Solutions for Organic Chemistry 12th Edition by Solomons

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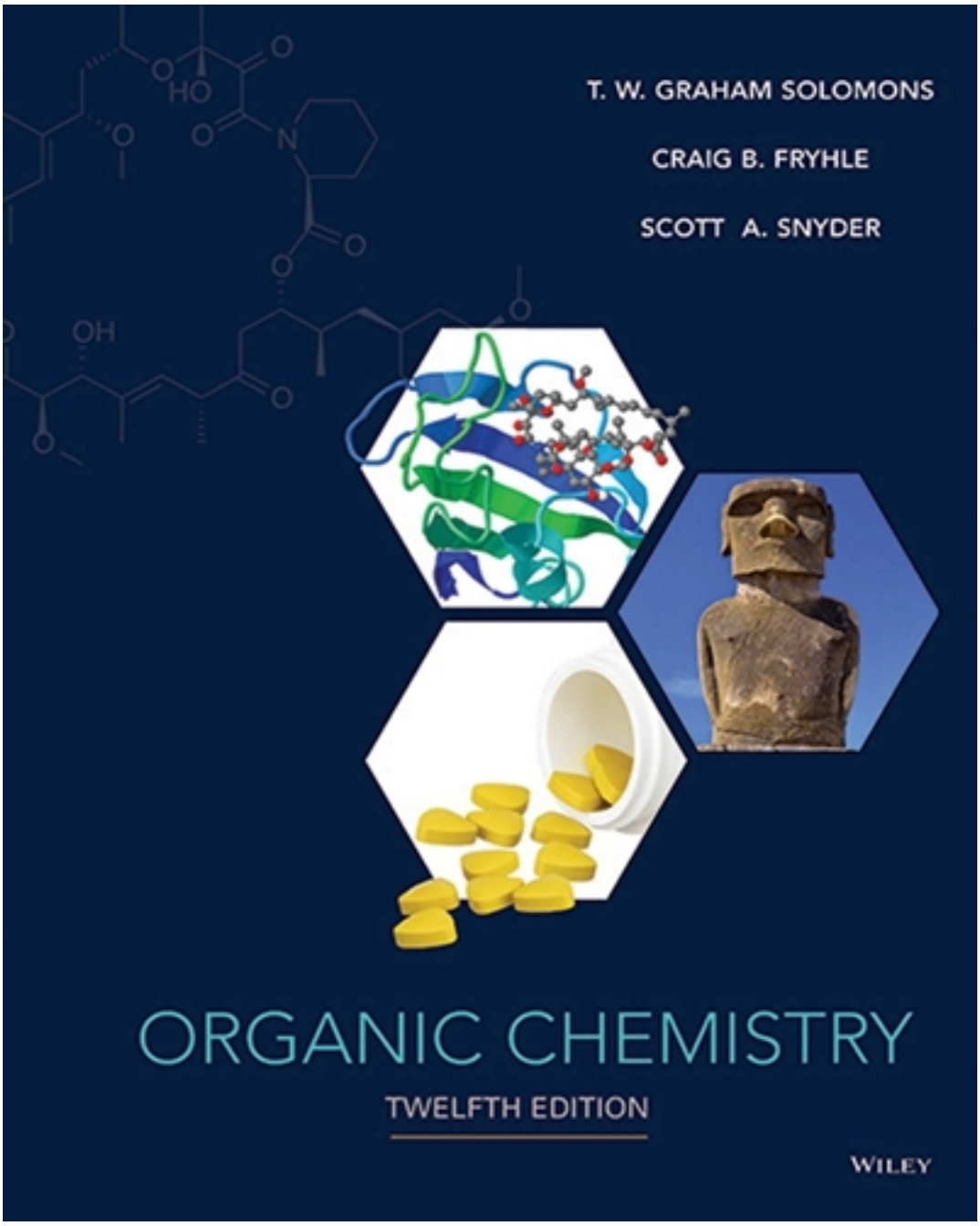


Solutions

SELECTED PROBLEMS

CHAPTER 1

1.15 (a) and (d); (b) and (e); and (c) and (f).

1.27 (a), (c), (d), (f), (g), and (h) have tetrahedral geometry; (b) is linear; (e) is trigonal planar.

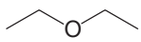
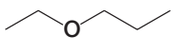
1.35 (a), (g), (i), (l), represent different compounds that are not isomeric; (b–e), (h), (j), (m), (n), (o) represent the same compound; (f), (k), (p) represent constitutional isomers.

1.42 (a) The structures differ in the positions of the nuclei. (b) The anions are resonance structures.

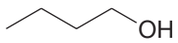
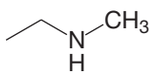
1.44 (a) A negative charge; (b) a negative charge; (c) trigonal pyramidal; (d) sp^3.

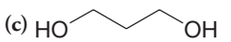
CHAPTER 2

2.11 (c) Propyl bromide; (d) isopropyl fluoride; (e) phenyl iodide.

2.14 (a)  (b) 

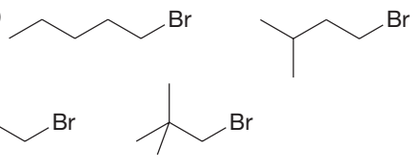
(e) diisopropyl ether.

2.25 (a)  (b) 

(c) 

2.29 (b) alkyne; (d) aldehyde; (e) 2° (secondary) alcohol.

2.30 (a) 3 alkene groups, and a 2° alcohol; (c) phenyl and 1° amine; (e) phenyl, ester and 3° amine; (g) alkene and 2 ester groups.

2.35 (f) 

2.53 Ester

CHAPTER 3

3.3 (b) and (e) are Lewis acids; (a), (c), (d), and (f) are Lewis bases.

3.5 (a) $[H_3O^+] = [HCO_2^-] = .0042\ M$; (b) Ionization = 4.2%.

3.6 (a) $pK_a = 7$; (b) $pK_a = -0.7$; (c) The acid with a $pK_a = 5$ (the lower of the two pK_a values) has a larger K_a, therefore it is the stronger acid.

3.8 The pK_a of the methylaminium ion is equal to 10.6 (Table 3.1 and Section 3.5C). Because the pK_a of the anilinium ion is equal to 4.6, the anilinium ion is a stronger acid than the methylaminium ion, and therefore aniline ($C_6H_5NH_2$) is a weaker base than methylamine (CH_3NH_2).

3.14 (a) $CHCl_2CO_2H$ would be the stronger acid because the electron-withdrawing inductive effect of two chlorine atoms would make its hydroxyl proton more positive. (c) CH_2FCO_2H would be the stronger acid because a fluorine atom is more electronegative than a bromine atom and would be more electron withdrawing.

3.31