

Study Guide
Exam 1, Chem 103

General instructions.

Prepare the workshop questions and problems separately.

For workshop questions,

- i) Note the main concepts
- ii) Go over the definitions
- iii) Understand key explanations

For problem questions,

- i) Write main equations for each problem
- ii) Note the conversion of quantities
- iii) Make sure your answer has the right significant figures and units

Workshop 1

- a) Significant figures and their rules of combining (1 question)
- b) Uncertainty, Accuracy, precision (1 questions)
- c) Conversion of quantities (2 questions)

Workshop 2

- a) Atomic Number and Atomic Mass. (1 question)
- b) Isotopes. Atomic Weight calculation from isotopic abundance (1 question)
- c) Mass to Mole. Mole to number of particles conversions (2 questions)
- d) Simple reaction stoichiometry (Reactant to reactant and reactant to product (2 questions))

Workshop 3

- a) Light as an energy: relating frequency, wavelength, number of photons, and energy (3 questions)
- c) Photoelectric effect (1 question)
- d) Rydberg's equation: Relating principal quantum numbers and quantized energy levels within an atom (1 question)
- e) The Wave Properties of Matter (de Broglie's wavelength calculation) (1 question)
- f) Four quantum numbers (2 questions)
- g) Hund's rule, Pauli's exclusion principle (2 questions)

Workshop 4

- a) Electron configurations of atoms and ions (3 questions)
- b) Effective nuclear charge and predicting the atomic size, ionization energies, and electron affinity (2 questions)