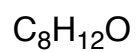


Chem 333 Organic Lab Lecture
Fall 2011
Exam #2
October 24, 2011

Name _____

This is an open-book, open-notes exam. Please indicate your answer clearly.

1. (20 points)



IR: 2975, 2879, 2212, 1677, 1173 cm^{-1}

^{13}C NMR

188.8, s

94.1, s

80.8, s

38.8, t

21.2, t

20.8, t

13.4, q

8.1, q

1H NMR

2.55, q, $J = 7.2$ Hz, 2H

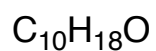
2.35, t, $J = 6.8$ Hz, 2H

1.6, m, 2H

1.14, t, $J = 7.2$ Hz, 3H

1.02, t, $J = 7.6$ Hz, 3H

2. (40 points)



IR: 3391, 2929, 1650, 1448, 1002, 967 cm^{-1}

^{13}C NMR

130.3, d
129.4, d
73.2, d
42.3, d
29.3, t
28.9, t (2)
26.7, t (2)
17.8, q

1H NMR

5.72, dd, $J = 6.4, 15.2$ Hz, 1H
5.47, dq, $J = 15.2, 7.6$ Hz, 1H
3.75, dd, $J = 6.4, 7.2$ Hz, 1H
2.1, bs, 1H (exchanges)
1.7, m, 5H
1.65, d, $J = 7.6$ Hz, 3H
1.3, m, 6H

3. (40 points) $C_{11}H_{16}O_3$ IR: 2928, 2859, 1743, 1714, 1651, 1612, 1440, 1257, 1215 cm^{-1}

^{13}C NMR

205.9, s

172.8, s

137.6, d

117.7, t

62.7, d

51.3, q

41.1, t

40.6, d

31.4, t

28.9, t

25.2, t

1H NMR

5.75, ddt, $J = 15.5, 11.2, 7.3$ Hz, 1H

5.0, m, 2H

3.75, s, 3H

3.17, d, $J = 11.0$ Hz, 1H

2.48, m, 2H

2.15, m, 2H

1.4-1.6, m, 5H