

تفريغ المحاضرة الثالثة

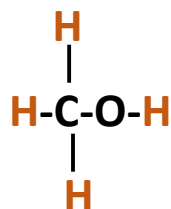
د. جلال زهرة

كتبت بواسطة : أسيل رحانة

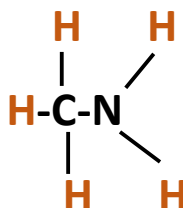
جلال

Organic Chemistry

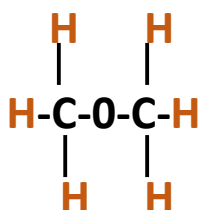
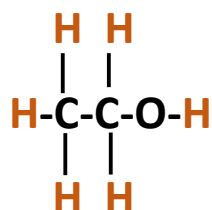
CH₄O



CH₅N



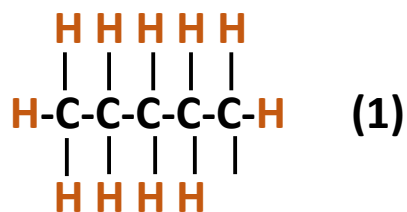
C₂H₆O

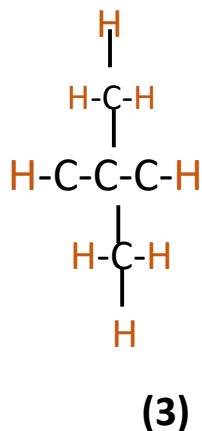
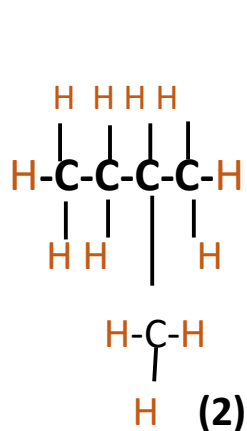


1.8- Isomerism

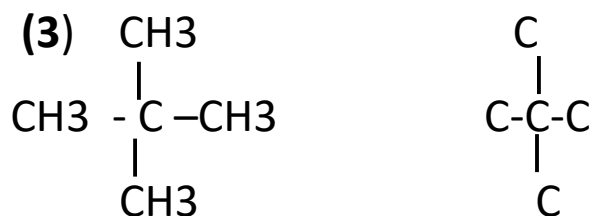
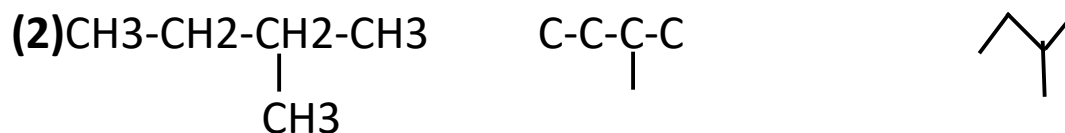
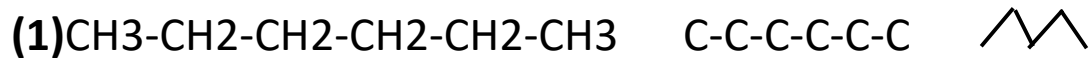
C₂H₆O molecular formula \longrightarrow **structural isomers or constitutional isomers** : have the same molecular formula but different structural formula

C₅H₁₂





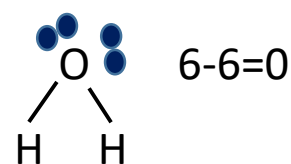
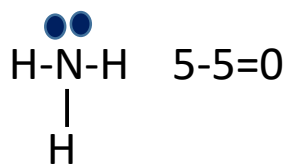
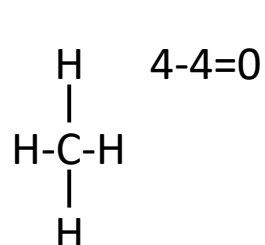
1.9 writing structural formulas



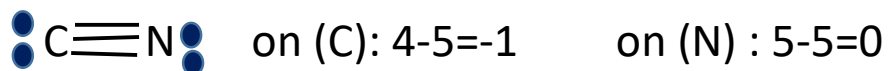
1.11- formal charge

Formal charge: the charge atom would have if all the atoms in molecule had the same electronegativity

CH₄

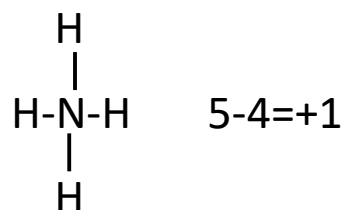


CN-

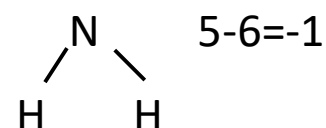


SO , the negative charge on C atom not on N atom

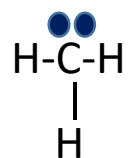
NH₄⁺



NH₂⁻

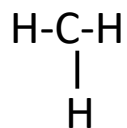


CH₃⁻



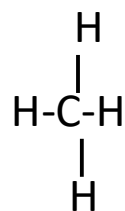
$$4-5=-1$$

CH₃⁺



$$4-3=+1$$

CH₄

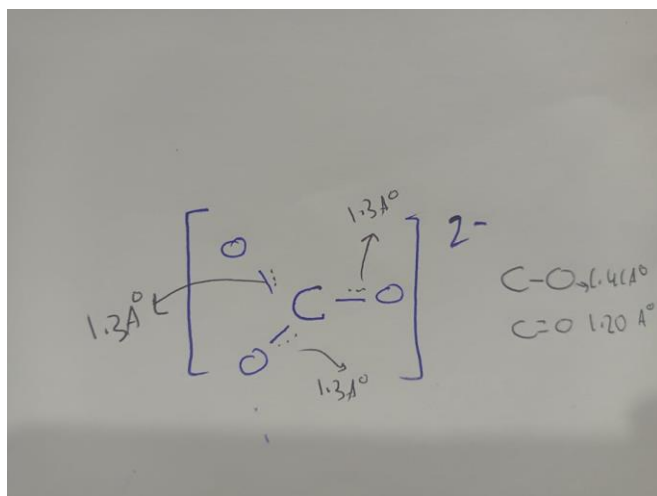
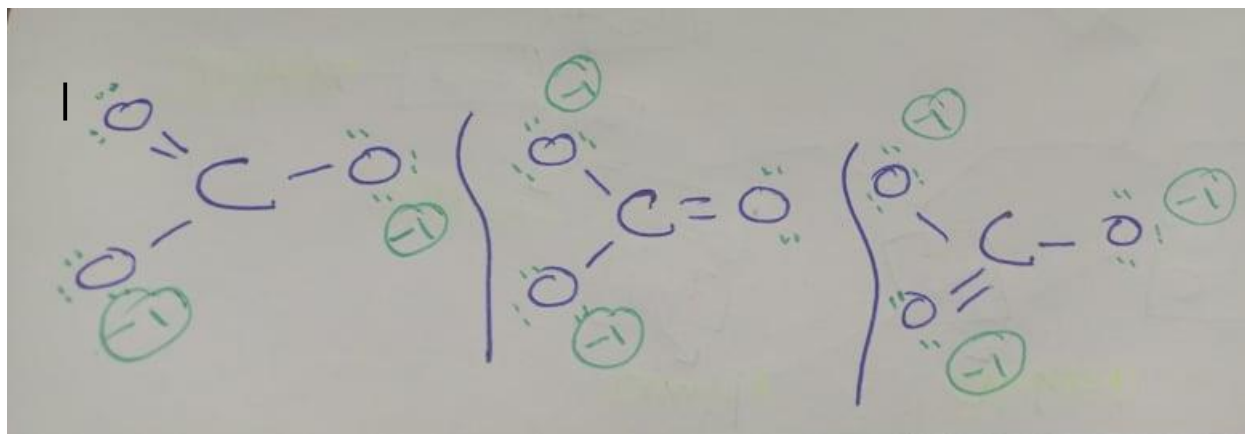


$$4-4=0$$

Formah charge tell us the positive and negative center in molecule

1.12 Resonance

CO3 2-




All of structure in picture1 are on paper just, but in picture2 is nearly to reality and it is called **Resonance Hybrid**

HW: draw (NCS-) / (NCS-) / (NO-)

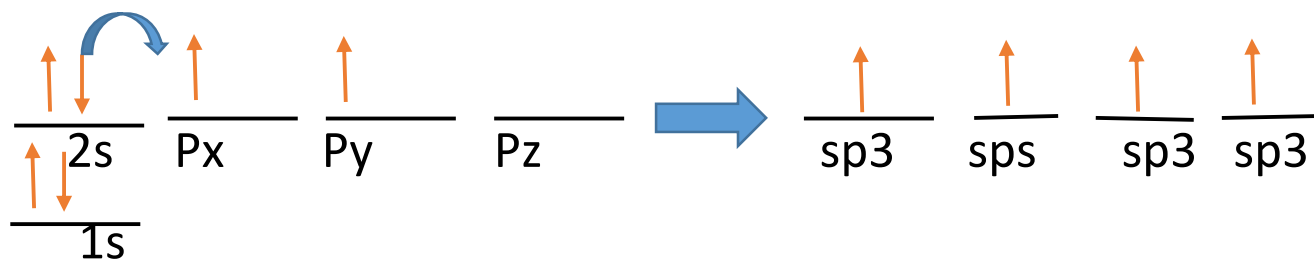
1.13 Arrow Formation

1) $R \longrightarrow P$ (reactant, product)

2) $R \rightleftharpoons P$ (Equilibrium)

3)  (movement)

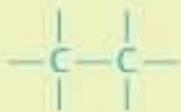
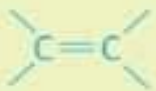



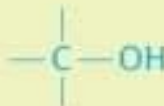
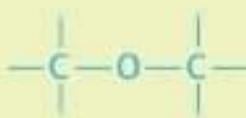
1.14 The orbitals view of bonding the sigma bond



This example is in CH₄

1.16/1.15/1.16 the same

1.17 Classification according to functional group

Structure	Class of compound	Specific example
	alkane	$\text{CH}_3\text{—CH}_3$
	alkene	$\text{CH}_2\text{=CH}_2$
	alkyne	$\text{HC}\equiv\text{CH}$
	arene	
	alcohol	$\text{CH}_3\text{CH}_2\text{OH}$
	ether	$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$

Structure	Class of compound	Specific example
$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{H} \end{array}$	aldehyde	$\text{CH}_2=\text{O}$
$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{C}-\text{C}- \\ \quad \quad \end{array}$	ketone	$\begin{array}{c} \text{O} \\ \\ \text{CH}_3\text{CCH}_3 \end{array}$
$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{OH} \end{array}$	carboxylic acid	$\begin{array}{c} \text{O} \\ \\ \text{CH}_3\text{C}-\text{OH} \end{array}$
$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{O}-\text{C}- \\ \quad \end{array}$	ester	$\begin{array}{c} \text{O} \\ \\ \text{CH}_3\text{C}-\text{OCH}_2\text{CH}_3 \end{array}$
$\begin{array}{c} \\ -\text{C}-\text{NH}_2 \\ \end{array}$	primary amine	$\text{CH}_3\text{CH}_2\text{NH}_2$
$-\text{C}\equiv\text{N}$	nitrile	$\text{CH}_2=\text{CH}-\text{C}\equiv\text{N}$
$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{NH}_2 \end{array}$	primary amide	$\begin{array}{c} \text{O} \\ \\ \text{H}-\text{C}-\text{NH}_2 \end{array}$
$-\text{X}$	alkyl or aryl halide	CH_3Cl
$\begin{array}{c} \\ -\text{C}-\text{SH} \\ \end{array}$	thiol (also called mercaptan)	CH_3SH
$\begin{array}{c} \quad \quad \\ -\text{C}-\text{S}-\text{C}- \\ \quad \quad \end{array}$	thioether (also called sulfide)	$(\text{CH}_2=\text{CHCH}_2)_2\text{S}$

Exercise

