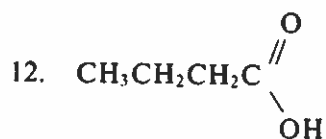
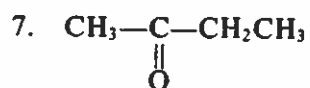
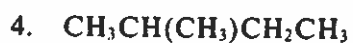
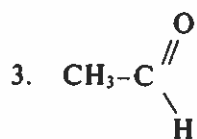


# Organic Chemistry

I. Identify the structural group in each of the following compounds and tell which organic family the compound belongs to.



(continued)

13.  $\text{CH}_3\text{C} \equiv \text{CH}$
14.  $\text{CH}_2\text{NH}_2\text{CH}_2\text{CH}_3$
15.  $\text{CH}_3\text{CCl}_2\text{CH}_3$

II. Write an expanded structural formula for each of the following compounds, and then name the compound.

1.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
2.  $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
3.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$
4.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}_3$
5.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{C}(\text{CH}_3)(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}_3$
6.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$
7.  $\text{CH}_3\text{CH}_2\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_3$
8.  $\text{CH}_3\text{CH}_2\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_3$
9.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}_3$

(continued)

10.  $\text{CH}_3\text{CHBrCH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$
11.  $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_3$
12.  $\text{CH}_3\text{CHClCCl}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_3$
13.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{C}_2\text{H}_5)\text{C}(\text{CH}_3)(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}_3$
14.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHClCHClCH}_2\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_3$
15.  $\text{CH}_2\text{ClCHBrCH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_2\text{CHBrCH}_3$
16.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}(\text{n-C}_3\text{H}_7)\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CHClCH}_3$
17.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CHBrCH}_2\text{CH}_3$
18.  $\text{CH}_2\text{ICH}_2\text{CH}_2\text{CHICH}_2\text{CHICH}_2\text{CH}_3$
19.  $\text{CH}_3\text{CH}_2\text{CHFCH}_2\text{CH}(\text{CH}_3)\text{CHICH}_2\text{CH}_3$
20.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CHICH}_2\text{CH}_2\text{CH}_3$
21.  $\text{CH}_2=\text{CH}_2$
22.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}=\text{CHCH}_2\text{CH}_3$

(continued)

23.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{C}(\text{CH}_3)=\text{CHCH}_2\text{CH}_3$
24.  $\text{CH}_2=\text{CHCH}_2\text{CH}(\text{CH}_3)\text{CHClCH}_3$
25.  $\text{CH}_3\text{CH}_2\text{CHBrCH}_2\text{CH}(\text{CH}_3)\text{CH}=\text{CHCH}_3$
26.  $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}_3$
27.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}=\text{C}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$
28.  $\text{CH}_3\text{CH}=\text{C}(\text{CH}_3)\text{CH}_2\text{CH}_2\text{CHClCH}_2\text{Cl}$
29.  $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_2\text{CHClCH}_2\text{CH}_3$
30.  $\text{CH}_3\text{CH}=\text{CHC}(\text{CH}_3)_2\text{CH}_2\text{CHClC}(\text{CH}_3)_2\text{CH}_2\text{CH}_3$
31.  $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CCl}_2\text{CH}_2\text{CH}_2\text{Br}$
32.  $\text{CH}_3\text{CH}_2\text{CH}=\text{C}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}_3$
33.  $\text{CH}_3\text{CHBrCH}=\text{CBrCH}_2\text{CH}(\text{CH}_3)\text{CH}_3$
34.  $\text{CH}_3\text{CH}_2\text{CH}=\text{C}(\text{CH}_3)\text{CHBrCH}_2\text{CH}_2\text{Br}$
35.  $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCHBrCH}_2\text{CHClCH}_2\text{Cl}$

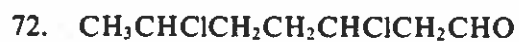
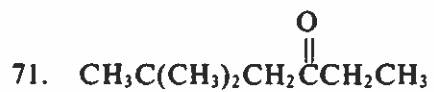
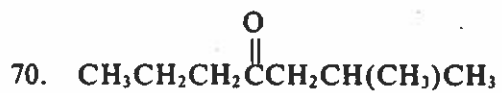
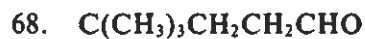
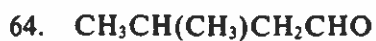
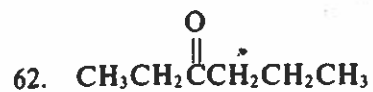
(continued)

36.  $\text{CH}_3\text{C}\equiv\text{CH}$
37.  $\text{CH}_3\text{C}\equiv\text{CCH}_3$
38.  $\text{CH}_3\text{CH}_2\text{C}=\text{CCH}_2\text{Br}$
39.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{C}\equiv\text{CCH}_3$
40.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{C}\equiv\text{CCH}(\text{CH}_3)\text{CHBrCH}_3$
41.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$
42.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
43.  $\text{CH}_3\text{CHOHCH}_2\text{CH}_2\text{CH}_3$
44.  $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$
45.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHOHCH}_2\text{CH}_2\text{CH}_3$
46.  $\text{CH}_3\text{CHOHCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
47.  $\text{CH}_3\text{CH}_2\text{CHOHCHClCH}_3$
48.  $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{OH}$

(continued)

49.  $\text{CH}_3\text{CHOHCH}(\text{CH}_3)\text{CH}_2\text{CH}_3$
50.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}(\text{CH}_3)\text{CHOHCH}_3$
51.  $\text{CH}_3\text{C}(\text{CH}_3)_2\text{CH}_2\text{CHOHCH}_2\text{CH}(\text{CH}_3)\text{CH}_3$
52.  $\text{CH}_2\text{OHCH}_2\text{CH}_2\text{CHClCH}(\text{CH}_3)\text{CH}_3$
53.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CHOHCHClCH}_2\text{Cl}$
54.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHOHCH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}_3$
55.  $\text{CH}_2\text{ClCHOHCHClCH}_3$
56.  $\text{CH}_3\text{CHOHCH}_2\text{CH}_2\text{C}(\text{C}_2\text{H}_5)_2\text{CH}_2\text{CH}_3$
57.  $\text{CH}_3\text{CHOHCH}_2\text{CHClCH}_2\text{CHBrCH}_2\text{Cl}$
58.  $\text{CH}_2\text{OHCH}(\text{CH}_3)\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}_3$
59.  $\text{CH}_2\text{OHCH}_2\text{CH}_2\text{CH}_2\text{OH}$
60.  $\text{CH}_3\text{CH}_2\text{CHOHCH}_2\text{CH}_2\text{CH}_2\text{OH}$
61.  $\text{CH}_3\text{CHO}$

(continued)



(continued)

73.  $\text{CH}_3\overset{\text{O}}{\parallel}\text{CCH}_2\text{CH}_2\text{CHICH}_2\text{CH}(\text{CH}_3)_2$
74.  $\text{CH}_3\text{CHICH}_2\text{CH}_2\text{CHICHO}$
75.  $\text{CH}_3\text{C}(\text{CH}_3)_2\text{CH}_2\text{CHIC}\overset{\text{O}}{\parallel}\text{CH}_2\text{CH}_3$
76.  $\text{CH}(\text{CH}_3)_2\text{CH}_2\text{CH}_2\overset{\text{O}}{\parallel}\text{CCH}_2\text{CH}_2\text{CH}_2\text{Br}$
77.  $\text{CH}_3\text{CH}_2\overset{\text{O}}{\parallel}\text{CCH}_2\text{CCl}_2\text{CH}_2\text{CH}_2\text{Cl}$
78.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CHO}$
79.  $\text{CH}_3\text{C}(\text{CH}_3)_2\text{CH}_2\text{CH}_2\overset{\text{O}}{\parallel}\text{CCH}_2\text{CH}_2\text{CH}_2\text{Cl}$
80.  $\text{CH}_3\text{CH}_2\text{CHClCH}_2\text{C}(\text{CH}_3)_2\text{CH}_2\text{CHO}$
81.  $\text{CH}_3\text{OCH}_3$
82.  $\text{CH}_3\text{CH}_2\text{OCH}_3$
83.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_3$

*(continued)*



84.  $\text{CH}_3\text{OCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
85.  $\text{CH}_3\text{CH}_2\text{OC}(\text{CH}_3)_3$
86.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$
87.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{COOH}$
88.  $\text{CH}_3\text{CH}_2\text{C}(\text{CH}_3)_2\text{COOH}$
89.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{COOH}$
90.  $\text{HOOCCH}_2\text{CH}_2\text{COOH}$
91.  $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_2\text{COOH}$
92.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}(\text{CH}_3)\text{COOH}$
93.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHClCH}_2\text{COOH}$
94.  $\text{CH}_3\text{CH}_2\text{CHFCH}_2\text{CH}_2\text{COOH}$
95.  $\text{CH}_3\text{CH}_2\text{CHNH}_2\text{COOH}$
96.  $\text{CH}_3\text{CH}_2\text{CHBrCOOH}$

(contin)

97.  $\text{CH}_3\text{CHBrCH}_2\text{CHBrCOOH}$
98.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHNH}_2\text{COOH}$
99.  $\text{CH}_3\text{CHOHCH}_2\text{COOH}$
100.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CHOHCOOH}$

**III. Draw structural formulas for each of the following compounds.**

1. n-butane
2. 2-chloropentane
3. 3-methylhexane
4. n-heptane
5. 2, 2, 4-trimethylheptane
6. 4-chloro-2, 3-dimethyloctane
7. 1, 2, 4-trichloropentane
8. 2, 3, 4-trimethylhexane

*(continued)*

9. 2, 3, 3-trimethylheptane
10. 4-bromo-4-chloro-2-methyldecane
11. 2, 3-dimethyl-3-hexene
12. 2-chloro-1-pentene
13. 3-octene
14. 4-ethyl-2, 3-dimethyl-3-nonene
15. 2, 2, 3, 5-tetramethyl-3-octene
16. 1, 4, 5-tribromo-2, 2-dichloro-3-heptene
17. 3-chloro-2, 3-difluoro-1-butene
18. 1, 3-butadiene
19. ethanol
20. 2-propanol
21. 2-pentanol

22. 3, 3-dimethyl-2-hexanol
23. 1, 2, 3-trichloro-1-butanol
24. 3-ethyl-2, 2-dimethyl-1-hexanol
25. 2, 4, 4-trimethyl-2-heptanol
26. 2-bromo-1, 3, 6, 7-tetrachloro-4, 4-dimethyl-1-decanol
27. 1, 3-butanediol
28. 2, 2-dibromo-3, 4-dimethyl-3-hexanol
29. 1, 4-difluoro-2, 2, 3-trimethyl-3-heptanol
30. 3-ethyl-2, 4-diiodo-2, 4, 5-trimethyl-1-nonanol
31. heptanal
32. butyraldehyde
33. methylpropyl ketone
34. diethyl ketone

(continued)

35. 4-nonanone
36. 3-ethyl-2-methylhexanal
37. 3-bromo-2, 2-dichlorobutanal
38. 2-chloro-2, 4-dimethyl-3-hexanone
39. methanal
40. 2, 3, 3-trimethylpentanal
41. 2, 4, 4-trimethyl-3-heptanone
42. 4-chloro-4-iodo-3, 3-dimethyl-2-pentanone
43. 2, 3-dibromo-4, 6, 7-trichlorodecanal
44. 5, 7-diethyl-2, 3, 5-trimethyl-4-nonanone
45. butanoic acid
46. 1, 5-pentanedioic acid
47.  $\alpha$ -aminopropionic acid

48. 2, 3-dichlorobutanoic acid
49. 3, 3-dimethylhexanoic acid
50.  $\gamma$ -hydroxyvaleric acid
51. 2, 3, 4-tribromodecanoic acid
52. 4, 4, 5-triiodo-2-methylhexanoic acid
53.  $\alpha$ -hydroxybutanoic acid
54. 1, 4-butanedioic acid
55.  $\beta$ -hydroxyvaleric acid
56. 4-chloro-2, 3-dimethylhexanoic acid
57. 3, 4-dibromo-2, 5, 7-trichlorodecanoic acid
58. 2, 2-diaminobutanoic acid
59. 5, 6-dichlorooctanoic acid
60. 2, 4-dihydroxypentanoic acid