

3.7

C

What Is a Covalent Bond and How Does One Form?

Multiple Bonds – Resonance?

 F_2CO

F: 2(7)

C: 4

O: 6

24

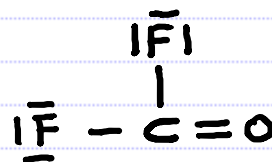
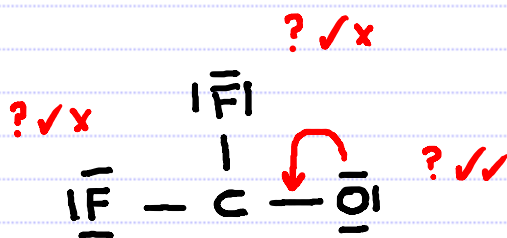
3x B.P.

-6

18

9x L.P.

-18

0

How many equivalent Lewis structures are necessary to describe the bonding in F_2CO

a) 0

b) 1 \checkmark

c) 2

d) 3

e) Help



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Group V:

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Drawing Lewis Structures of Covalent Compounds

Organic Molecules



$C: 2(4)$

$H: 6(1)$

$O: 6$

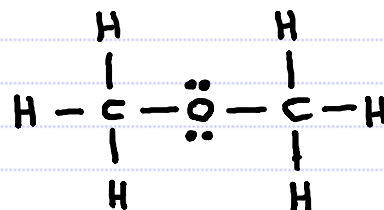
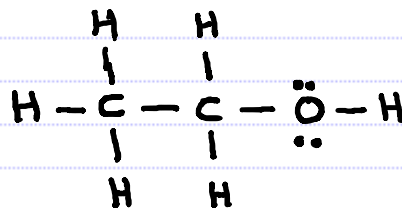
$\frac{20}{}$

$8 \times B.P. \quad -16$

$\frac{4}{}$

$2 \times L.P. \quad -4$

$\frac{0}{}$



How many C-H bonds are there in C_2H_6O

- 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 a great deal of certainty that the 'Octet Rule' will not be violated. Thus we can use the following short cut.

C: 4 bonds, 0 lone pairs

N: 3 bonds, 1 lone pair

O: 2 bonds, 2 lone pairs

Halides: 1 bond, 3 lone pairs

and of course;

H: 1 bond

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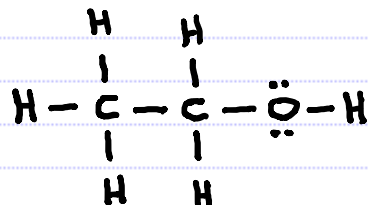
Group V:

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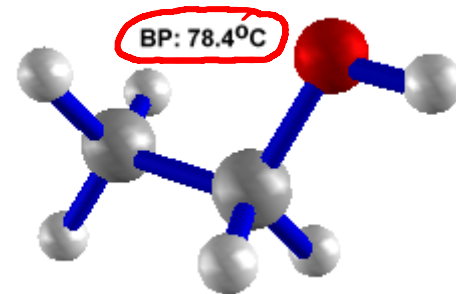
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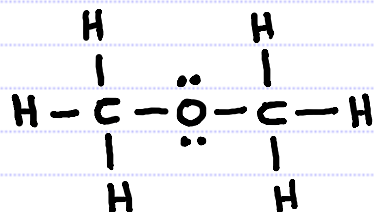
$\text{CH}_3\text{CH}_2\text{OH}$... ' $\text{C}_2\text{H}_6\text{O}$ '
↳ Alcohol functional group.



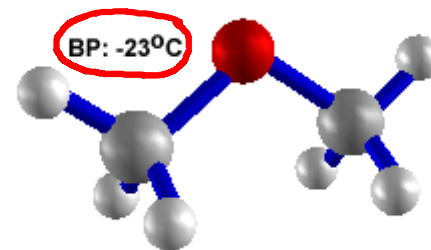
Ethanol



CH_3OCH_3 ... ' $\text{C}_2\text{H}_6\text{O}$ '
↳ Ether



Dimethyl ether



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Group V:

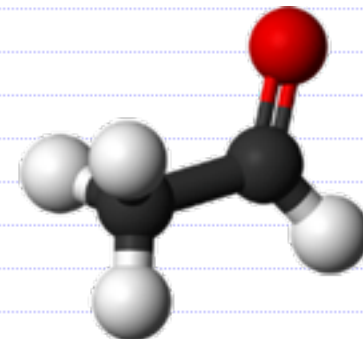
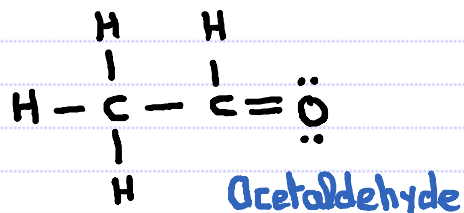
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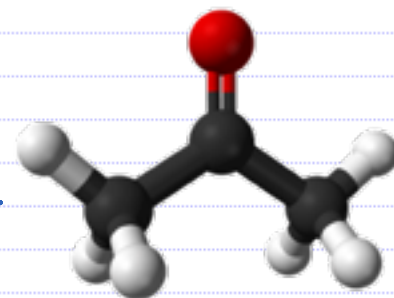
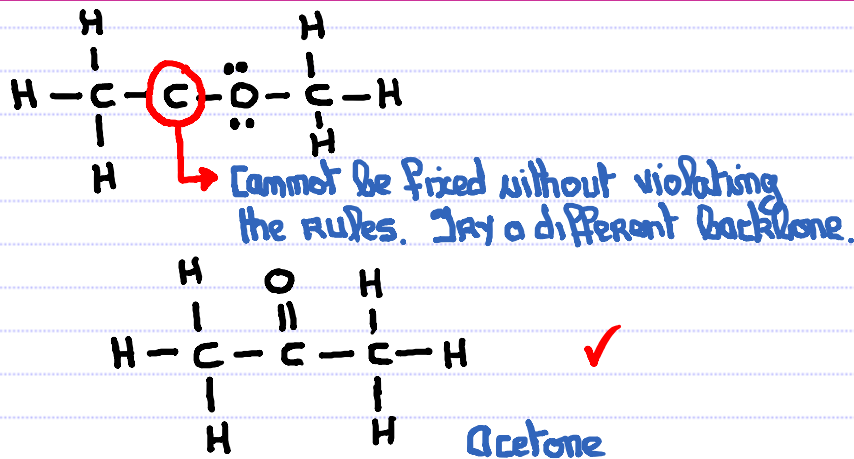
Organic Molecules



↳ Aldehyde



↳ Ketone



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Group V:

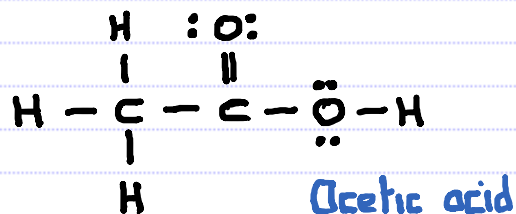
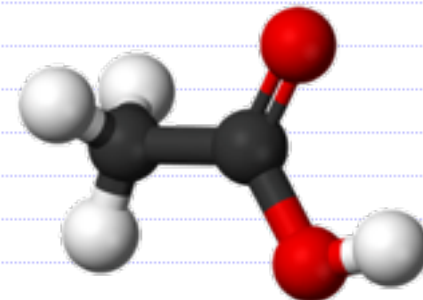
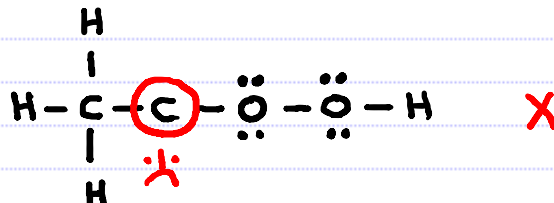
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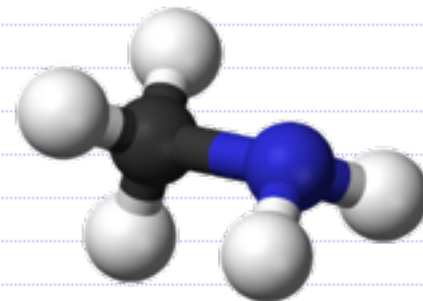
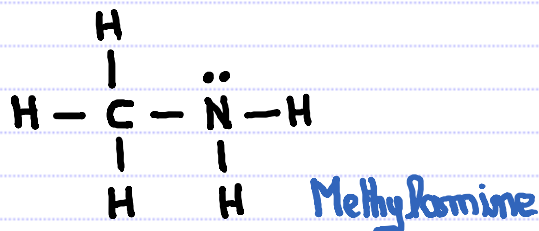
CH_3COOH

↳ Carboxylic acid.



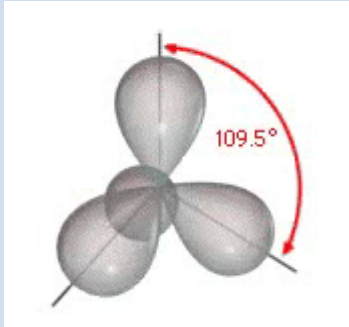
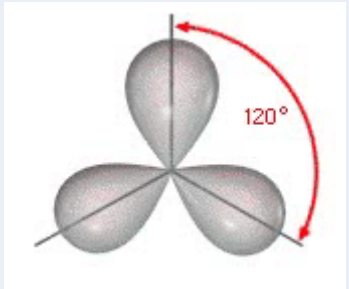
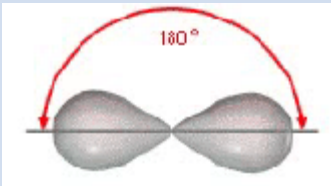
CH_3NH_2

↳ Amine (base)



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°