

# ERRATA

Study Guide and Solutions Manual, 7th Edition, by Jim Parise, Marc Loudon and Lisa Bonner  
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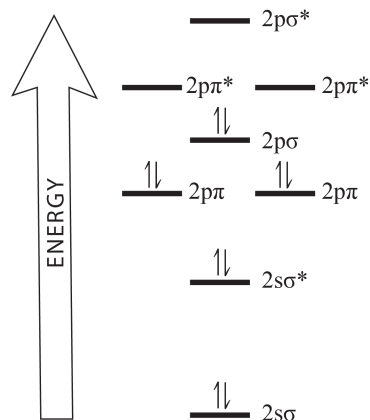
Unmarked corrections have been corrected in the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> printing.

\*Means that corrections will be made in the 6<sup>th</sup> printing.

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## Chapter 1

- p. 7 In the solution to Problem 1.3a, change the word “less” to “loss.”
- \*p. 7 In the solution to Problem 1.4, the third line should read, “...you can use  $(2p)^6$  or  $(3p)^6$ , as in parts (c) through (f) below.”
- p. 10 Add an introductory comment: In each of these cases the single bonds are shown to hydrogen.
- \*p. 12 In the solution to Problem 1.21, the 109.5 is missing a degree sign; that is, it should be 109.5°.
- p. 16 In the solution to Problem 1.28(a), the statement should be: The nitrogen and the carbon bonded to it are ...
- p. 16 In the solution to Problem 1.27d, the statement should read, “The geometry is trigonal planar at the carbon atom and bent at the oxygen. Because the oxygen orbital containing the nonbonded electron pair has increased 2s character, and the other hybrid orbitals on oxygen have increased 2p character, the C—O—H bond angle is somewhat smaller than 120°.”
- p. 18 In the solution to Problem 1.32c, the statement should be that the lowest MO has zero *new* nodes. (As with the carbon of methane, text Fig. 1,14, we don’t show the internal node of the 2s orbital of oxygen.)
- p. 18 In the solution to Problem 1.33, second sentence should be: The Si—Cl bond is most polar ... (not the Si—C bond).
- \*p. 21 In the solution to Problem 1.51, the order of bond lengths should read
- $$c \approx a < d < b \approx f < h < e < g$$
- Si and Cl are in the same row of the periodic table; so, the more electronegative element (Cl) has the shorter bond to carbon.
- p. 22 In the solution to Problem 1.54(b), the geometry at the oxygen is bent, not trigonal planar. In the solution to Problem 1.56(a), the idealized hybridization of the central oxygen of ozone is  $sp^2$ , and its geometry is bent.
- p. 24 In the electron-occupancy diagram shown in Fig. SG1.7, the energy level for the  $2p\sigma$  MO should be raised so that it is just above the level of the two  $2p\pi$  MOs:

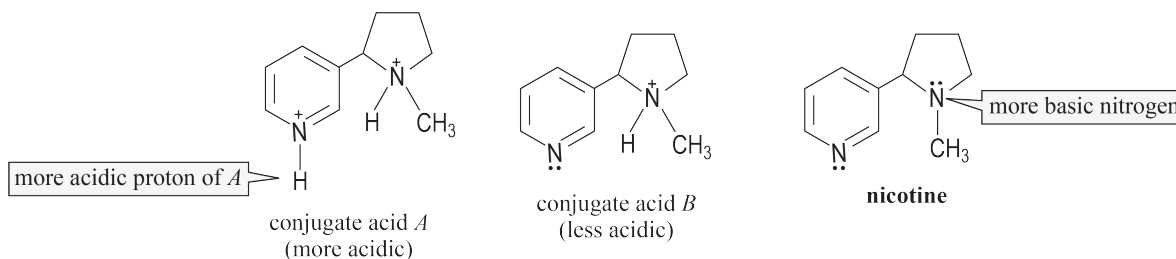


- p. 25 In the solution to Problem 1.63, move the resonance structures following part (c) up so they are under part (a).
- p. 28 In the solution to Problem 1.69(d): the phrase after the dash should be: —that is, it is *not* cylindrically ...

## Chapter 2

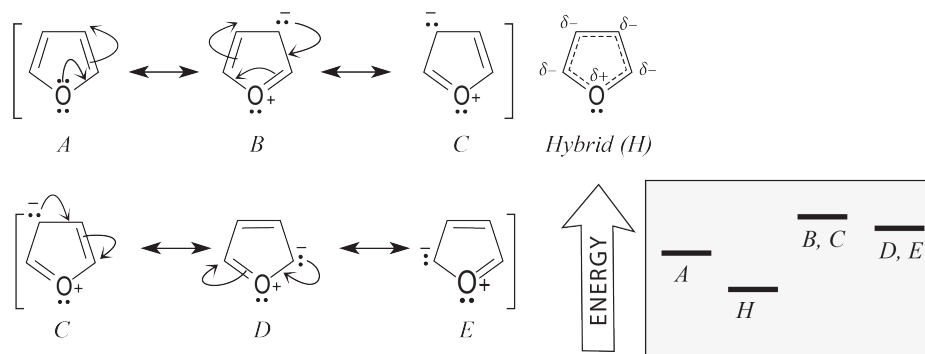
## Chapter 3

- p. 56 Part (2) of the Problem 3.18 was not answered explicitly. In (a) and (b), the reactants are more stable than the products. In (c) and (d), the products are more stable than the reactants.
- p. 58 In the solution to Problem 3.26(a), the last sentence should read: The  $K_{\text{eq}}$  for this reaction is  $10^{(9.25-14)} = 10^{-4.75}$ . (There is an extra minus sign in the first exponential expression.)
- pp. 60–61 In the solution to Problem 3.35, the structure of the conjugate acid *A* is incorrect. It should be the deprotonated nicotine.



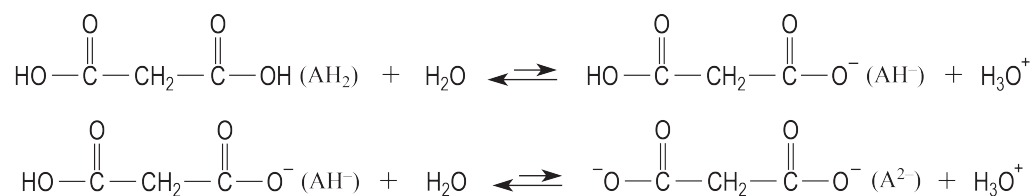
Add to the solution at the bottom of p. 60: “The  $\text{sp}^3$ -hybridized nitrogen is therefore the more basic nitrogen of nicotine.”

- p. 64 In the solution to Problem 3.47b, two additional charge-separated resonance structures for furan should be shown:



Space constraints prevent our showing these on reprint; however, their inclusion does not alter the conclusion that structure *A* is most important.

p. 68 In the solution to Problem 3.65, labeling the structures helps to follow the discussion:

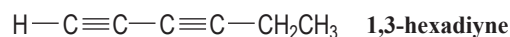


p. 70 In the solution to Problem 3.70, the division line in the fraction  $K_{\text{HA}}/K_{\text{HB}}$  of the second equation is missing.

$$\frac{K_{\text{HA}}}{K_{\text{HB}}} = \frac{[\text{H}_3\text{O}^+][\text{A}^-]}{[\text{HA}]} \times \frac{[\text{HB}]}{[\text{H}_3\text{O}^+][\text{B}^-]} = \frac{[\text{HB}][\text{A}^-]}{[\text{HA}][\text{B}^-]} = K_{\text{eq}}$$

## Chapter 4

p. 84 The structure given in part (e) of the solution to Focused Problem 4.8 is not the one requested. The correct structure is

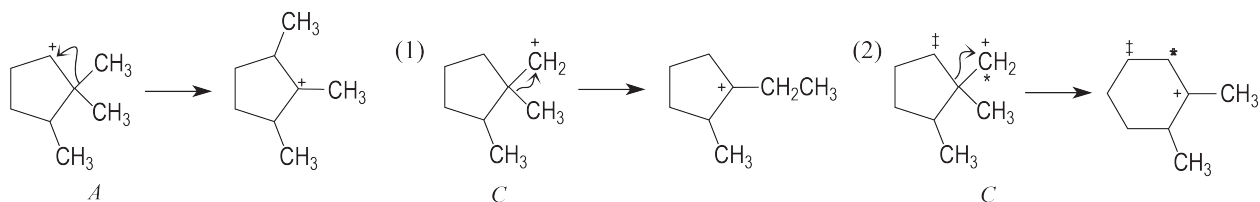


p. 86 In the solution to Problem 4.16, omit the degree sign preceding the last  $\text{O}_2$  on the equation.

p. 86 In the solution to Problem 4.19, the least stable hydrocarbon is 1-pentyne, not 1-hexyne.

p. 95 In the solution to part (b) of Problem 4.53, the stability order is reversed; the order should be  $B < A < C$ .

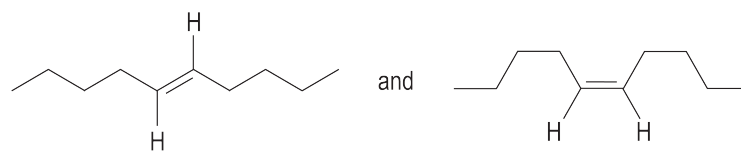
p. 98 In the display at the top of the page, which is part of the solution to Problem 4.63, a methyl group is missing in the final product. The corrected display is as follows:



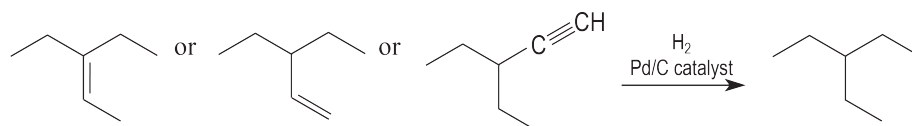
p. 98 In the solution to Problem 4.65, the calculation is for  $T = 25^\circ\text{C}$ , or 298 K.

## Chapter 5

p. 130 In the solution to Problem 5.28b the methyl substituents should be hydrogens:



p. 130 The solution to Problem 5.29c should be alkenes or alkynes with 7 carbons rather than 6 carbons as shown; and the product, of course, should also have 7 carbons.



(Compounds with more than one double and/or triple bond, not shown here, are also possible.)

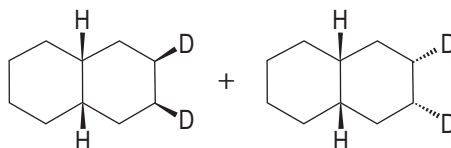
## Chapter 6

## Chapter 7

p. 177 The solution to Problem 7.41a used an incorrect value for the equilibrium constant (2.01) at the end of the first line; this should have been 2.07, as given in the problem. This produced in turn a small error in the resulting calculation. The solution should now read (corrections in **bold**):

From the equilibrium constant (**2.07**), we use  $\Delta G^\circ = -2.303RT \log K_{\text{eq}} = -5.71 \times \log(\mathbf{2.07}) = -1.80 \text{ kJ mol}^{-1}$  (**-0.43 kcal mol<sup>-1</sup>**). The conformation with the equatorial chlorine is more stable.

p. 181 The product in the solution for Problem 7.50f should be two diastereomers, as follows:



## Chapter 8

## Chapter 9

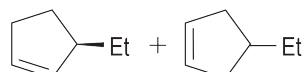
p. 221 Starting with Eq. FE9.5 and continuing up to the next equation there are symbol errors that are not consistent with symbols used elsewhere in the manual—specifically, the Boltzmann constant is abbreviated  $k_B$  and not  $\kappa$ . The units of the Planck constant should be J s. The numerical value of the Boltzmann constant is incorrect. The values of the constants are all corrected to the same number of significant figures. Finally, the sentence above Eq. FE9.6 has some incorrect punctuation and boldface. The corrected passage is as follows:

$$k = \frac{k_B T}{h} e^{-\Delta G^\ddagger/RT} = (6.21 \times 10^{12} \text{ s}^{-1}) (e^{-\Delta G^\ddagger/RT}) \quad (\text{FE9.5})$$

where  $k_B$  = the Boltzmann constant ( $1.38 \times 10^{-23} \text{ J K}^{-1}$ ),  $h$  = the Planck constant ( $6.63 \times 10^{-34} \text{ J s}$ ), and  $T$  is the absolute temperature in kelvins. The evaluation of the  $k_B T/h$  pre-exponential factor in Eq. FE9.5 is at  $T = 298 \text{ K}$ , or approximately room temperature. This is the equation used to give the relationship between the standard free energy of activation and rate constant in Table 9.2 in text Sec. 9.3B.

A useful concept used to describe the velocity of a reaction is the **half-life**, abbreviated  $t_{1/2}$ .

p. 227 A structure should be added to the solution to Problem 9.17a. The corrected solution is



### Chapter 10

p. 269 In the solution to Problem 10.39(c), the values of bonds  $f$  and  $g$  were interchanged. The overall  $\Delta H^\circ$  calculation should be (interchanged items that should be corrected are in *boldface*):

$$4b + e + x + y - 2g - 4f - x - y = 4b + e - 2g - 4f = 4(463) + 728 - 2(\mathbf{368}) - 4(\mathbf{423}) = +152 \text{ kJ mol}^{-1} \\ (+36.3 \text{ kcal mol}^{-1})$$

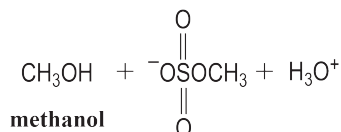
p. 275 In the solution for Problem 10.49, insert a clarification in part (c) to read: "... the bond homolysis of 2,2,3,3-tetramethylbutane [by part (b), pathway (2)] should occur more readily."

The first sentence in the solution to part (d) should read: "The  $\Delta H^\circ$  for the reaction in part (c) [that is, part (b), pathway (2)] is the difference between the heats of formation of products and reactants." The second sentence in the last paragraph should read, "This demonstrates quantitatively the assertion in the solution to part (c), namely ..."

p. 278 In the solution to Problem 10.57(a), the cross-reference to Table 5.2, text p. 212, should be changed to Table 10.1, text p. 518.

### Chapter 11

p. 302 In the solution to Problem 11.19(b), omit the sodium ion. The solution for this part is as follows:



### Chapter 12

### Chapter 13

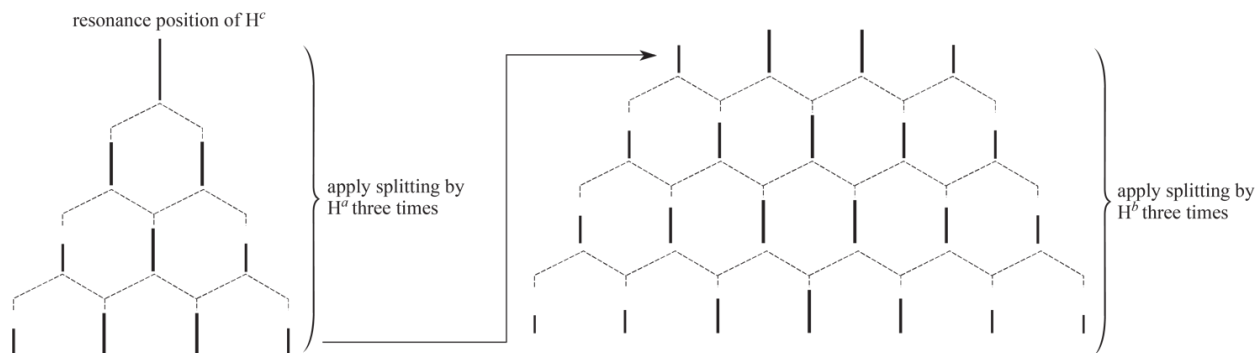
### Chapter 14

p. 408 The solution to Focused Problem 14.26(c) is missing. This solution is:

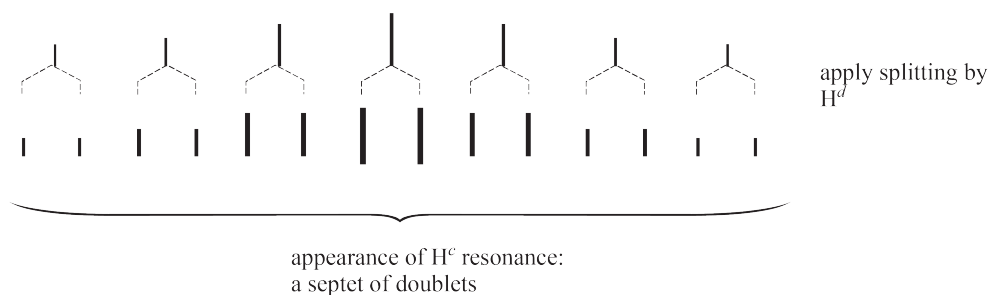
(c) The compound is 3,3-dimethyl-1-butyne (*tert*-butylacetylene)  $(\text{CH}_3)_3\text{CC}\equiv\text{CH}$ .

p. 424 In the solution to Problem 14.59(b), the splitting diagram is confusing. This solution and a revised diagram should read as follows:

The signal for proton  $c$  is split with  $J = 7.0$  Hz into a quartet by protons  $a$ , and that quartet is split again with  $J = 7.0$  Hz, into a septet by protons  $b$ . Because the coupling constants are the same, lines in the two splitting patterns overlap. The way to show this is to apply the splitting of each proton  $a$  successively, and then, to the resulting pattern, apply the splitting of each proton  $b$  successively:



Finally, each peak in that septet is split into a doublet by 4.3 Hz by proton *d*.



**Chapter 15**

**Chapter 16**

**Chapter 17**

**Chapter 18**

**Chapter 19**

**Chapter 20**

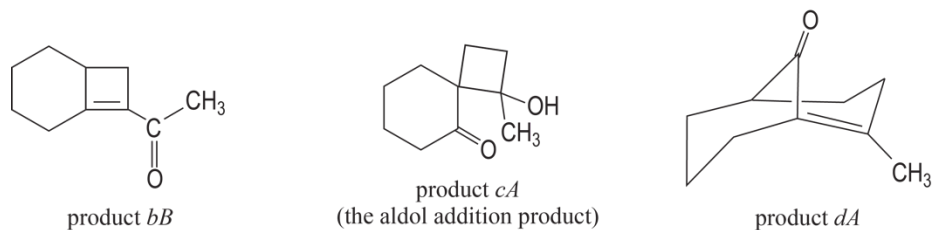
**Chapter 21**

**Chapter 22**

p. 781

In the solution to Problem 22.23, the second structure in the array of possible products is impossible because it has a pentavalent carbon. The last three sentences of the first paragraph should read as follows, with a corrected array of products:

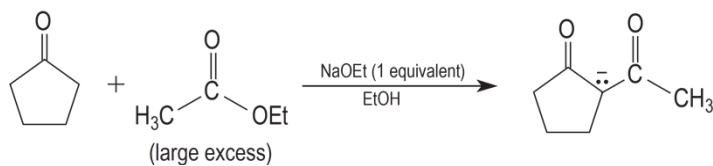
Reaction of an enol formed at carbon *c* with carbonyl *A* also would require the formation of a strained four-membered ring (product *cA* below). This alcohol cannot dehydrate to a conjugated product, and its formation would be reversible. Reaction of an enol formed at carbon *d* with carbonyl *A* would give bicyclic compound *dA*:



p. 800

In the solution to Problem 22.62(a), the product of the equation should be a  $\beta$ -diketone rather than a  $\beta$ -keto ester, and there are several corrections in the text. The complete solution is as follows:

22.62 (a) The likely reaction:



(Addition of acid in a separate step would be required to give the neutral  $\beta$ -diketone.) Because the product is the relatively stable anion, a second condensation (at either of the other  $\alpha$ -positions of the diketone) is unlikely because it would require formation of a much less stable enolate of the ketone (unless a second equivalent of base were used). An aldol condensation of the ketone with itself is reversible and unfavorable, so this product will not be observed. A Claisen condensation of the ester with itself is not likely because the ketone is much more acidic than the ester; because there is an excess of the ester, the ketone enolate will react with the ester.

Chapter 23

Chapter 24

Chapter 25

Chapter 26

Chapter 27

Chapter 28

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