calculating total concentration, single step stoichiometry including multiple reaction steps, dilution, net ionic eqn from names of compounds, empirical formula from elemental analysis data, evaluating LDS using valence e- and formal charge, average atomic mass calc using relative abundance, balancing redox, empirical to molecular formula given molar mass, titration of strong acid/base, % yield, manometer calcs, rate of consumption/production, determining chemical eqn from concentration in time curves, identifying rate limiting step from rate law	Single or multi equation systems with many unit conversions, limiting reactants, stoichiometry with several conversions required, a mixture of stoichiometry solubility and/or limiting reagents, reading graphs for 1 st order kinetics, bond energy comparisons	Compare isotope sizes to atomic mass on periodic table, compare energy to break bonds in multiple molecules, compare bonds by increasing polarity, determine rate law from a mechanism with a slow first step, Reading graphs for 0 th and 2 nd order (not first order)	Create rate law from a mechanism with the first step as the fast equilibrium step, Create rate laws or orders from initial rates data	Determining best arguments about the results of a demo
Characteristics of multiple-choice questions	Question only requires information recall. Possible answers do not include significant distractors	Question requires understanding of concepts or terms. Possible answers include significant distractors	Question requires prediction given a new, but not complicated system.	Question requires prediction given a new, relatively complicated system.	Question requires interpretation of data and selection of best conclusion	Creating a new model from a chemical system.	Question requires assessment of information to support an argument

Score	1	2	3	3.5	4	5	6