

Announcements – Lecture XI – Thursday, Oct 10^h

1. **Lab 3 – Saturday, October 19th, 1:00-4:00 pm – ISB 155/160 A-E**
Lab Owl II – Deadline – Saturday, October 19th, 11:59 pm

2.



iClicker:

Choose any letter:

A-E

3.7

C

Group V:

What Is a Covalent Bond and How Does One Form?

Drawing Lewis Structures of Covalent Compounds

Organic Molecules



$$\text{C} : 2(4)$$

$$\text{H} : 6(1)$$

$$\text{O} : 6$$

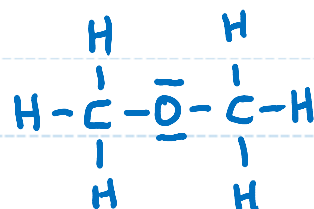
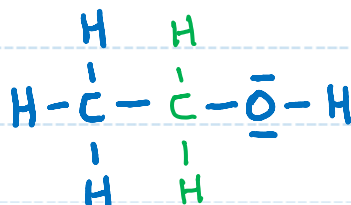
$$\hline 20$$

$$8 \times \text{BP} \quad -16$$

$$\hline 4$$

$$2 \times \text{LP} \quad -4$$

$$\hline 0$$



How many C-H bonds are there in $\text{C}_2\text{H}_6\text{O}$

a) 3

b) 4

c) 5

d) 6

e) Help



How do I know which one?
Does it matter?

Notes

When dealing with organic molecules we can assume with some degree of certainty that the "Octet Rule" is not violated and thus:

C: 4 bonds, 0 lone pairs

N: 3 bonds, 1 lone pair

O: 2 bonds, 2 lone pairs

Halides: 1 bond, 3 lone pairs



3.7

What Is a Covalent Bond and How Does One Form?

C

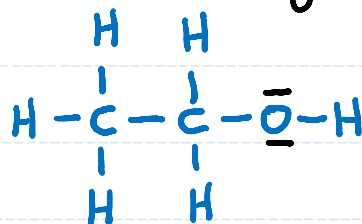
Drawing Lewis Structures of Covalent Compounds

Group V:

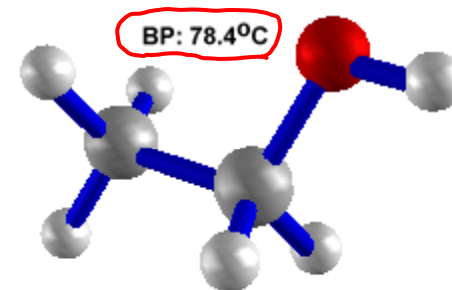
Organic Molecules



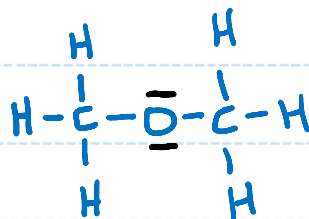
↳ Alcohol functional group



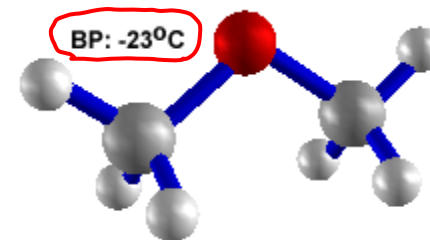
Ethanol.



↳ Ether



Dimethyl ether



3.7

What Is a Covalent Bond and How Does One Form?

C

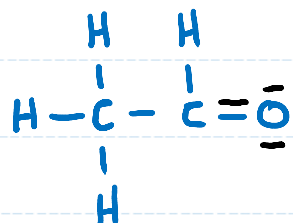
Drawing Lewis Structures of Covalent Compounds

Group V:

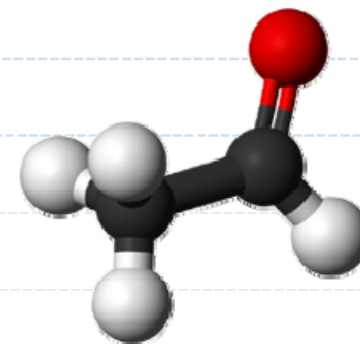
Organic Molecules



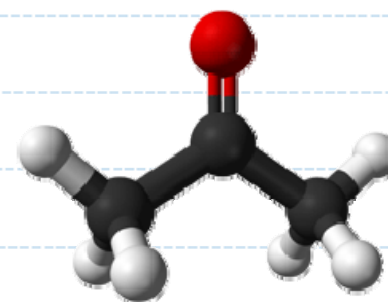
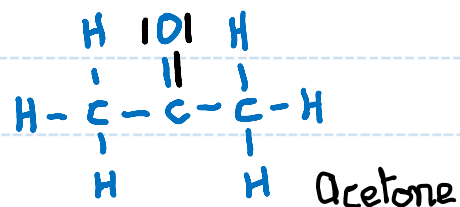
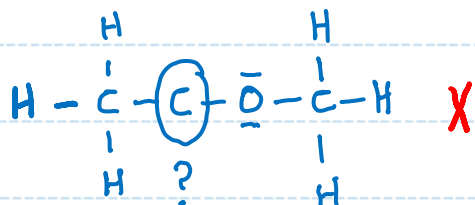
↳ aldehyde



Acetaldehyde



↳ Ketone



3.7

C

Group V:

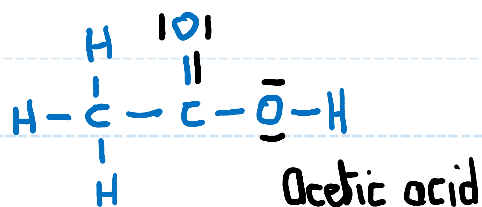
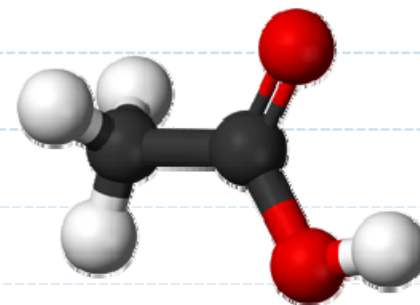
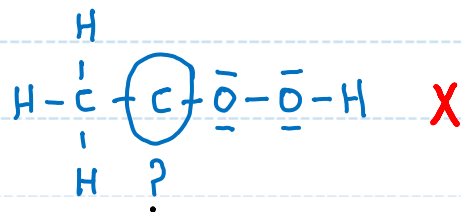
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Drawing Lewis Structures of Covalent Compounds

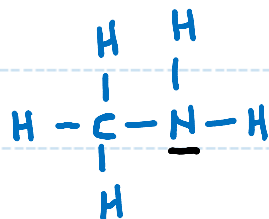
Organic Molecules



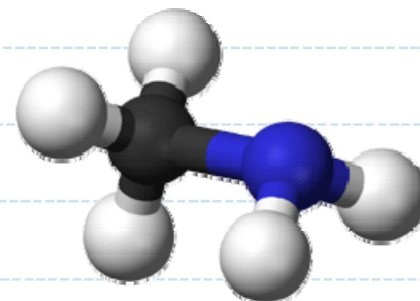
Carboxylic acid



Amine (base)

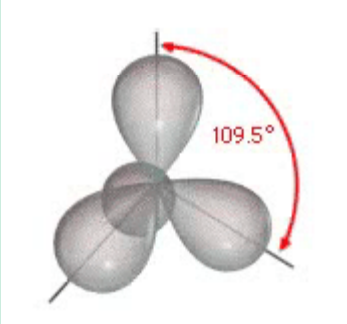
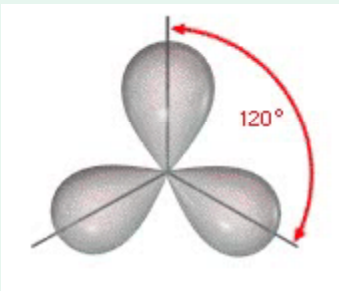
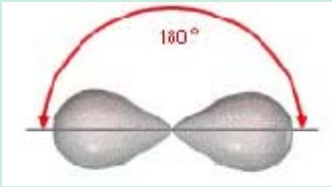


Methylamine



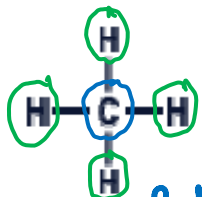
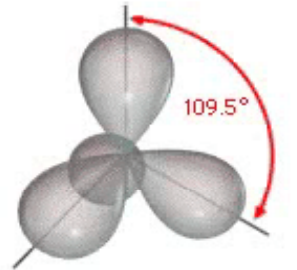
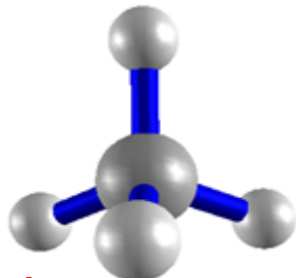
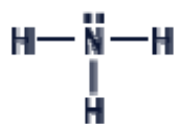
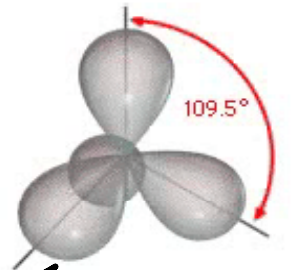
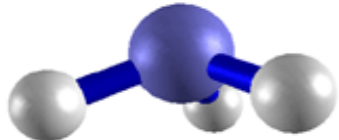

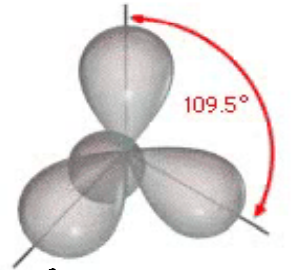
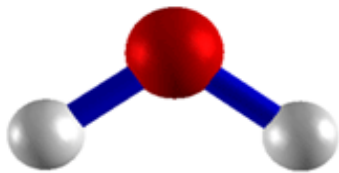
3.10 Molecular Geometries

Balloons – Shapes – Angles

No of Balloons	Shape	Name	Angle
4		TETRAHEDRON	$\sim 109^\circ$
3		TRIGONAL PLANAR	120°
2		LINEAR	180°

3.10 Molecular Geometries and Bond Angles → ELECTRON PAIR GEOMETRY

Molecular Geometry Worksheet Fall 2008 ... Whelan ... Page 1

Lewis Structure	Classification	X+E	Parent Geometry	Molecular Geometry	Bond Angle	Polarity
<p>CH₄</p>  <p>A: Central atom X: Attachments on A E: Lone pairs on A</p>	<u>AX₄E₀</u>	<u>4</u>	 <p>TETRAHEDRON</p>	 <p>TETRAHEDRON</p>	<u>~109°</u>	
<p>NH₃</p> 	<u>AX₃E₁</u>	<u>4</u>	 <p>TETRAHEDRON</p>	 <p>TRIGONAL PYRAMID</p>	<u>~109°</u>	
<p>H₂O</p> 	<u>AX₂E₂</u>	<u>4</u>	 <p>TETRAHEDRON</p>	 <p>ANGULAR/BENT 109°</p>	<u>~109°</u>	