

Exam #2

This is an open-book, open notes exam. Show your work, so you can receive credit for correct parts of the final molecule.

1. (20 points) $C_6H_{12}O_3$

^{13}C NMR

205.2, s
101.5, d
53.8, q (2)
47.3, t
31.0, q

1H NMR

2.20, s, 3H
2.75, d, J=7.2 Hz, 2H
3.35, s, 6H
4.80, t, J=7.2 Hz, 1H

2. (40 points) $C_7H_{12}O$

^{13}C NMR

211.6, s
50.0, t
41.1, t
34.2, d
33.3, t
25.3, t
22.1, q

1H NMR

1.05, d, J=7.3 Hz, 3H
1.30, m, 1H
1.60, m, 1H
1.95, m, 3H
2.4, m, 4H

3. (40 points) $C_{10}H_{16}O_2$ IR: 2932, 2854, 1825, 1132 cm^{-1}

^{13}C NMR

172.9, s
79.0, d
46.8, d
37.7, d
28.9, t (2)
28.1, t
25.0, t (2)
8.4, q

1H NMR

4.18, dd, J = 10.6, 6.3 Hz, 1H
3.72, qd, J = 7.8, 6.3 Hz, 1H
2.01-1.92, m, 1H
1.82-1.52, m, 5H
1.34, d, J = 7.8 Hz, 3H
1.32-1.19, m, 3H
1.07-0.88, m, 2H