

CHM 2210 Exam 4 Review Sheet

This is exactly what you need to focus on for test 4.
Practice, review, and understand everything on this list.

Mass Spectroscopy

- Determining molecular weight and formula from the molecular ion peak (Section 12.2, Figures 12.3 and 12.5)
- Interpreting fragmentation patterns
 - Losing alkyl groups (Figure 12.15 and Worked Example 12.1)
 - Alpha cleavages of alcohols and amines (Section 12.3, Worked Example 12.2, and Figure 12.10)
 - Dehydration of alcohols (Section 12.3 and Figure 12.9)
 - McLafferty rearrangements of carbonyls (Section 12.3 and Figure 12.13)

IR Spectroscopy

- Interpreting absorptions to determine the molecular bonds involved (Sections 12.6 and 12.7, Figures 12.19 and 12.20)
- Identifying characteristic absorptions of common functional groups (Section 12.8, Figures 12.24, 12.25, and 12.26)
- Using a table of absorptions with a spectrum to identify the functional groups involved (Table 12.1, Figure 12.21, Worked Examples 12.4, 12.5, and 12.6)

^{13}C , and ^1H NMR Spectroscopy

- Nuclear spin changes alignment depending on electronic environment (Section 13.2 and Figure 13.3)
- Chemical shifts in δ or ppm (Section 13.3 and Figure 13.5)
- Characteristic chemical shifts for ^{13}C (Section 13.5, Figures 13.7 and 13.8, Worked Example 13.1)
- Characteristic chemical shifts for ^1H (Section 13.9, Tables 13.2 and 13.3, Worked Example 13.3)
- Proton counting and integration (Section 13.10 and Figure 13.12)
- Proton splitting pattern depends on neighboring protons (Section 13.11, Figures 13.13, 13.15, and 13.16, Worked Example 13.4)
- Complex splitting patterns (Section 13.12, Figures 13.18 and 13.19)

Practice Problems from 9e:

12-2, 12-3, 12-7, 12-8, 12-9, and 12-10

13-17, 13-19, 13-23, 13-6, 13-7, 13-8, 13-9, 13-10, 13-13, and 13-15