TD N° 1

Exercice 01

Combien d'électrons de valence possède chacun des éléments suivants : carbone, oxygène, chlore, hydrogène et azote ?

En déduire le nombre de liaisons que peuvent réaliser ces atomes.

Exercice 02

Représenter en structure de Lewis les entités suivantes :

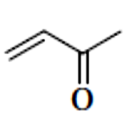
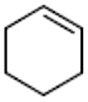
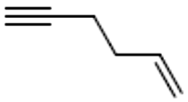
CH_4	CO_2 (dioxyde de carbone)	CH_3NH_2 (méthylamine)
H_2O (eau)	CH_3OH (méthanol)	CH_2Cl_2 (dichlorométhane)
NH_3 (ammoniac)	N_2 (azote gazeux)	H_2CO (formaldéhyde, les deux H sur le C)
BrI	C_2H_6 (éthane)	

Exercice 03

A partir des structures simplifiées suivantes :

a) déterminer l'état d'hybridation des atomes de carbone

b) déterminer l'état d'hybridation de l'atome d'oxygène

$H_2C{=}CH_2$ $HC{\equiv}CH$   

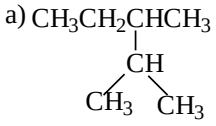
Exercice 04

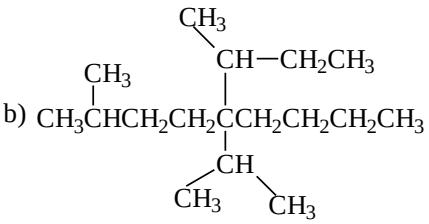
Quelle est la géométrie des formules condensées suivantes :

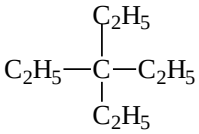
CH_4, C_2H_4, C_2H_2, HCN, CH_3NH_2, H_2O.

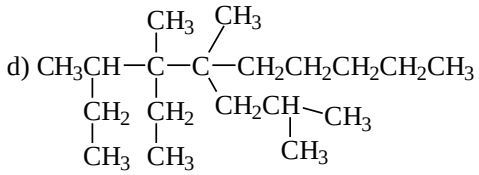
Exercice 05

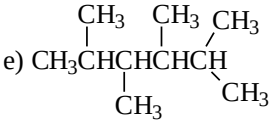
Nommer les molécules suivantes selon le système de nomenclature IUPAC :

a) 

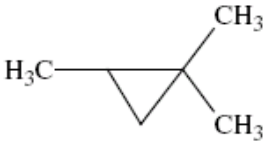
b) 

c) 

d) 

e) 

Exercice 06 : Nommer les composés suivants :



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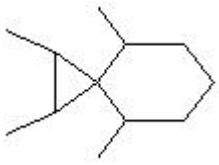
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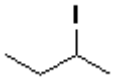
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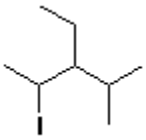

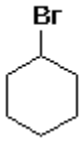

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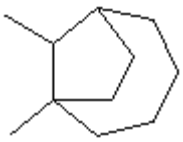
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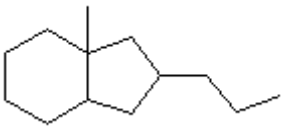
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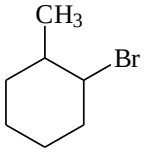
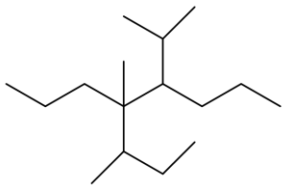
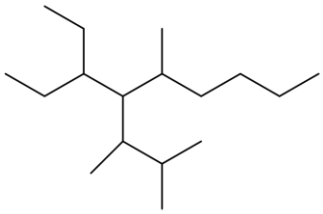
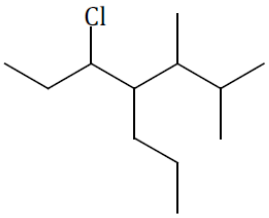
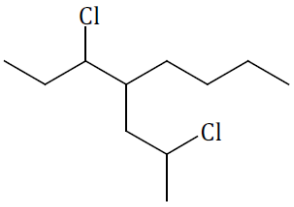


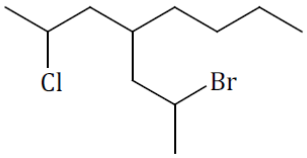
Exercice 07

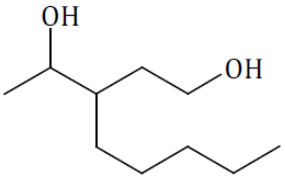
Nommer les molécules suivantes selon le système de nomenclature IUPAC :

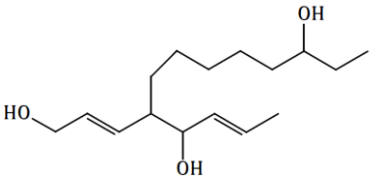







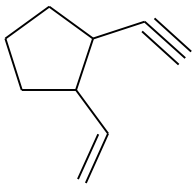






Exercice 08

Nommer les molécules suivantes selon le système de nomenclature IUPAC :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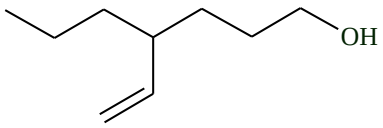

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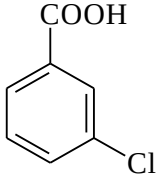

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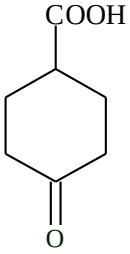

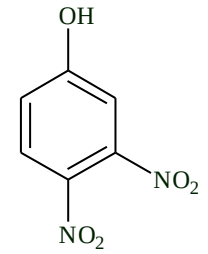

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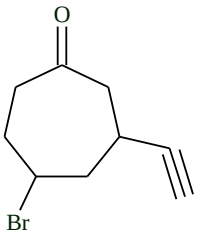

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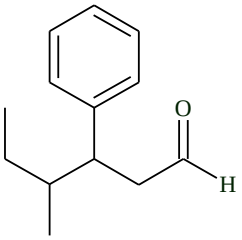

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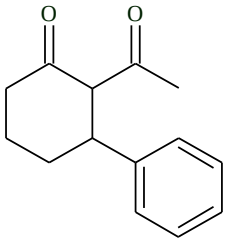

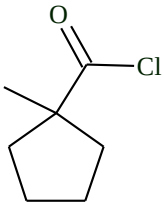

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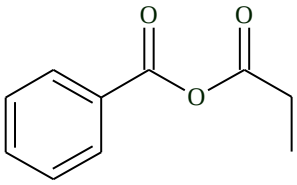

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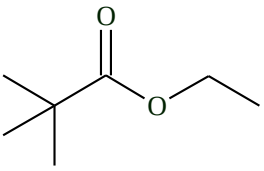

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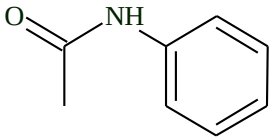
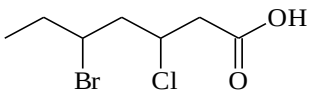
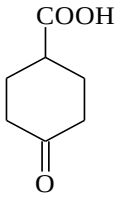


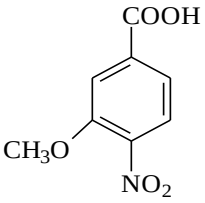
Exercice 09

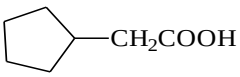
Donner le nom systématique ou écrire la structure, selon ce qui convient, des composés suivants :

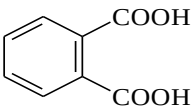
Acide 2,2-dibromohexanedioïque ; Acide 4-hydroxypentanoïque ; Acide 4-(1,1-diméthyléthyl)benzoïque.

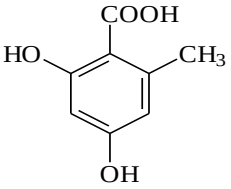


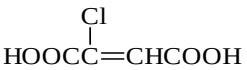








Acide phtalique




Exercice 10

Convertir les noms suivants en formules moléculaires. Après quoi, vérifier si le nom qui donné ici pour chaque molécule est en accord avec le système de nomenclature IUPAC. Si ce n'est pas le cas, restituer à la molécule son appellation correcte.

a) 4-(2-Ethylbutyl)décane ; b) 4-Ethyl-5,6-bis(1-méthylpropyl)undécane ; c) 4-Bromo-2-iodopent-2-ène ; d) 5-Méthylhex-3-én-1-ol ; e) 4-Bromo-3-méthylpent-3-èn-1-yne ; f) Hex-4-yn-1-ol ; g) 1-Ethényl-4-nitrobenzène ; h) 4-Nitro-*o*-xylène ; i) Acide m-isopropylbenzoique ; j) 4,5-Dibromoaniline ; k) *p*-Méthoxy-*m*-nitroacétophénone ; l) Benzoate de 2-chloroéthyle ; m) N,N-Diméthylbenzamide ; n) 2-Méthylhexanenitrile ; o) Cyclopentanecarbonitrile ; p) Acide 2-formylcyclohexanecarboxylique.