

## Announcements – Lecture XII – Thursday, Oct 20<sup>th</sup>

### 1. Third Lab – Saturday, October 22<sup>nd</sup> ... 1-4pm ... ISB 155/160 (A-E)

a) *Print lab prior to coming to lab -- use the 'Print Friendly Version' located on the top left hand side of the page – this is the version that contains the 'Data Sheet' that you will hand in upon completing the lab.*

b) *Second set of Lab Owls will appear in Owl after this lab. There are a total of 4 sets of Lab Owls and they are worth 25% of the Lab Grade.*

### 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



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

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

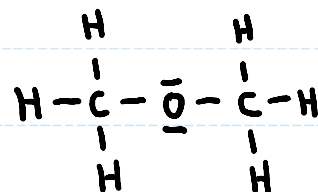
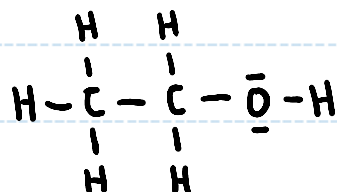
$$\text{O: } 6$$

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

$$\hline 4$$

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

$$\hline 0$$



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.

H: 1 bond.

N: 3 bonds, 1 lone pair.

O: 2 bonds, 2 lone pairs.

Halides: 1 bond, 3 lone pairs.



### 3.7

### C

### Group V:

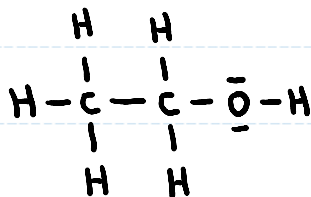
## What Is a Covalent Bond and How Does One Form?

### Drawing Lewis Structures of Covalent Compounds

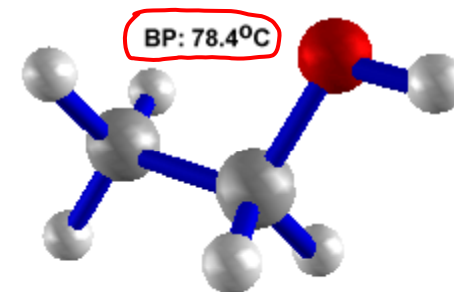
### Organic Molecules



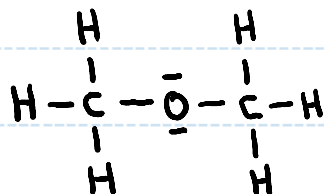
↳ Alcohol functional group



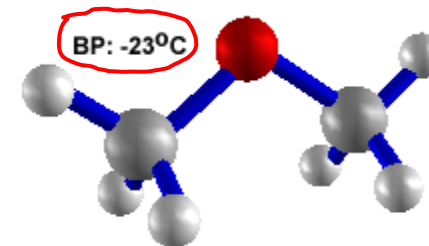
Ethanol



↳ ether



Dimethylether



## 3.7

## What Is a Covalent Bond and How Does One Form?

## C

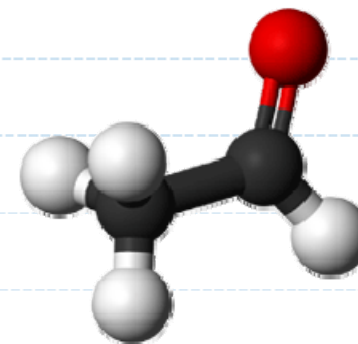
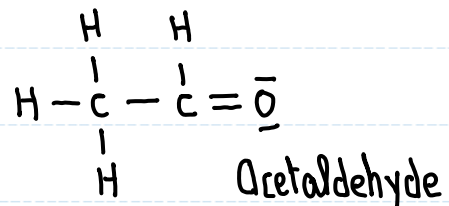
## Drawing Lewis Structures of Covalent Compounds

## Group V:

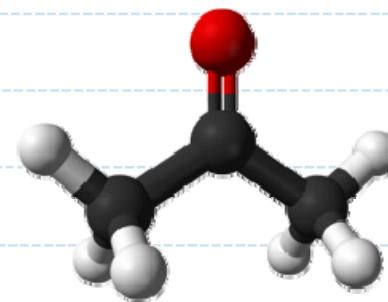
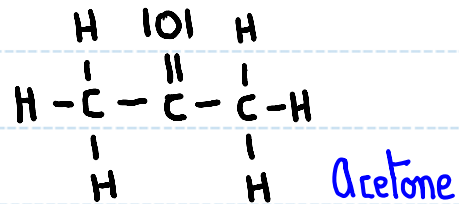
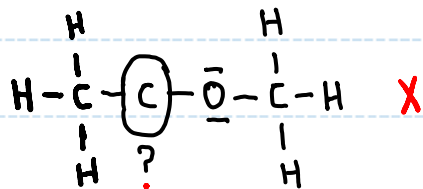
## Organic Molecules



↳ Aldehyde



↳ Ketone



## 3.7

## What Is a Covalent Bond and How Does One Form?

## C

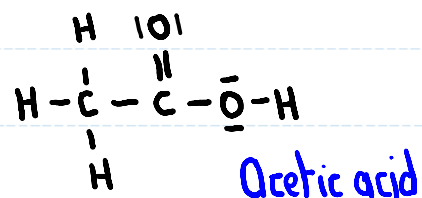
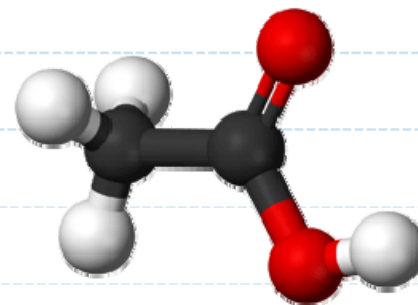
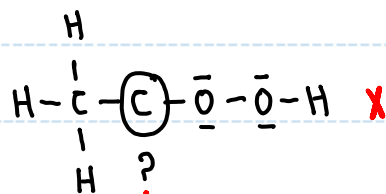
## Drawing Lewis Structures of Covalent Compounds

## Group V:

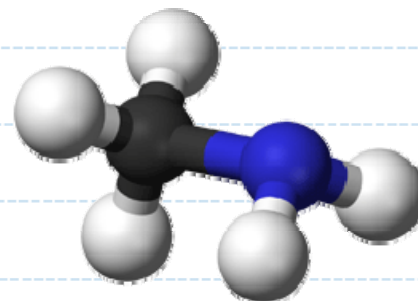
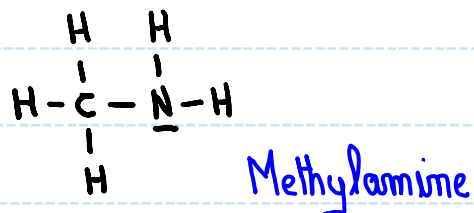
## Organic Molecules



↳ Carboxylic acid

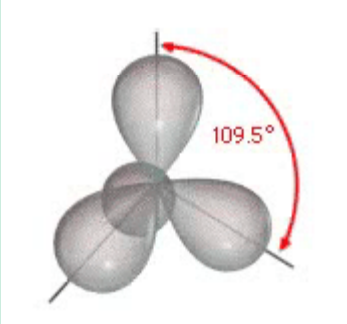
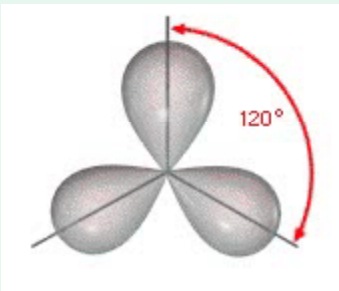
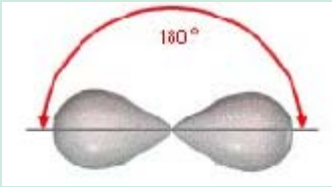


↳ Amine (base)



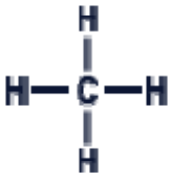
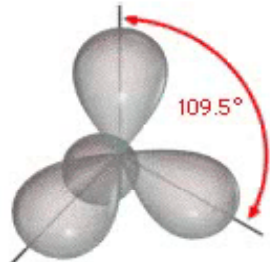
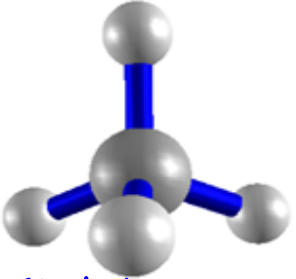
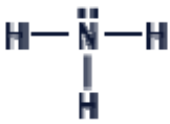
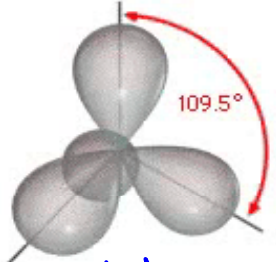
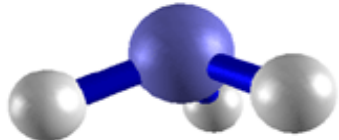

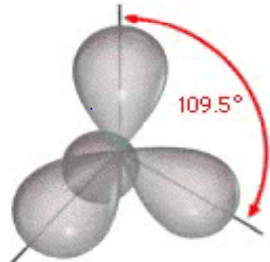
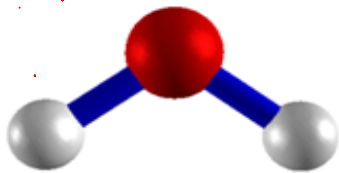
### 3.10 Molecular Geometries

#### Balloons – Shapes – Angles

No of Balloons	Shape	Name	Angle
4		Tetrahedron	$\sim 109^\circ$
3		Trigonal planar	$120^\circ$
2		Linear	$180^\circ$

### 3.10 Molecular Geometries and Bond Angles

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

Lewis Structure	Classification	X+E	Parent Geometry	Molecular Geometry	Bond Angle	Polarity
$\text{CH}_4$  A: Central atom X: Attachments on A E: Lone Pairs on A	$\text{AX}_4\text{E}_0$	<u>4</u>	Electron Pair Geometry  Tetrahedron	 Tetrahedron	<u><math>\sim 109^\circ</math></u>	
$\text{NH}_3$ 	$\text{AX}_3\text{E}_1$	<u>4</u>	 Tetrahedron	 Trigonal pyramid	<u><math>\sim 109^\circ</math></u>	
$\text{H}_2\text{O}$ 	$\text{AX}_2\text{E}_2$	<u>4</u>	 Tetrahedron	 Angular/Bent ( $\sim 109^\circ$ )	<u><math>\sim 109^\circ</math></u>	