ORGANIC CHEMISTRY 1 LECTURE GUIDE 2019

BY RHETT C. SMITH

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Organic Chemistry 1
Lecture Guide 2019

By Rhett C. Smith, Ph.D.

Companion Books from the Proton Guru:

Organic Chemistry 1 Reactions and Practice Problems 2019

by Rhett C. Smith

Organic Chemistry 1 Primer 2019,

by Rhett C. Smith, Andrew G. Tennyson, and Tania Houjeiry

1. Opposite Charges Attract

2. Like Charges Repel

Notes

When given the formula for a molecule or ion:

1. Add up valence electrons; if it is an ion and has a charge, add an electron for each "–" charge, take away an electron for each "+" charge.
2. Draw single bonds between the atoms
3. Add remaining valence electrons to the atoms to give them the expected number of lone pairs (you know this from the Lewis structure of the given element)
4. Add bonds between adjacent elements that have open valences, making multiple bonds.

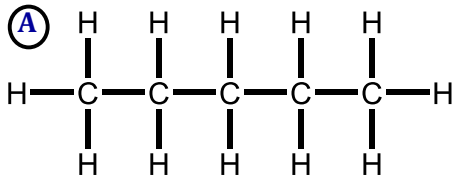
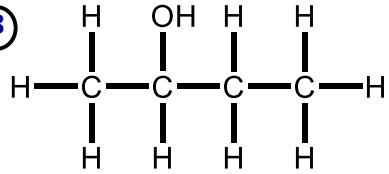
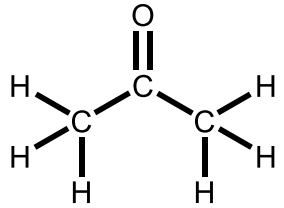
HINT:

Most neutral species we will encounter in this class feature elements with a total of 8 electrons (an octet) around them in the correct structure, except H, which will have only 2.

Notes

	Target	Atoms	#e^-	Structure
A.	CCl_4	C 4×Cl		
B.	CH_3OH	C 4×H O		
C.	CH_2O	C 2×H O		

Notes

dash formula	condensed formula	bond-line formula
A 	$CH_3CH_2CH_2CH_2CH_3$ $CH_3(CH_2)_3CH_3$	
B 	$CH_3CH(OH)CH_2CH_3$	
C 	$CH_3C(O)CH_3$	

Notes

Since orbitals point in different directions, it should not be surprising that bonds point in various directions, and that molecules are three-dimensional. Chemists use a simple shorthand, called the "dash-wedge notation" in order to attempt to indicate a molecules 3D shape on 2D paper. It's not too complicated …

A "regular" line indicates a bond that lies

(A)

A "wedge" indicates a bond that is

(B)

A "dashed wedge" indicates a bond that is

(C)

Notes