Announcements – Lecture XII – Friday, June 7th

4th LAB : TUE, JUN 11th, 1:30 - 4:30

EXAM II : FRI, JUN 14th, IN CLASS

Quiz 9 Last Name: _____

Draw the Lewis Dot Structure for the following molecules.

CO

C: 4
O: 6
10
1 x BP -2
8
3 x LP -6
2
1 x LP -2
0

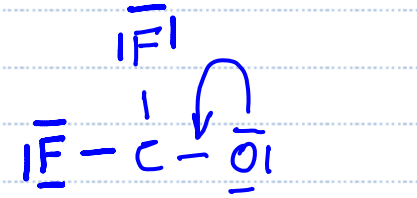
$|C - \bar{O}|$ (with curved arrows)

C & O ... CNOPS

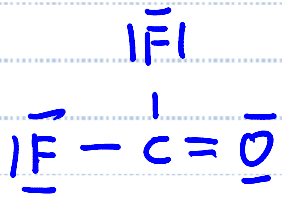
$|C \equiv O|$

F_2CO

F: 2 x 7
C: 4
O: 6
24
3 x BP: -6
18
9 x LP -18
0



C & O ... CNOPS
F not in CNOPS

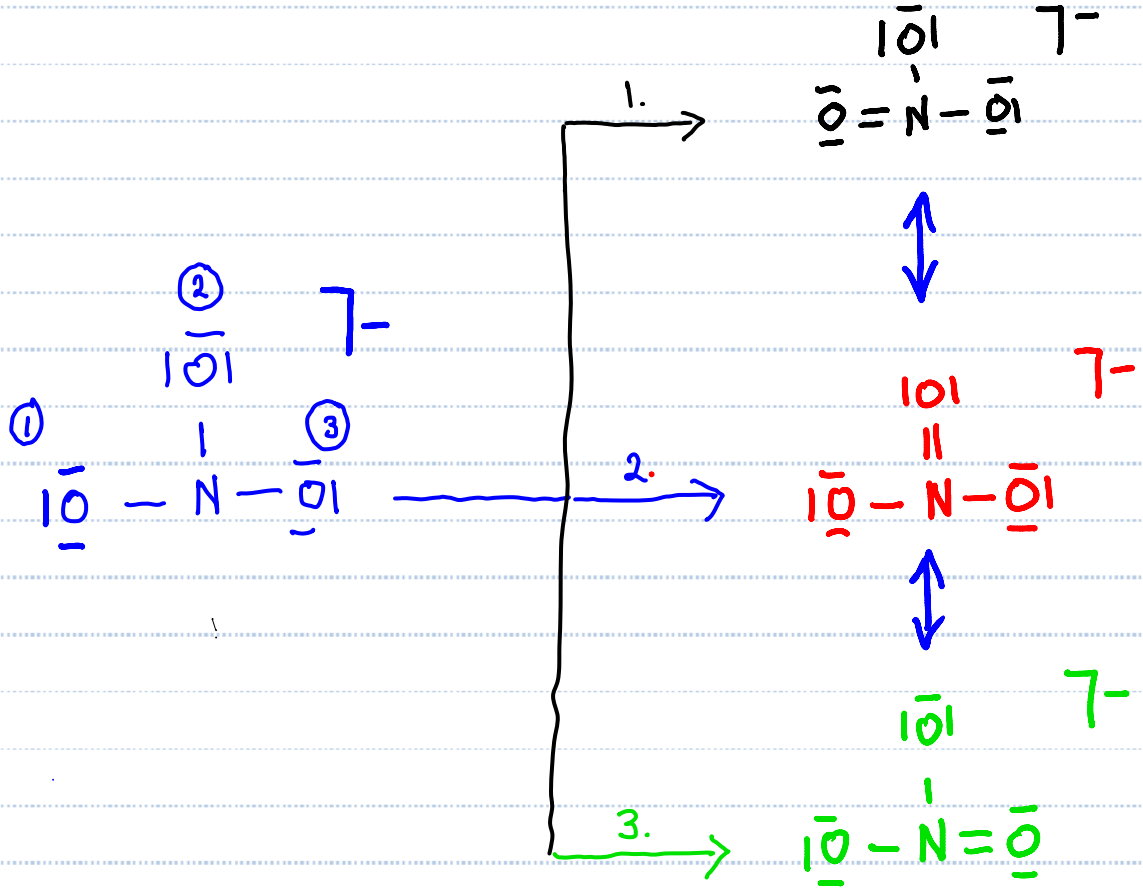


8.2 Lewis Structures

D: Drawing Lewis Structures – Multiple Bonds and Resonance

NO_3^-

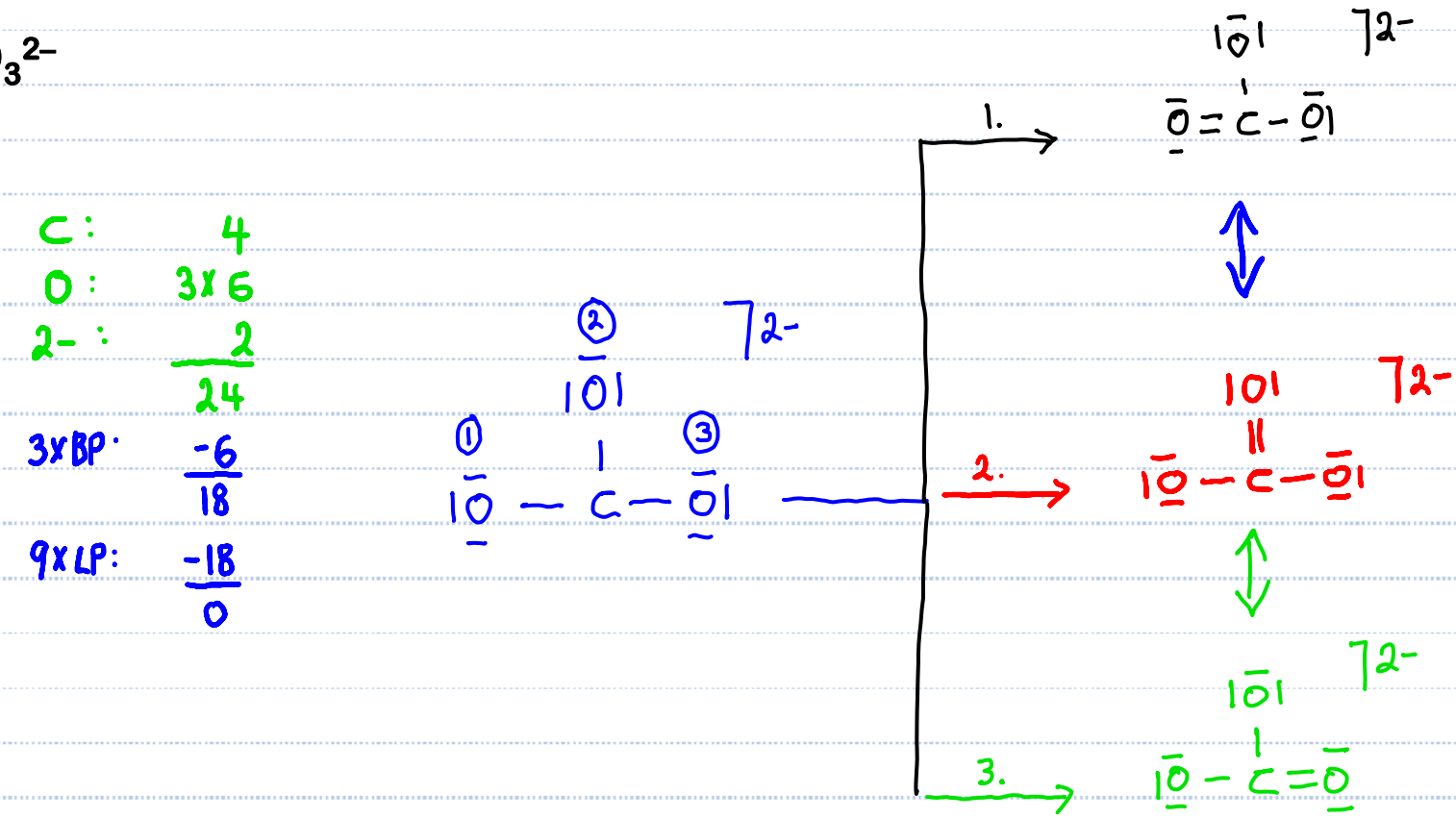
N: 5
O: 3x6
−: 1
24
3xBP: −6
18
9xLP −18
0



8.2 Lewis Structures

D: Drawing Lewis Structures – Multiple Bonds and Resonance

CO_3^{2-}

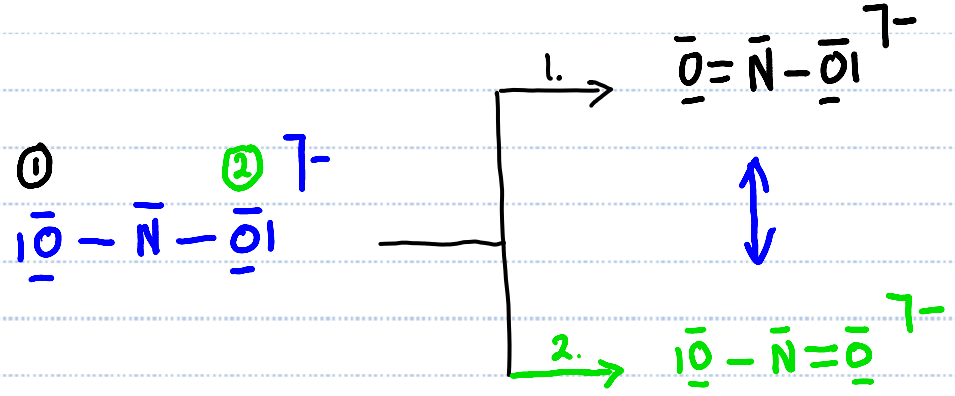


8.2 Lewis Structures

D: Drawing Lewis Structures – Multiple Bonds and Resonance

NO_2^-

N:	5
O:	2x6
−:	1
	18
2x BP:	−4
	14
6x LP:	−12
	2
1x LP:	−2
	0



Notes

a) Use ↔ to denote that a set of Lewis Structures are Resonance structures

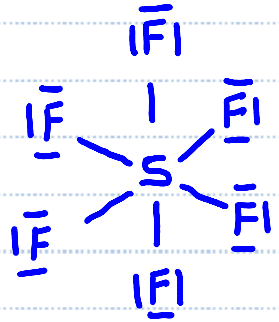
b) Note that Resonance Structures are not 'real' structures, they are in fact extremes. The actual structure is the weighted average of all reasonable Resonance structures.

8.2 Lewis Structures

C: Exceptions to the Octet Rule

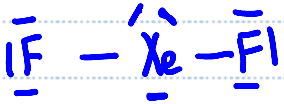
SF_6

S: 6
F: 6x7
48
6xBP: -12
36
18xLP: -36
0



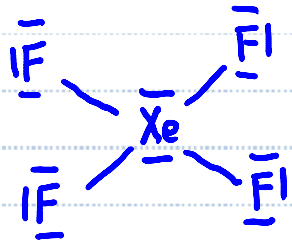
XeF_2

Xe: 8
F: 2x7
22
2xBP: -4
18
6xLP: -12
6 !
3xLP -6
0



XeF_4

Xe: 8
F: 4x7
36
4xBP: -8
28
12xLP: -24
4
2xLP: -4
0



Notes

a) 'Beyond the octet' is seen only when the central atom is period 3 or greater.

8.2 Lewis Structures

C: Exceptions to the Octet Rule

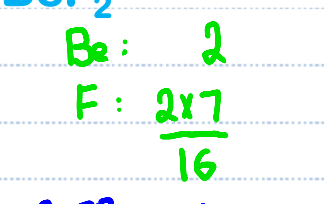
BF_3

B: 3

F: 3x7 = 24

3xBP: −6 = 18

9xLP −18 = 0



No multiple bond as neither B nor F belong to CNOPS

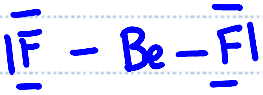
BeF_2

Be: 2

F: 2x7 = 16

2xBP: −4 = 12

6xLP: −12 = 0



8.2 Lewis Structures

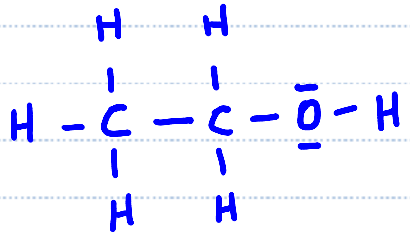
C: Organic Molecules

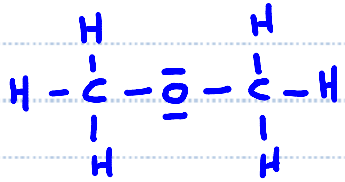
C_2H_6O

How many C-H bonds are there in C_2H_6O

a) 3 d) 6 ✓
b) 4 e) Help
c) 5 ✓

C: 2x4
H: 6x1
O: 6
20
8xBP: -16
4
2xLP: -4
0





How do I know which one? Does it matter?

Notes

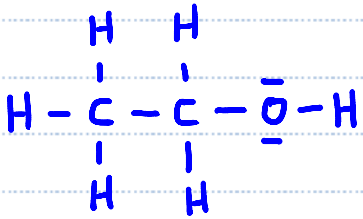
C: 4 Bond pairs 0 Lone pairs
N: 3 Bond pairs 1 Lone pair
O: 2 Bond pairs 2 Lone pairs
Halogens: 1 Bond pair 3 Lone pairs

H: 1 Bond pair

8.2 Lewis Structures

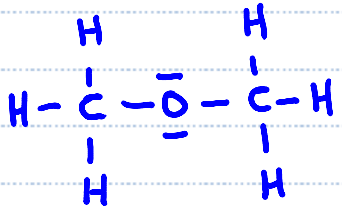
C: Organic Molecules

CH_3CH_2OH



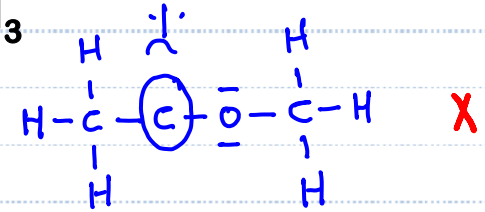
Ethanol : Boiling Point, 78.4°C

CH_3OCH_3

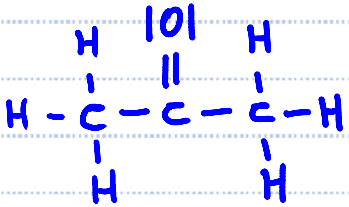


Dimethyl ether : Boiling Point, -23°C

CH_3COCH_3

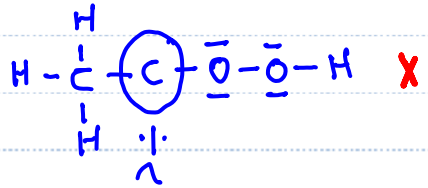


X

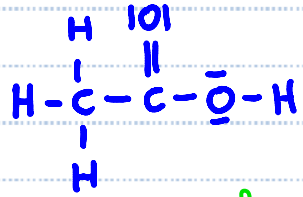


Ketone .. Acetone

CH_3COOH



X



Carboxilic acid

Acetic acid.