Université Bdji Mokhtar
Faculté de Médecine
Première Année

TD de Chimie Organique Nomenclature

Dessinez la formule développée des molécules suivantes :

a) $(CH_3)_2CHCH_2OH$

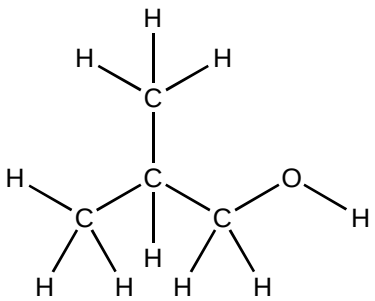
b) $Cl_2C=CCl_2$

c) $CH_3CCl_2CH_3$

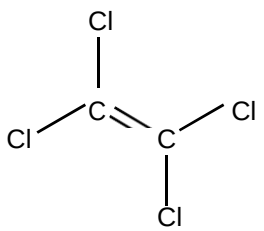
d) $(CH_3)_2C(CH_2CH_3)_2$

Réponses :

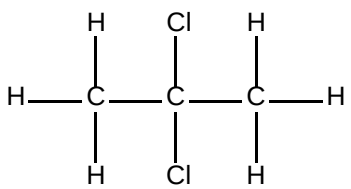
a)



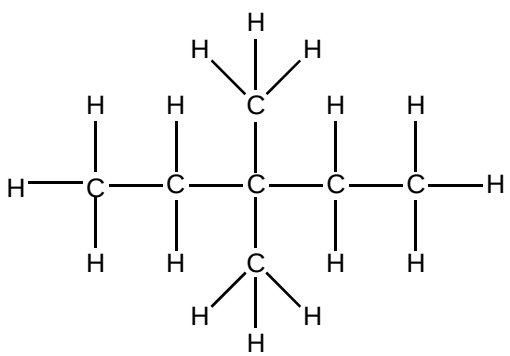
b)



c)



d)



2

Dessinez la formule topologique (zig-zag) des molécules ci-dessous :

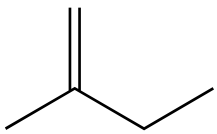
a) $CH_3(C=CH_2)CH_2CH_3$

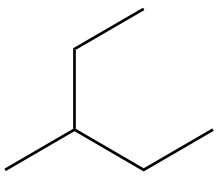
b) $CH_3C(CH_2CH_3)CH_2CH_3$

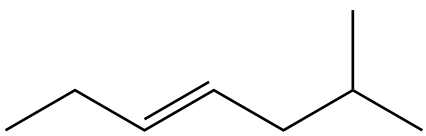
c) $CH_3CH_2CH=CHCH_2CH(CH_3)_2$

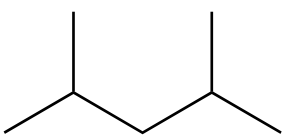
d) $(CH_3)_2CHCH_2CH(CH_3)_2$

Réponses :

a) 

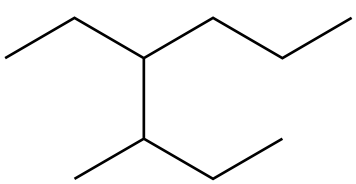
b) 

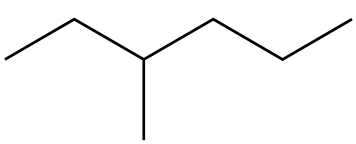
c) 

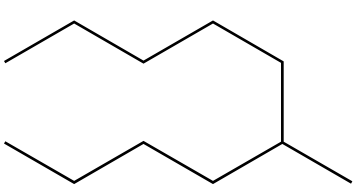
d) 

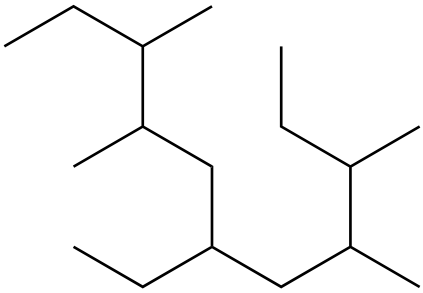
3

Déterminez la chaine principale et les ramifications des molécules ci-dessous :

a) 

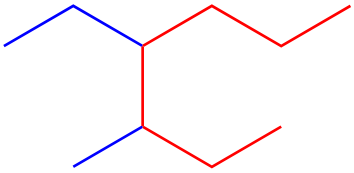
b) 

c) 

d) 

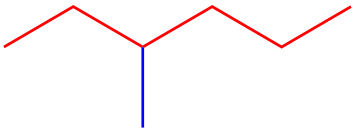
Réponses :

Les chaînes principales sont dessinées en rouge, les substituants en bleu :

a) 

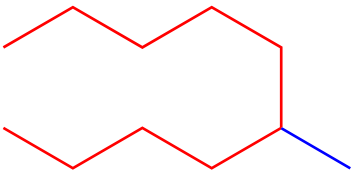
Chaîne principale : 7 carbones →→ heptane.

2 substituants : méthyle et éthyle.

b) 

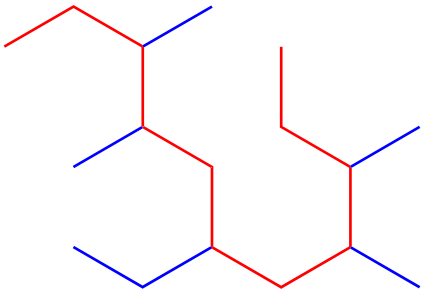
Chaîne principale : 6 carbones →→ hexane.

1 substituant : méthyle.

c) 

Chaîne principale : 10 carbones →→ décane.

1 substituant : méthyle.

d) 

Chaîne principale : 11 carbones →→ undécane.

5 substituants : 4 méthyle et 1 éthyle.

4

Ecrivez une formule simplifiée ou stylisée contenant :

a) *Un homocycle ou composé carbocyclique de 5 C.*

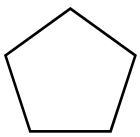
b) *Un hétérocycle ou composé hétérocyclique avec deux ramifications.*

c) *Une chaîne principale de 7 C avec 2 ramifications de 2 C chacune.*

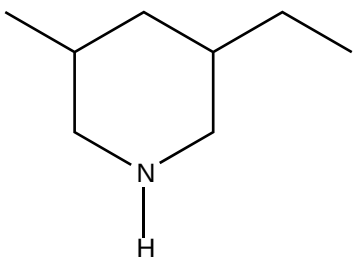
d) *Une chaîne principale de 8 C avec une ramification méthyle et une ramification isopropyle.*

Réponses :

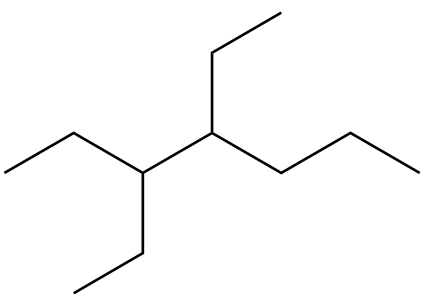
a)



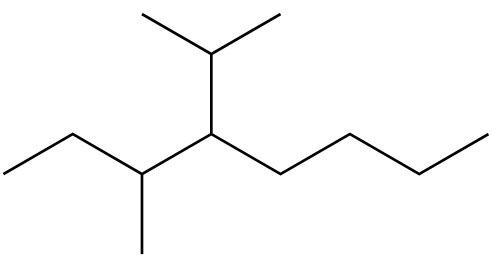
b)



c)



d)



5

Dessinez en formule topologique (zig-zag) les structures associées aux noms suivant selon les règles IUPAC.

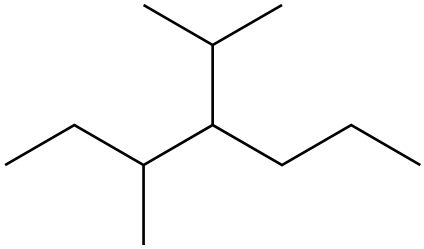
a) *4-isopropyl-3-méthylheptane.*

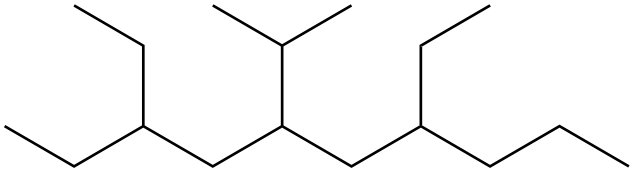
b) *3,7-diéthyl-5-isopropyldécane.*

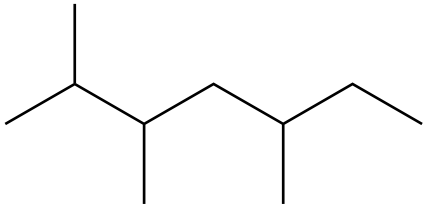
c) *2,3,5-triméthylheptane.*

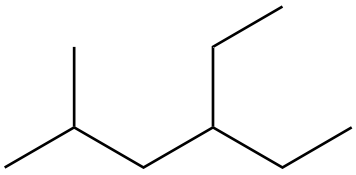
d) *4-éthyl-2-méthylhexane.*

Réponses :

a) 

b) 

c) 

d) 

6

Corrigez, s'il y a lieu, le nom des substances suivantes :

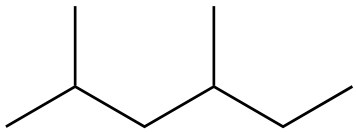
a) 4-éthyl-2-méthylpentane.

b) 5-éthyl-3-méthylheptane.

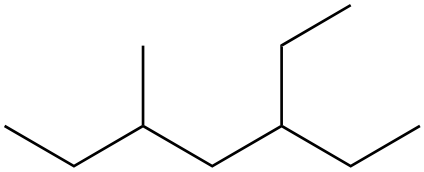
c) 3-isobutyl-5-isopropylheptane.

d) 4-(sec-butyl)-6-(tert-butyl)-3,5-diéthyl-7-isopropyl-2-méthylnonane.

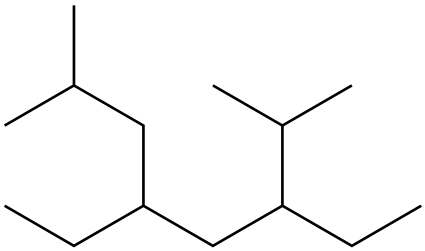
Réponses :

a) 

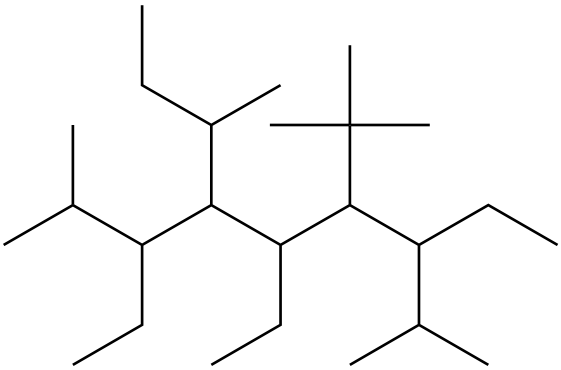
Nom correct : 2,4-diméthylhexane.

b) 

Nom correct : 3-éthyl-5-méthylheptane.

c) 

Nom correct : 3,5-diéthyl-2,7-diméthyloctane.

d) 

Nom correct : 4-(*sec*-butyl)-6-(*tert*-butyl)-3,5,7-triethyl-2,8-dimethylnonane.

7

Donnez la formule semi-développée ou le nom des produits suivants :

a) hexa-1,3-diène

Réponse : $CH_2=CH-CH=CH-CH_2-CH_3$

b) hept-2-yne-4-ène

Réponse : $CH_3-C\equiv C-CH=CH-CH_2-CH_3$

c) pentène

Réponse : $CH_2=CH-CH_2-CH_2-CH_3$

d) octa-1,3,5-trién-7-yne

Réponse : $CH_2=CH-CH=CH-CH=CH-C\equiv CH$

e) donnez un synonyme au produit d)

Réponse : oct-1-yne-3,5,7-triène

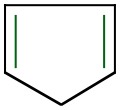
f) $CH\equiv C-CH=CH-CH_2-CH=C=CH_2$

Réponse : octa-1,2,5-trién-7-yne

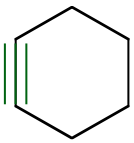
8

Donnez la formule semi-développée ou le nom des produits suivants:

a) cyclopenta-1,3-diène

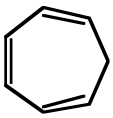
Réponse : 

b) cyclohexyne

Réponse : 

c) cyclobuta-1,3-diène

Réponse : 

d) 

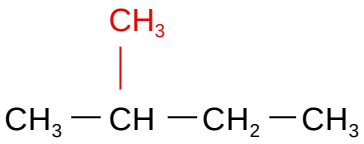
Réponse : cyclohepta-1,3,5-triène

9

Donnez la formule semi-développée ou le nom des produits suivants :

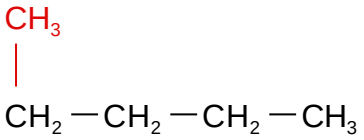
a) 2-méthylbutane

Réponse :



b) 1-méthylbutane

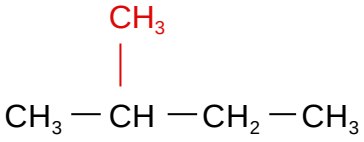
Réponse :



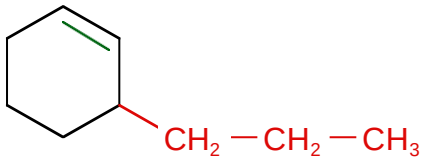
(cela correspond en fait au pentane)

c) méthylbutane

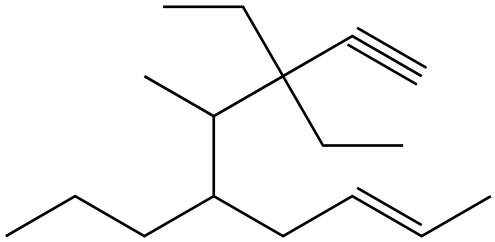
Réponse :

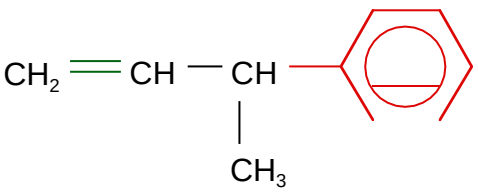


d) 3-propylcyclohexène

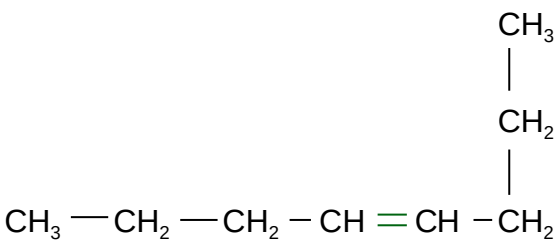
Réponse : 

e) 3,3-diéthyl-4-méthyl-5-propylnon-7-én-1-yne

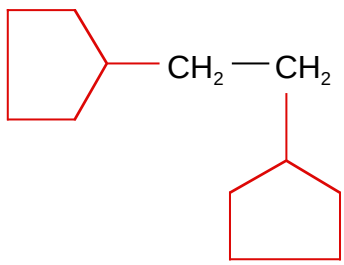
Réponse : 

f) 

Réponse : but-3-én-2-ylbenzene

g) 

Réponse : oct-4-ène

h) 

Réponse : 1,2-dicyclopentyléthane

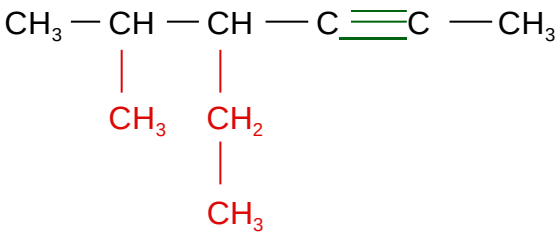
10

Dessiner les molécules ci-dessous :

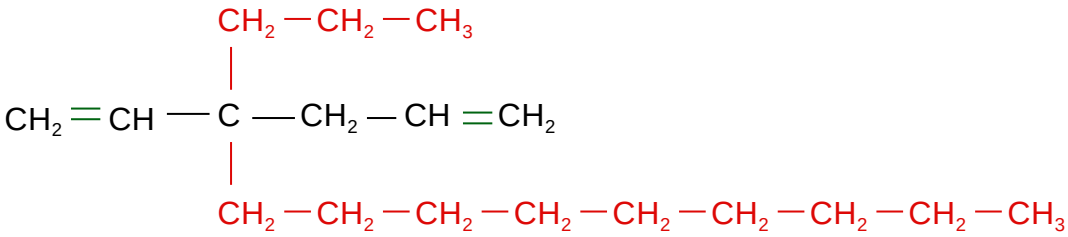
a) 2-méthyl-3-éthylhex-4-yne
b) 3-nonyl-3-propylhexa-1,5-diène
c) 1,3-dicyclopentylprop-2-ène
d) 1,3,5-tripropylbenzène
e) 2-penta-1,3-diénylbutane
f) 1,2,2-triméthyl-4-benzyl-5-butyloctane
g) 1-méthyl-1,3-diéthylcyclopentane
h) octa-1,6-diène-4-yne
i) 1-méthyl-1-éthyl-3-pentylhepta-4,5-diène
j) 2-oct-2-yne-4,5,7-triénylpenta-2,4-diène

Réponses :

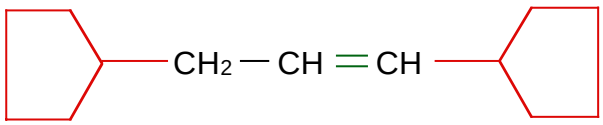
a)



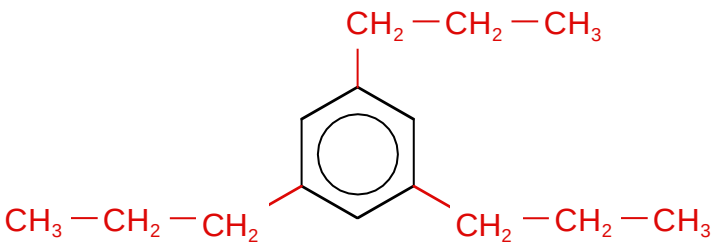
b)



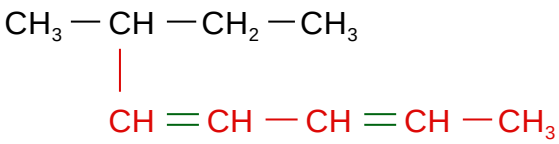
c)

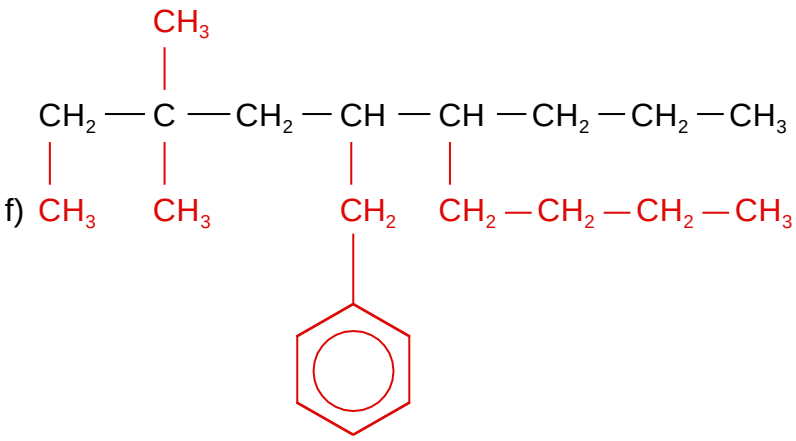


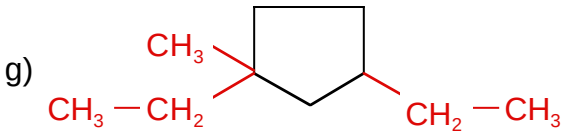
d)



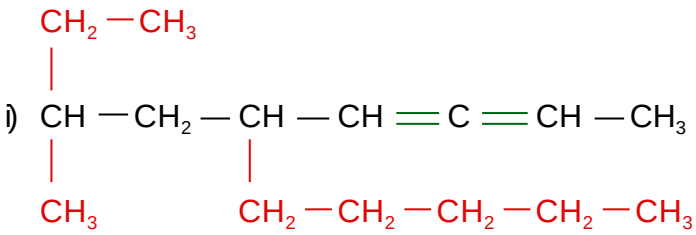
e)

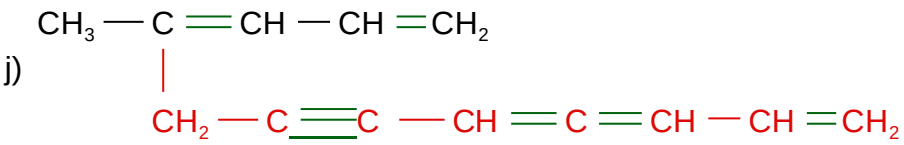


f) 

g) 

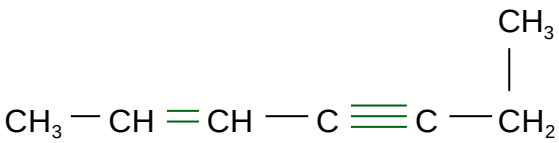
h) 

i) 

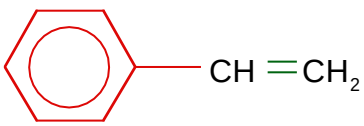
j) 

11

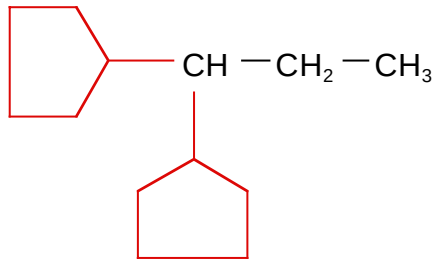
Nommer les molécules ci-dessous :

a) 

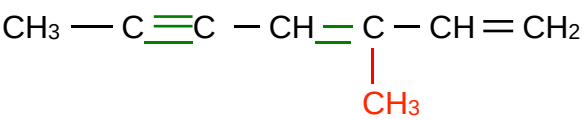
Réponse : hept-2-én-4-yne

b) 

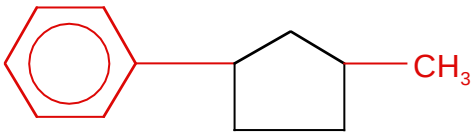
Réponse : phényléthène

c) 

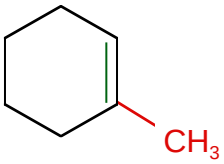
Réponse : 1,1-dicyclopentylpropane

d) 

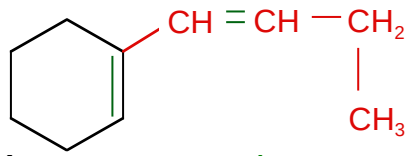
Réponse : 3-méthylhepta-1,3-diène-5-yne

e) 

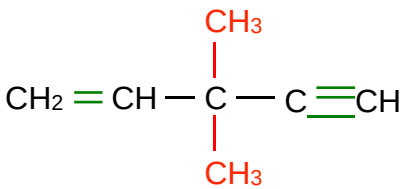
Réponse : 1-méthyl-3-phénylcyclopentane

f) 

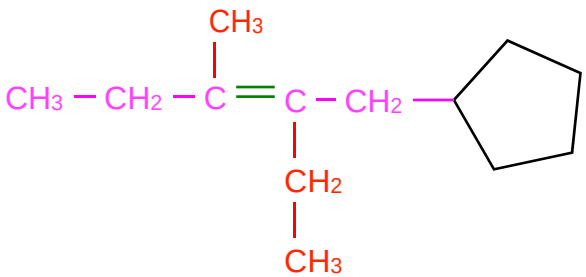
Réponse : 1-méthylcyclohex-1-ène (ou méthylcyclohexène)

g) 

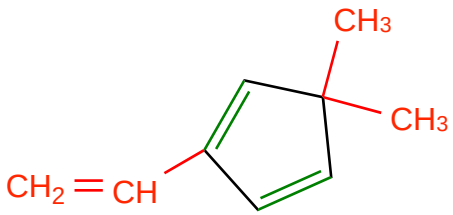
Réponse : 1-but-1-énylcyclohex-1-ène (ou 1-cyclohex-1-énylbut-1-ène)

h) 

Réponse : 3,3-diméthylpent-1-én-4-yne

i) 

Réponse : (2-éthyl-3-méthylpent-2-én-1-yl)cyclopentane

j) 

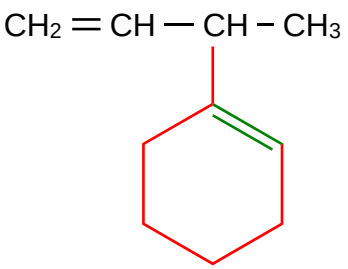
Réponse : 5,5-dimethyl-2-vinylcyclopenta-1,3-diène

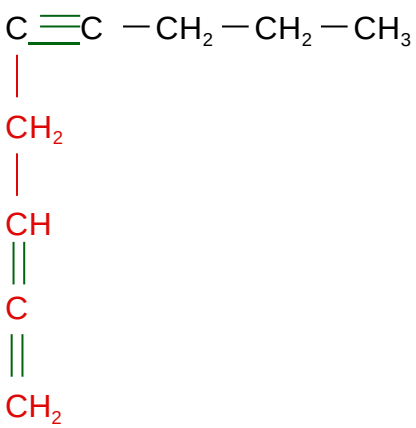
12

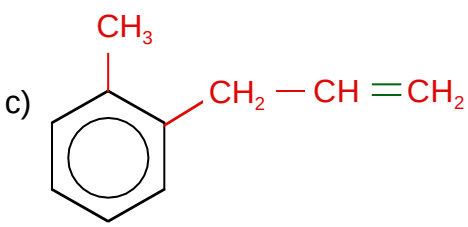
Dessiner les molécules ci-dessous :

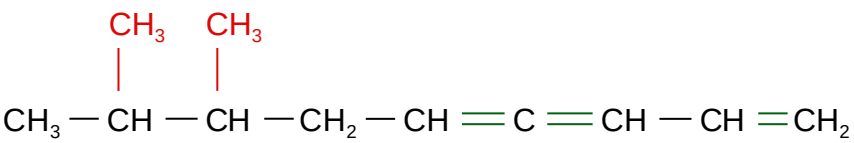
a) 3-cyclohex-1-énylbutène
b) 1-buta-2,3-diénylpent-1-yne
c) 2-prop-2-ényl-1-méthylbenzène
d) 2,3-diméthylnona-5,6,8-triène
e) 1,3-dicyclohex-2-énylprop-1-ène
f) 1-phénylbut-1-yne
g) 2-cyclopentylbut-3-ène
h) 5-propyl-4,5,6-triéthylnonane
i) 2,4-diméthylhepta-1,6-diène
j) 1,1-dicyclohex-1-ényl-3-méthylhex-4-ène

Réponses :

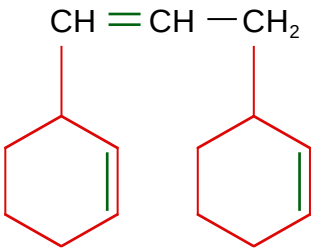
a) 

b) 

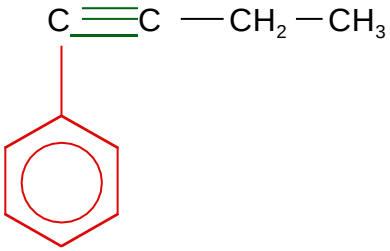
c) 

d) 

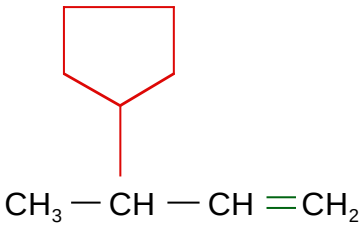
e)



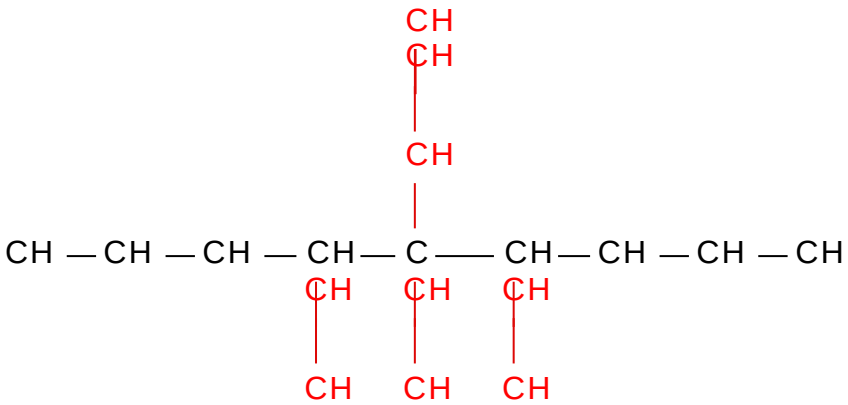
f)



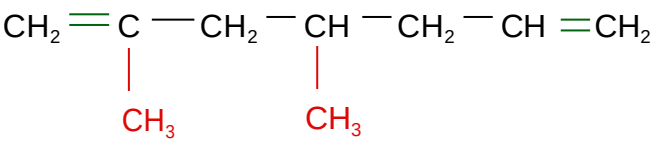
g)



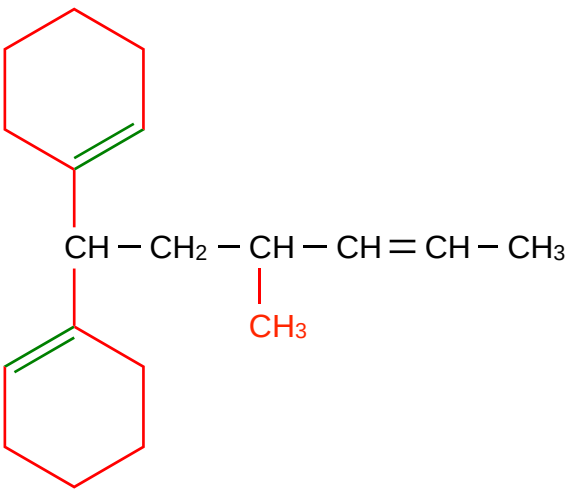
h)



i)



j)



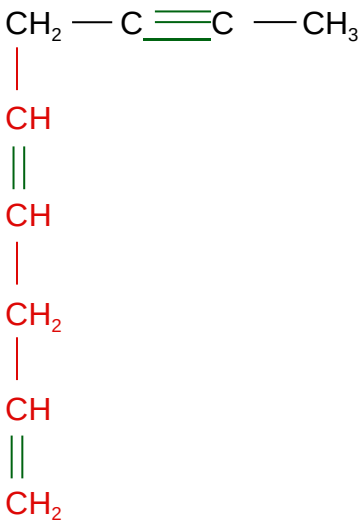
13

Dessiner les molécules ci-dessous :

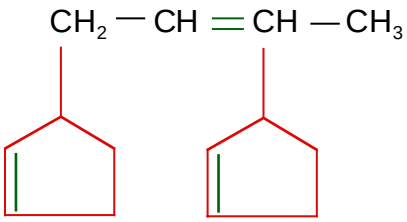
a) 1-penta-1,4-diénylbut-2-yne
b) 1,3-dicyclopent-2-énylbut-2-ène
c) 2-cyclopent-2-énylbutène
d) 2,3,3-triméthylocta-4,5,7-triène
e) 2-pentylbut-3-ène
f) 2,2-dicyclopent-2-ényl-4-méthylhept-6-ène
g) 2-phénylhex-5-yne
h) 2,5-diméthylhexa-1,4-diène
i) 5-butyl-4,5,6-tripropylnon-1-ène
j) 2-éthyl-3-hex-4-énylbenzène

Réponses :

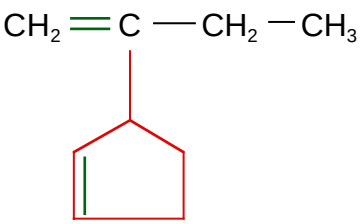
a)



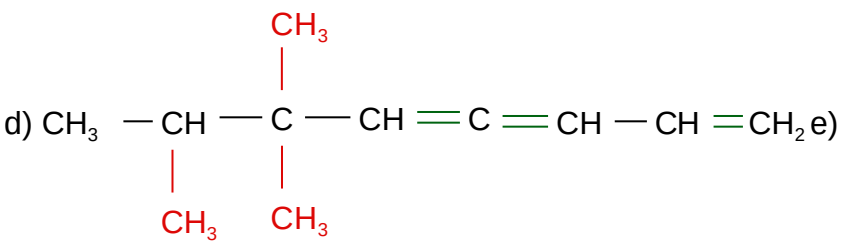
b)



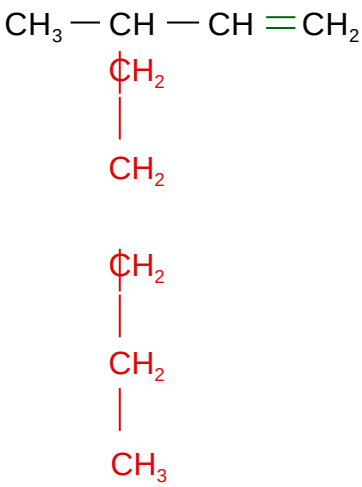
c)

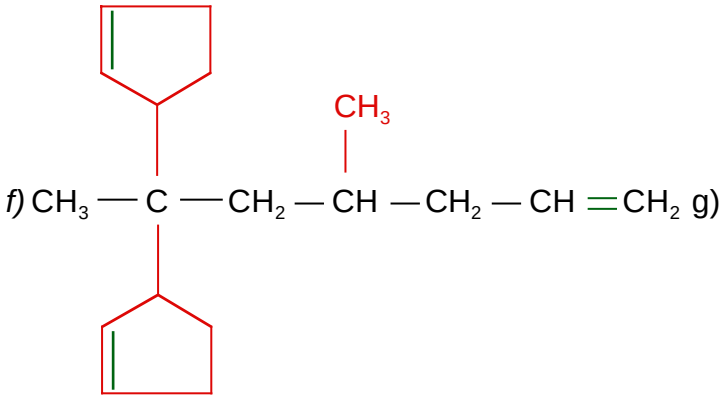


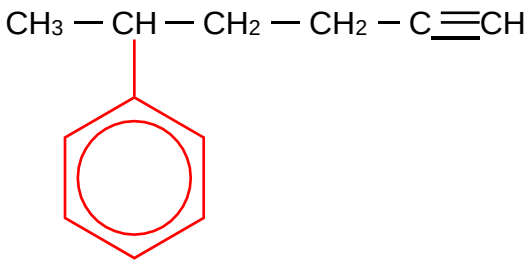
d)

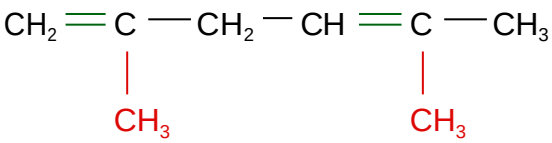


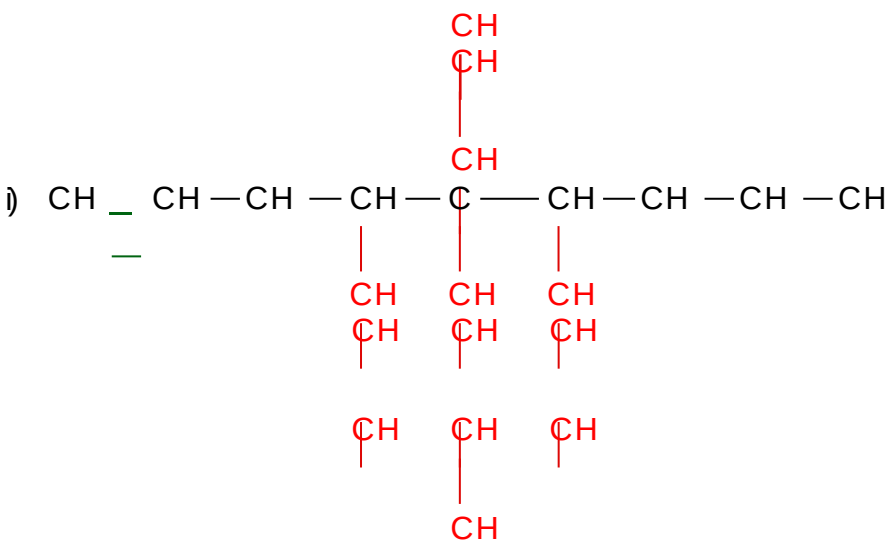
e)

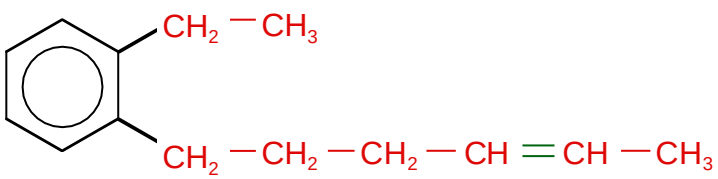


f) 

g) 

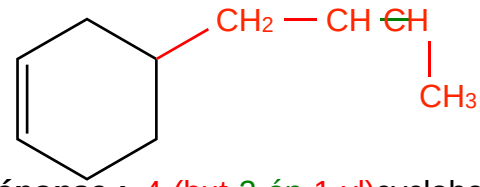
h) 

i) 

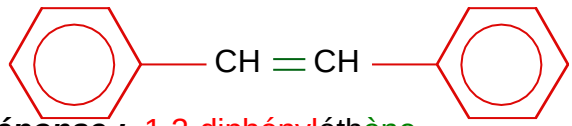
j) 

14

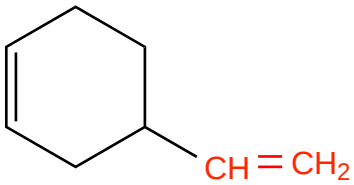
Nommer les molécules ci-dessous :

a) 

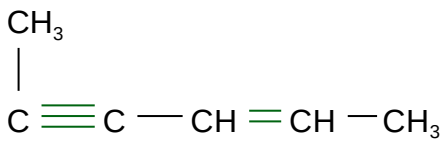
Réponse : 4-(but-2-én-1-yl)cyclohex-1-ène

b) 

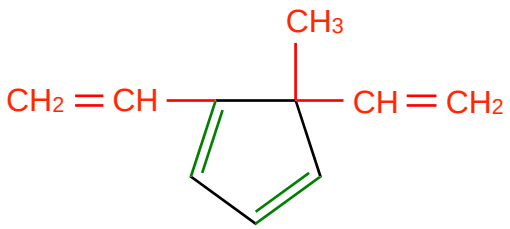
Réponse : 1,2-diphényléthène

c) 

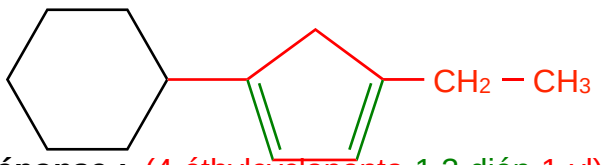
Réponse : 4-vinylcyclohex-1-ène

d) 

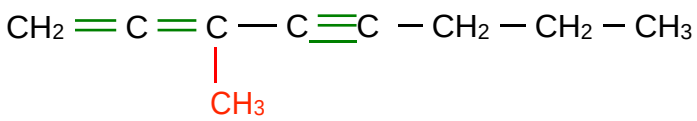
Réponse : hex-2-ène-4-yne

e) 

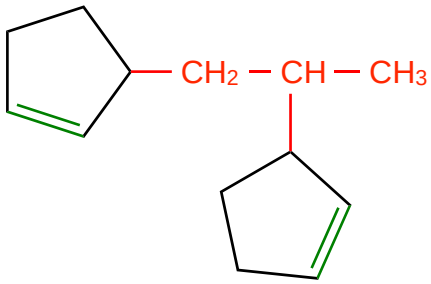
Réponse : 5-méthyl-1,5-divinylcyclopenta-1,3-diène

f) 

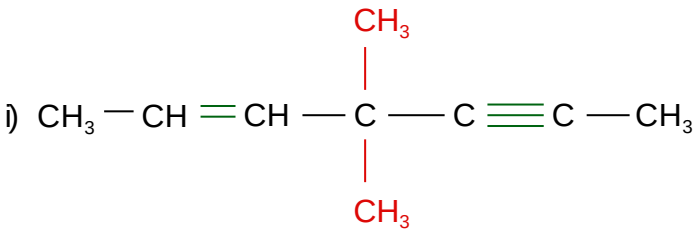
Réponse : (4-éthylcyclopenta-1,3-dién-1-yl)cyclohexane

g) 

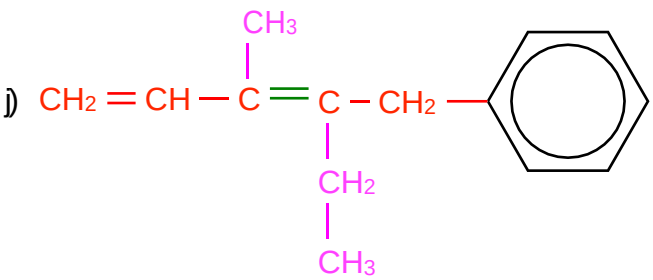
Réponse : 3-méthylocta-1,2-diène-4-yne

h) 

Réponse : 3,3'-(propane-1,2-diyl)dicyclopent-1-ène

i) 

Réponse : 4,4-diméthylhept-2-én-5-yne

j) 

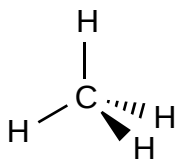
Réponse : (2-éthyl-3-méthylpenta-2,4-dién-1-yl)benzène

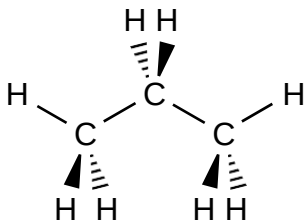
15

Dessiner en Cram les molécules ci-dessous :

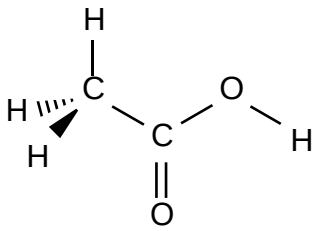
a) Méthane.
b) Propane.
c) Acide acétique.
d) Toluène (méthylbenzène).

Réponses :

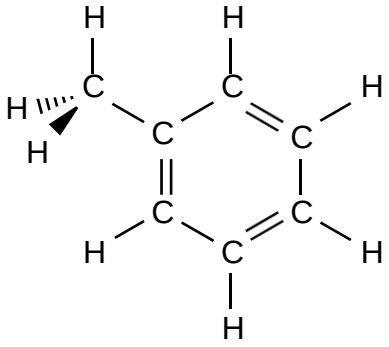
a) 

b) 

c)



d)



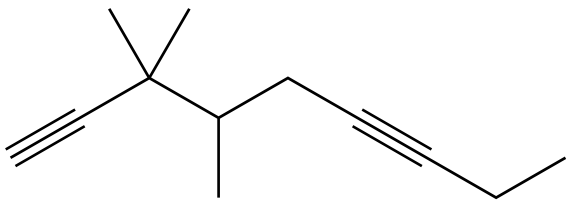
16

Dessinez en formule topologique (zig-zag), les molécules suivantes :

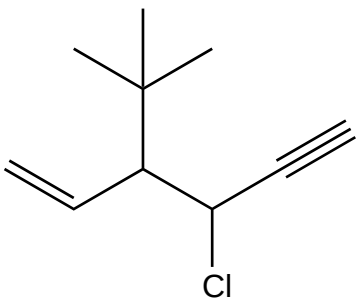
a) 3,3,4-triméthylnona-1,6-diyne.
b) 3-tert-butyl-4-chlorohex-1-én-5-yne.
c) 3-sec-butylhept-5-én-1-yne.

Réponses :

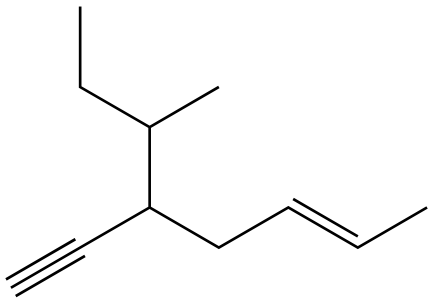
a)



b)



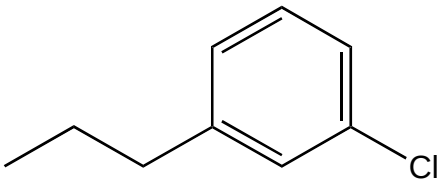
c)



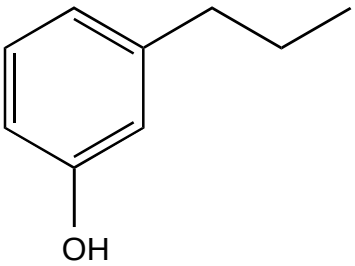
17

Indiquez le nom IUPAC des molécules suivantes :

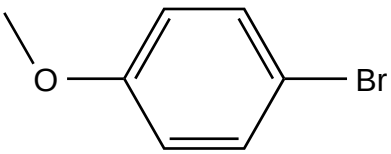
a)



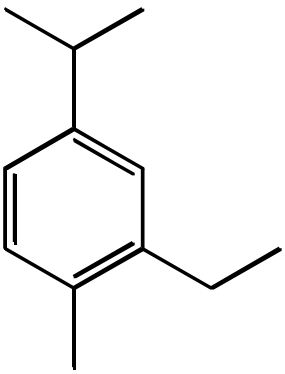
b)



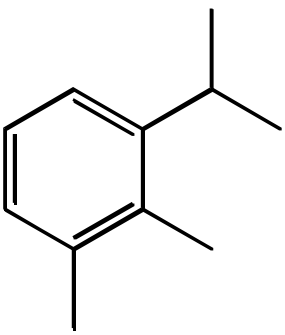
c)



d)



e)



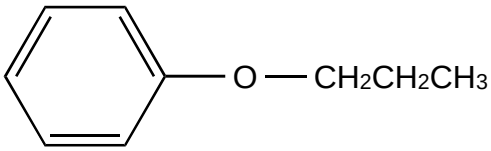
Réponses :

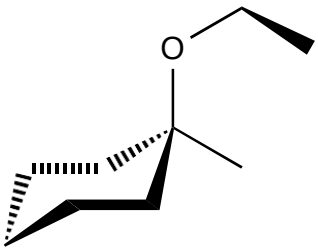
a) 1-chloro-3-propylbenzene.
b) 3-propylphénol.
c) 1-bromo-4-méthoxybenzène.
d) 2-éthyl-4-isopropyl-1-méthylbenzène.
e) 1-isopropyl-2,3-diméthylbenzène.

18

Indiquez le nom des molécules suivantes selon les règles de l'IUPAC :

a) $(CH_3)_2CHOCH_3$

b) 

c) 

Réponses :

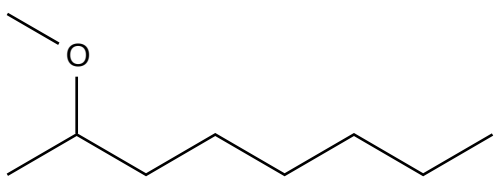
a) 3-methylbutan-2-one.
b) Propoxybenzène.
c) 1-éthoxy-1-méthylcyclohexane.

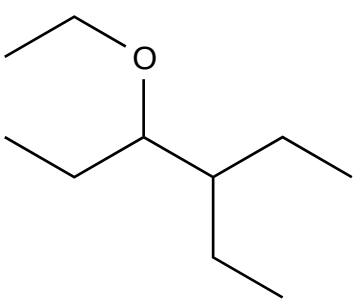
19

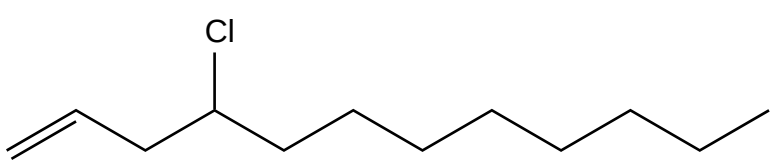
Dessinez, en formule topologique (zig-zag), les structures correspondantes aux noms suivants :

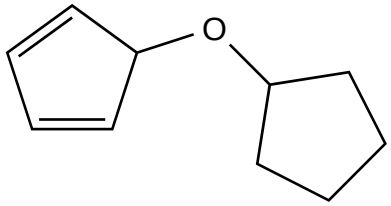
a) 2-méthoxyoctane.
b) 3-éthoxy-4-éthylhexane.
c) 4-chloro-6-hexylhex-1-ène.
d) 5-cyclopentyloxycyclopenta-1,3-diène.

Réponses :

a) 

b) 

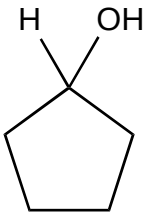
c) 

d) 

20

Nommez les molécules suivantes selon les règles de l'IUPAC :

a) $ClCH_2CH_2OH$

b) 

c) 

Réponses :

a) 2-chloroethanol.
b) Cyclopentanol.
c) Pent-3-yn-1-ol.

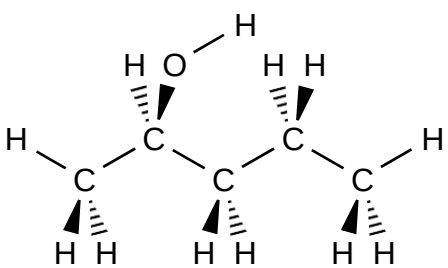
21

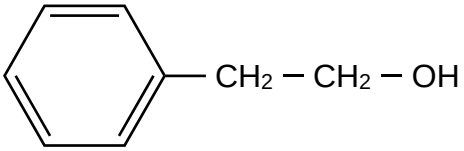
Dessinez les molécules ci-dessous en formules semi-développées et en Cram:

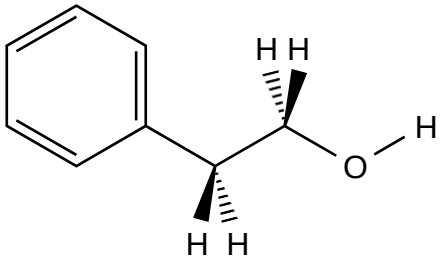
a) Pentan-2-ol.
b) 2-phényléthan-1-ol.
c) Pent-3-yn-2-ol.

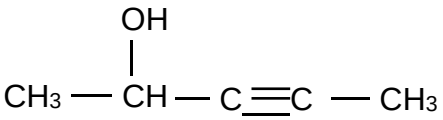
Réponses :

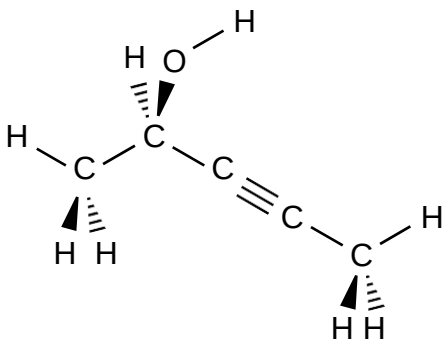
a) Formule semi-développées : $CH_3 - \underset{\displaystyle OH}{\underset{|}{CH}} - CH_2 - CH_2 - CH_3$

Formule en « coins-volants » : 

b) Formule semi-développées : 

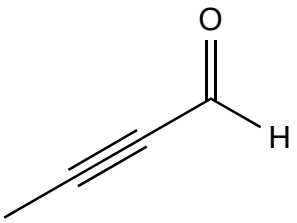
Formule en « coins-volants » : 

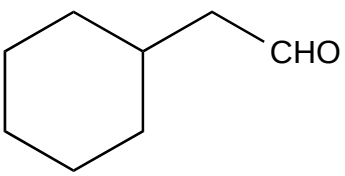
c) Formule semi-développées : 

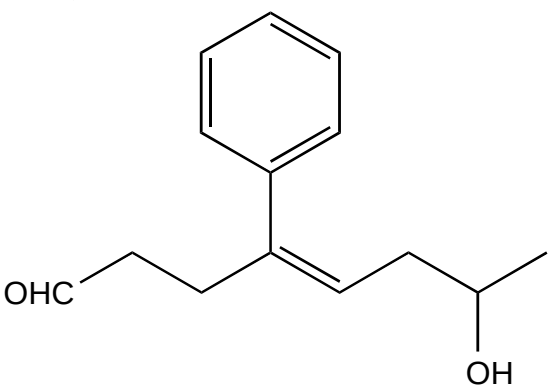
Formule en « coins-volants » : 

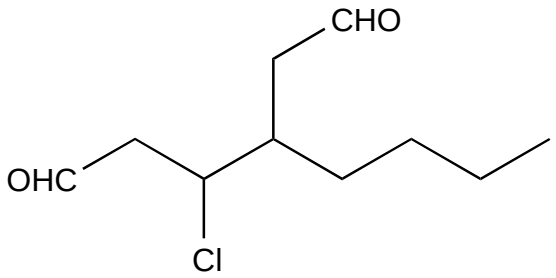
22

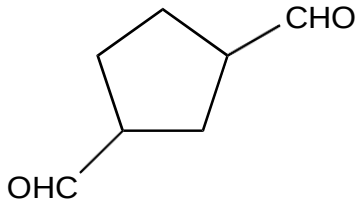
Nommez les molécules suivantes selon les règles de l'IUPAC :

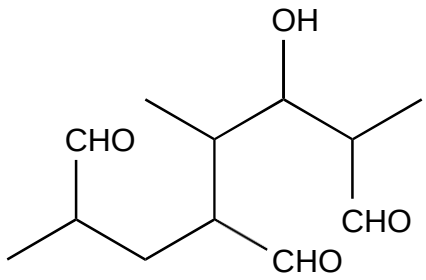
a) 

b) 

c) 

d) 

e) 

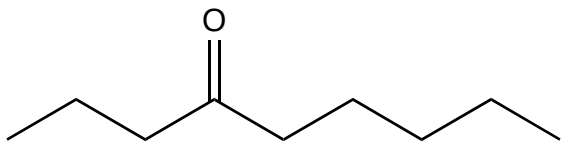
f) 

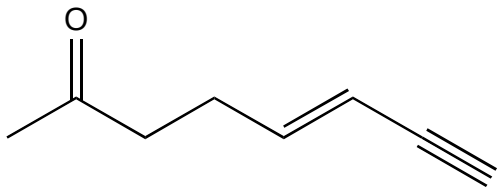
Réponses :

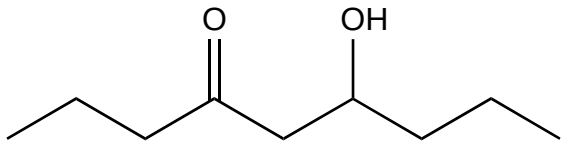
a) But-2-ynal.
b) 2-cyclohexylacétaldéhyde.
c) 7-hydroxy-4-phényloct-4-énal.
d) 3-butyl-4-chlorohexanedial.
e) Cyclopentane-1,3-dicarbaldéhyde.
f) 6-hydroxy-5-méthyloctane-2,4,7-tricarbaldéhyde.

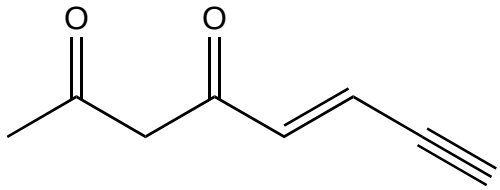
23

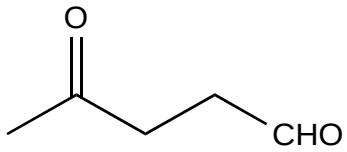
Nommez les molécules suivantes selon les règles de l'IUPAC :

a) 

b) 

c) 

d) 

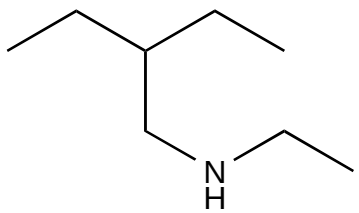
e) 

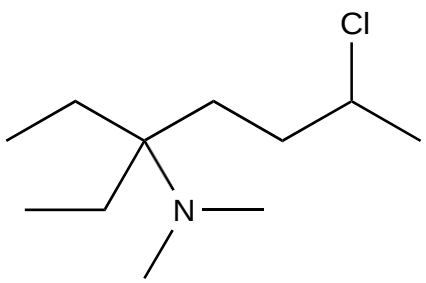
Réponses :

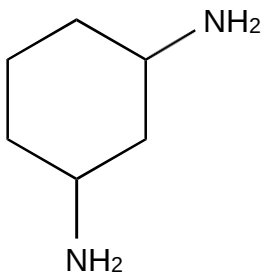
a) Nonan-4-one.
b) Oct-5-én-7-yn-2-one
c) 6-hydroxynonan-4-one.
d) Oct-5-en-7-yne-2,4-dione.
e) 4-oxopentanal.

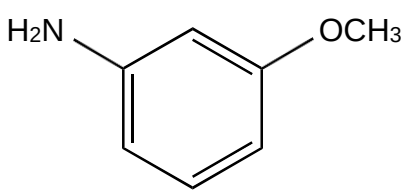
24

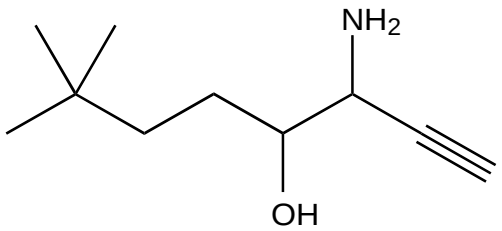
Nommez les molécules suivantes selon les règles de l'IUPAC :

a) 

b) 

c) 

d) 

e) 

Réponses :

e) N,2-diéthylbutan-1-amine.
f) 6-chloro-3-éthyl-N,N-diméthylheptan-3-amine.
g) Cyclohexane-1,3-diamine.
h) 3-méthoxyaniline.
i) 3-amino-7,7-dimethyloct-1-yn-4-ol.