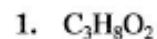
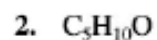


Using this same approach, you should be able to figure out the structures of unknowns 1–20 using the molecular formula and the ^{13}C NMR.



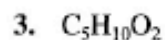
^{13}C NMR

57.5, q
60.1, t
73.1, t



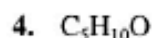
^{13}C NMR

29.6, q (2)
70.9, s
110.6, t
146.8, d



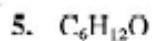
^{13}C NMR

19.3, q (2)
34.4, d
51.4, q
176.9, s



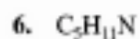
^{13}C NMR

212.5, s
41.6, d
27.4, q
18.1, q (2)



^{13}C NMR

80.0, s
41.3, t
28.2, q
24.1, t



^{13}C NMR

56.3, t (2)
42.2, q
24.1, t (2)



^{13}C NMR

170.4, s
34.4, t
23.1, q
14.7, q



^{13}C NMR

211.5, s
44.3, t
35.9, t
17.4, t
13.8, q
7.8, q



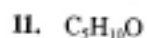
^{13}C NMR

204.7, d
50.7, d
26.7, t (2)
26.2, t (2)
25.6, t
25.3, t (2)



^{13}C NMR

73.4, t
32.6, s
26.0, q (3)



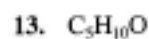
^{13}C NMR

135.5, d
125.5, d
68.8, d
23.3, q
17.5, q



^{13}C NMR

70.5, t
66.1, t
32.0, t
19.5, t
15.3, q
14.0, q



^{13}C NMR

205.2, d
47.7, d
23.6, t
12.9, q
11.4, q



^{13}C NMR

68.3, d
67.8, t
18.7, q



^{13}C NMR

67.2, t
37.4, d
24.5, t (2)
18.4, t



^{13}C NMR

67.0, d
41.6, t
23.3, q
19.1, t
14.0, q



^{13}C NMR

170.5, s
38.0, q
35.1, q
21.5, q



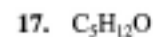
^{13}C NMR

173.8, s
64.5, t
34.4, t
26.1, t
24.8, t
24.5, t
24.0, t
23.9, t
23.5, t
23.3, t
22.1, t



^{13}C NMR

145.7, s
110.5, t
67.4, t
19.9, q



^{13}C NMR

72.7, t
58.5, q
31.8, t
19.4, t
13.9, q