

Exam I

Certain material for exam I deviates from the textbook. Generally, you should read the text, work the chapter exercises multiple times, and practice with problems at the back of the chapter using answer guide.

Chapter 10 - study and practice using the book and solutions guide as recommended. The section on FT and 2D NMR techniques is generally more advanced than is expected.

Chapters 11, 13, and 14: First, study and practice using the lecture slides for weeks 2 and 3. This includes terminology, reactions, and results/spectra from spectroscopy. Generally, the IR and MS spectra that you will be asked to interpret come off of the slides. Be sure that you can convert among frequencies, wavelengths, wavenumbers, and energies, and that you understand the relationship to the specific transitions that occur in molecules. If you can do the textbook problems 25 to 29 at the back of chapter 10, you will understand some types of energetics problems that can be asked for UV, visible, and IR spectroscopy.

From Chapter 11, practice the section on degree of unsaturation, along with the related problems in and at the back of the chapter, such as 61 and 62, but it is your responsibility to find the problems that relate to degree of unsaturation. (The rest of the problems at the back of Chapter 11 were either Organic I or are more challenging than is expected.) The section on infrared spectroscopy in Chapter 11 (section 11.8 - again it is your responsibility to find the correct section) is also helpful, but very short. Also, the infrared spectroscopy exercises in the chapter are less important than is the material from the slides. The section on mass spectroscopy (section 11.9 - again it is your responsibility to find the correct section) in Chapter 11 is also helpful. Be sure to understand the significance of molecular ion peak and the effect of isotopes on the molecular ion peak(s), especially those isotopes that are discussed in the slides. The two in-chapter exercises on mass spectroscopy are also helpful. The section on fragmentation patterns of organic molecules (mass spectroscopy, section 11.10) is generally more challenging than is expected, focus instead on the material in the slides. Also note that the material from NMR will come from Chapter 10, not chapter 11.

From Chapter 13, section 13.3 is generally helpful for NMR, MS, and IR. The chapter and back of chapter problems are generally more challenging than is expected. To study for the exam, follow the guidelines given [above](#).

From Chapter 14, section 14.11 is generally helpful for UV-Visible spectroscopy. Any of the examples in the text may appear on the exam. The exercises in the chapter and at the back of the chapter are generally more challenging than is expected. To study for the exam, be sure that you understand and can work problems from the reading, and follow the guidelines given [above](#).

Chapter 15 - study and practice using the textbook and solutions guide as recommended.