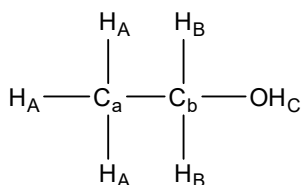


Advanced tabulation of a multitude of spectra is best done by combining ^1H -based data separately from ^{13}C -based data. These examples are more sophisticated than the tables you've previously completed. Not all data columns apply to every problem, so eliminate any blank columns when you re-write this information into your report.

Table 1: ^1H and COSY NMR of ethanol in CDCl_3 (see appendices 1-2)

| Shift (ppm) multiplicity, coupling(Hz), relative integration | COSY shows correlation to protons at δ (ppm) | Assignment | Reference Values |
|--|---|------------------------------------|-------------------|
| 1.27 t, $^3J_{\text{AB}} = 7, 3\text{H}$ | 3.7 (H_B) | A | 1.2t ² |
| 1.51 s | - | water in CDCl_3 | 1.56 ¹ |
| 3.73 q, $^3J_{\text{BA}} = 7, 2\text{H}$ | 1.3 (H_A) | B | 3.7m ² |
| 3.90 s, 1H | - | C | 3.4t ² |
| 7.24 s | - | CHCl_3 in CDCl_3 | 7.261 |



A diagram of the molecule should be on the same page as the data table(s). Repeat the diagram if tables span several pages; facing page is sufficient if report is printed 2-sided.

Table 2: ^{13}C , DEPT-135 and 2D NMR of ethanol in CDCl_3 (see appendices 3-6)

| Shift (ppm) multiplicity, coupling (Hz), DEPT phase | 2D spectra shows correlation to protons at δ (ppm), assignment | | Assignment | Reference Values |
|---|---|----------------------------|-----------------|--------------------|
| | HMQC ($^1J_{\text{CH}}$) | HMBC ($^3J_{\text{CH}}$) | | |
| 18.42 s, \uparrow | 1.3, H_A | 3.9, H_C | a | 18.13 ³ |
| 58.34 s, \downarrow | 3.7, H_B | - | b | 57.79 ³ |
| 77.11 t, $^1J_{\text{CD}} = 32, \text{x}$ | - | - | CDCl_3 | 77.16 ¹ |

DEPT phase legend: \uparrow positive, \downarrow negative, x absent

References:

1. Chem 213 manual, University of Victoria, 2018, pages 76-79.
2. Sigma-Aldrich, <http://www.sigmaaldrich.com/spectra/fnmr/FNMR004114.PDF>, June 18, 2019
3. SDBS, https://sdb.sdb.aist.go.jp/sdb/cgi-bin/direct_frame_top.cgi, June 18, 2019

Appendices:

A list of appendices is not required, but a number and title should appear at the top of the first page of each appendix; subsequent pages within that appendix do not need a title.

1. ^1H NMR of ethanol (include original spectrum and relevant expansions)
2. COSY NMR of ethanol
3. $^{13}\text{C}\{^1\text{H}\}$ NMR of ethanol (include original spectrum and relevant expansions)
4. DEPT-135 NMR of ethanol (include original spectrum and relevant expansions)
5. HMQC NMR of ethanol
6. HMBC NMR of ethanol