

Preview Sheet for Final Exam
Monday, May 8, 7:45 – 10:15 a.m., in Olin-Rice 350

Coverage

- Test 1 (25 points): Probability and isotope exchange reactions, Boltzmann distribution, energy levels. No coverage of thermodynamic probability, W formula.
- Test 2 (25 points): Specific heats, calorimetry, bond dissociation energies, standard molar entropies, and entropy changes for reactions. No coverage of correcting entropy for non-standard conditions or calculating work.
- Test 3 (25 points): Enthalpies of formation, Gibbs energy, G - T curves, calculating equilibrium constants. No coverage of explicit second law calculations.
- Test 4 (25 points): Oxidation numbers, balancing redox equations, redox reaction stoichiometry, using standard reduction potentials, Nernst equation.
- Kinetics (75 points): Silberberg Chapter 16—everything except the frequency factor (pp. 696-697) and mechanisms with a fast initial step (pp. 704-705).

Format

- Part 1 (90 points): 18 multiple-choice questions (mostly) from American Chemical Society standardized tests covering most of the above topics. Do not expect very detailed or difficult questions! The goal here is to test your mastery of the basics of the key topics from this semester.
- Part 2 (85 points): Calculations and short essay questions on kinetics and a few other topics.

Other Comments

- You will have 2 hours and 30 minutes to work on the final. You are free to divide your time between the two parts of the test as you see fit.
- You are allowed to fill both sides of an 8.5" x 11" piece of paper with whatever information you want, and use it during the exam. Note that this personal "cheat sheet" will be in lieu of a sheet of formulas at the back of the exam booklet. All I will give you on the back page of the test is a periodic table and relevant physical constants.

[From the test booklet:]

Instructions before starting the test:

1. Write your name in the space above and on the backs of Pages 2-10.
2. Your exam booklet should have **eleven** pages total, with questions on Pages 2-10, and a periodic table and constants on Page 11. Check to see you have eleven pages now. If you do not, please ask for another copy of the exam.
3. Part I of this test (on pp. 2-6) contains 18 multiple-choice questions, each worth 5 points, covering most of the major topics of the semester, including kinetics. Circle the correct answer to each of the questions in the exam booklet. There is no penalty for incorrect

answers. Feel free to use blank spaces in this exam booklet for scratch work. However, realize that you will receive no partial credit for this work.

4. Part II of this test (on pp. 7-10) contains questions on kinetics and other major topics of the semester. Justify all of your answers in Part II. Partial credit will be awarded for work in Part II.
5. You may use as a reference a single sheet of 8.5"x 11" paper that you have filled (front and back) with information.
6. You have **2 hours and 30 minutes** to work on both sections of this exam.