Problem R-07C \((\text{C}_{19}\text{H}_{28}\text{O}_6)\)  
125.76 MHz \(^{13}\text{C}\) NMR Spectrum in CDCl\(_3\)  
Source: Kevin Lee/Burke 8/22 (Reich digitized hard copy)  

DEPT 135

Normal

Problem R-07D \((\text{C}_{19}\text{H}_{28}\text{O}_6)\).  
125.76 MHz \(^{13}\text{C}\) NMR Spectrum in CDCl\(_3\)  
(Source: Kevin Lee/Burke 8/22)

DEPT 135

Normal
Problem R-07C/R-07D (C_{19}H_{28}O_{6}). You are provided with the $^{13}$C NMR spectra of two isomers, and asked to distinguish them.

The structures of compounds 1 and 2 are shown below.

Identify difference(s) in the spectra of the two isomers that allow you to reliably distinguish the isomers 1 and 2. Clearly state your argument and give chemical shifts of the carbons involved. Mark the structures with C and D indicating your assignment.
Problem R-07C \((C_{19}H_{28}O_6)\).
125.76 MHz \(^{13}\)C NMR Spectrum in CDCl\(_3\)
(Source: Kevin Lee/Burke 8/22)

Problem R-07D \((C_{19}H_{28}O_6)\).
125.76 MHz \(^{13}\)C NMR Spectrum in CDCl\(_3\)
(Source: Kevin Lee/Burke 8/22)
Problem R-07C/D \((\text{C}_{19}\text{H}_{28}\text{O}_{6})\). You are provided with the \(^{13}\text{C}\) NMR spectra of two isomers, and asked to distinguish them.

The structures of compounds 1 and 2 are shown below.

1 = R-07 C

2 = R-07 D

Identify difference(s) in the spectra of the two isomers that allow you to reliably distinguish the isomers 1 and 2. Clearly state your argument and give chemical shifts of the carbons involved. Mark the structures with C and D indicating your assignment.

Expect the marked methyl signal in 2 to be upfield of that in 1 (cis \(\gamma\)-effect). The other \(\text{CH}_3\) signals should not move much, the 18.4 seems to have moved to 11.7. Thus 1 = C, 2 = D.

Similarly, expect the marked \(\text{CH}\) signal in 1 to be upfield of that in 2 (cis \(\gamma\)-effect). This one should be the most downfield of the \(\text{sp}^3\) \(\text{CH}\) signals. Thus 1 = C, 2 = D.
Problem R-07C (C$_{19}$H$_{28}$O$_{6}$).
125.76 MHz $^{13}$C NMR Spectrum in CDCl$_3$
(Source: Kevin Lee/Burke 8/22)

Problem R-07D (C$_{19}$H$_{28}$O$_{6}$).
125.76 MHz $^{13}$C NMR Spectrum in CDCl$_3$
(Source: Kevin Lee/Burke 8/22)

DEPT 135

Normal
The two carbons undergoing the different \( \gamma \)-interactions are the only ones that show a significant chemical shift between the two stereoisomers.