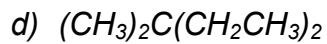
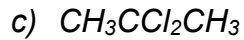
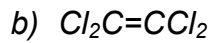
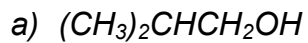


Exercices de nomenclature organique

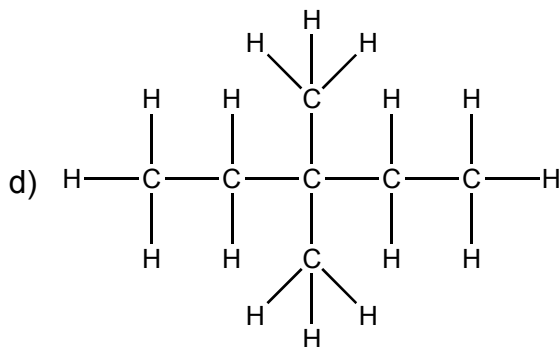
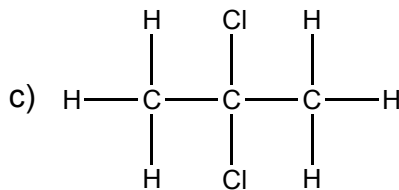
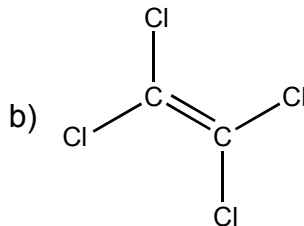
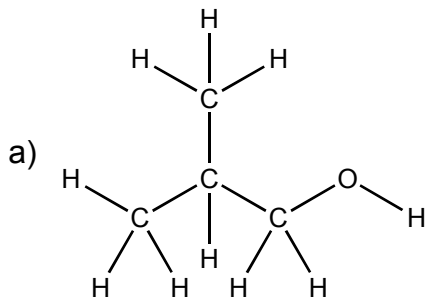
Corrigés

1

Dessinez la formule développée des molécules suivantes :



Réponses :

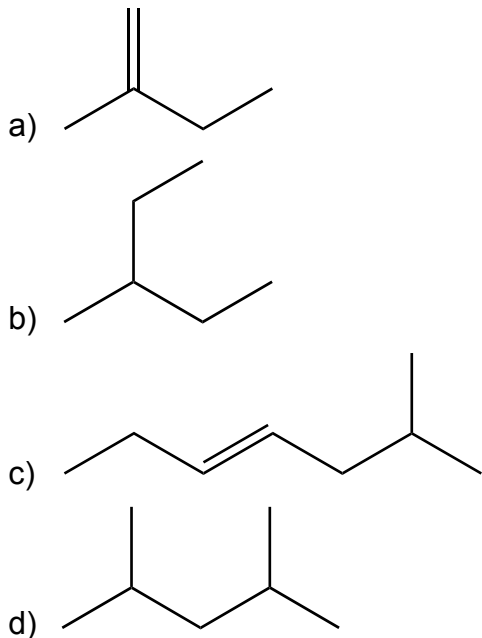


2

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

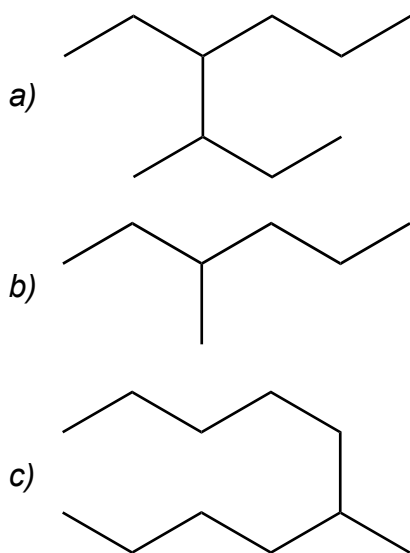
- a) $\text{CH}_3(\text{C}=\text{CH}_2)\text{CH}_2\text{CH}_3$
- b) $\text{CH}_3\text{C}(\text{CH}_2\text{CH}_3)\text{CH}_2\text{CH}_3$
- c) $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_2\text{CH}(\text{CH}_3)_2$
- d) $(\text{CH}_3)_2\text{CHCH}_2\text{CH}(\text{CH}_3)_2$

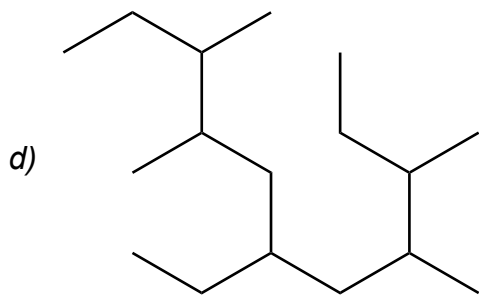
Réponses :



3

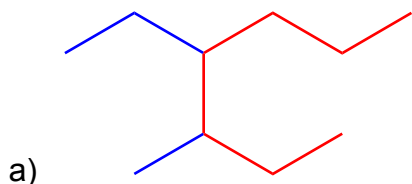
Déterminez la chaîne principale et les ramifications des molécules ci-dessous :



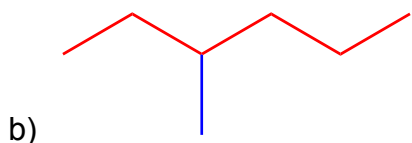


Réponses :

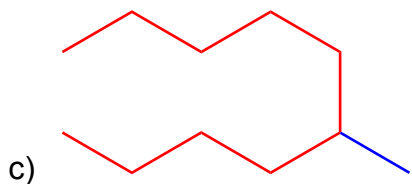
Les chaînes principales sont dessinées en rouge, les substituants en bleu :



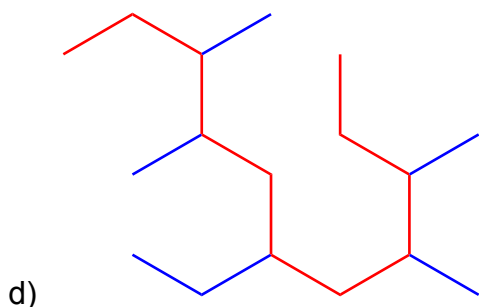
Chaîne principale : 7 carbones → heptane.
2 substituants : méthyle et éthyle.



Chaîne principale : 6 carbones → hexane.
1 substituant : méthyle.



Chaîne principale : 10 carbones → décane.
1 substituant : méthyle.



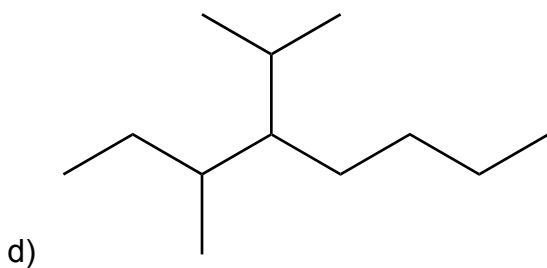
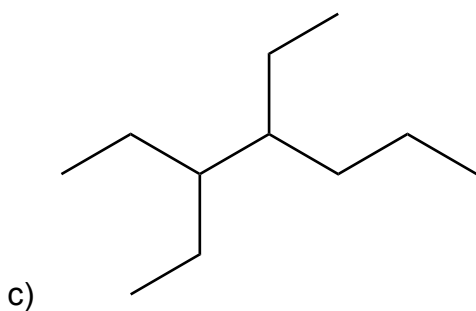
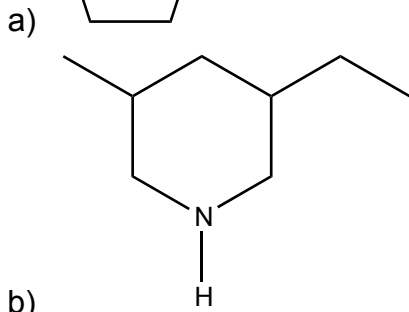
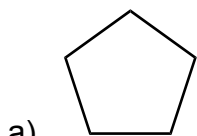
Chaîne principale : 11 carbones → undécane.
5 substituants : 4 méthyle et 1 éthyle.

4

Écrivez une formule simplifiée ou stylisée contenant :

- Un homocycle ou composé carbocyclique de 5 C.
- Un hétérocycle ou composé hétérocyclique avec deux ramifications.
- Une chaîne principale de 7 C avec 2 ramifications de 2 C chacune.
- Une chaîne principale de 8 C avec une ramification méthyle et une ramification isopropyle.

Réponses :

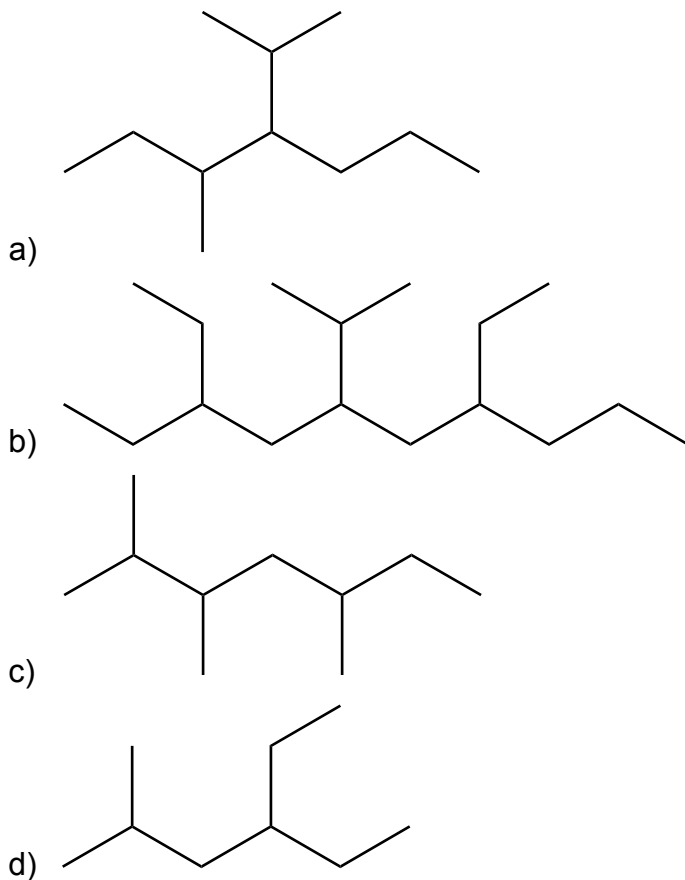


5

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

- 4-isopropyl-3-méthylheptane.
- 3,7-diéthyl-5-isopropyldécane.
- 2,3,5-triméthylheptane.
- 4-éthyl-2-méthylhexane.

Réponses :

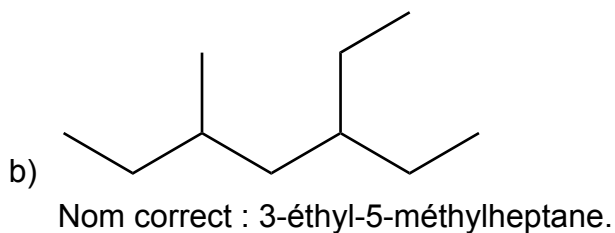
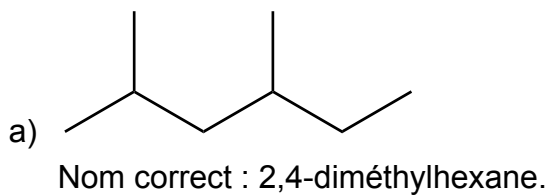


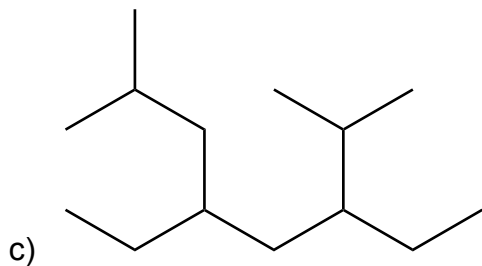
6

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

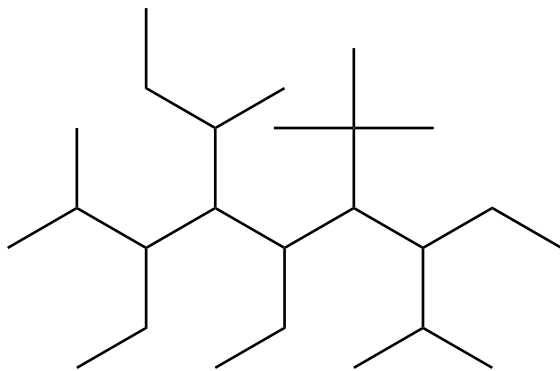
- a) 4-éthyl-2-méthylpentane.
- b) 5-éthyl-3-méthylheptane.
- c) 3-isobutyl-5-isopropylheptane.
- d) 4-(sec-butyl)-6-(tert-butyl)-3,5-diéthyl-7-isopropyl-2-méthylnonane.

Réponses :





c)
Nom correct : 3,5-diéthyl-2,7-diméthyl-octane.



d)
Nom correct : 4-(*sec*-butyl)-6-(*tert*-butyl)-3,5,7-triéthyl-2,8-diméthyl-nonane.

7

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

a) hexa-1,3-diène

Réponse : $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH} - \text{CH}_2 - \text{CH}_3$

b) hept-2-yne-4-ène

Réponse : $\text{CH}_3 - \text{C} \equiv \text{C} - \text{CH} = \text{CH} - \text{CH}_2 - \text{CH}_3$

c) pentène

Réponse : $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$

d) octa-1,3,5-trién-7-yne

Réponse : $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH} - \text{CH} = \text{CH} - \text{C} \equiv \text{CH}$

e) donnez un synonyme au produit d)

Réponse : oct-1-yne-3,5,7-triène

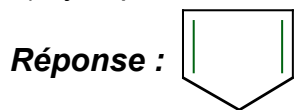
f) $\text{CH} \equiv \text{C} - \text{CH} = \text{CH} - \text{CH}_2 - \text{CH} = \text{C} = \text{CH}_2$

Réponse : octa-1,2,5-trién-7-yne

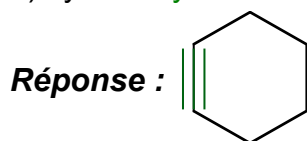
8

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

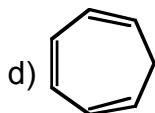
a) cyclopenta-1,3-diène



b) cyclohexyne



c) cyclobuta-1,3-diène

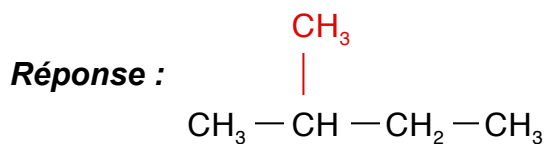


Réponse : cyclohepta-1,3,5-triène

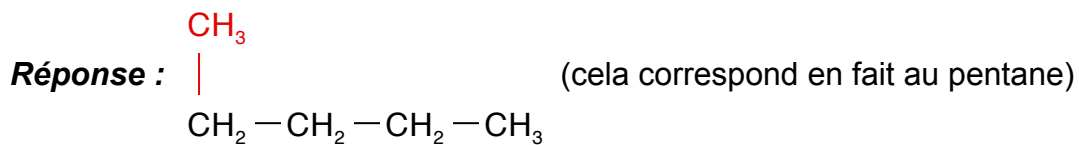
9

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

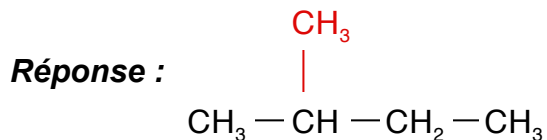
a) 2-méthylbutane



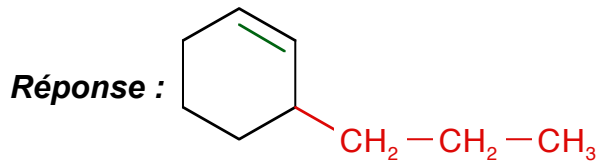
b) 1-méthylbutane



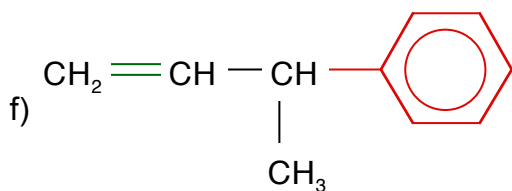
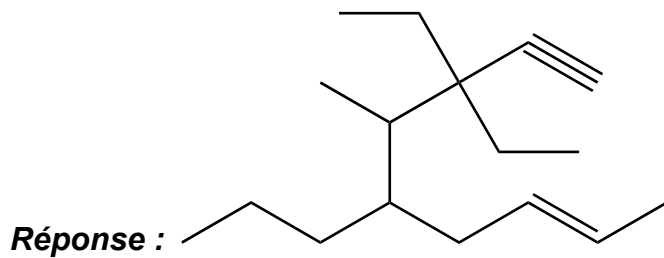
c) méthylbutane



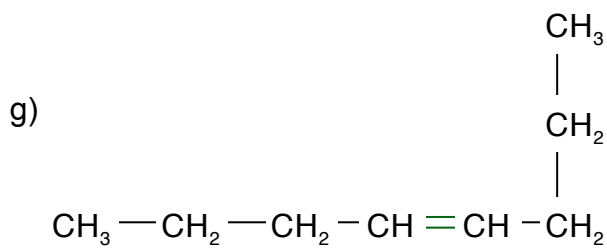
d) 3-propylcyclohexène



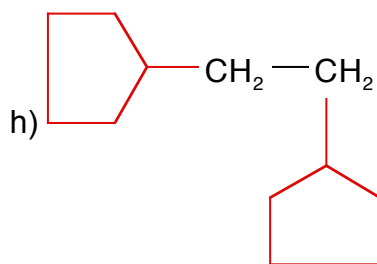
e) 3,3-diéthyl-4-méthyl-5-propylnon-7-én-1-yne



Réponse : but-3-én-2-ylbenzene



Réponse : oct-4-ène

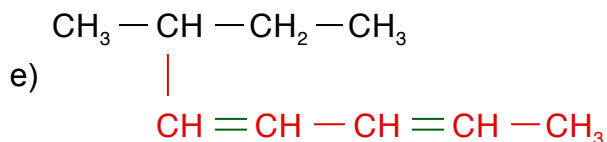
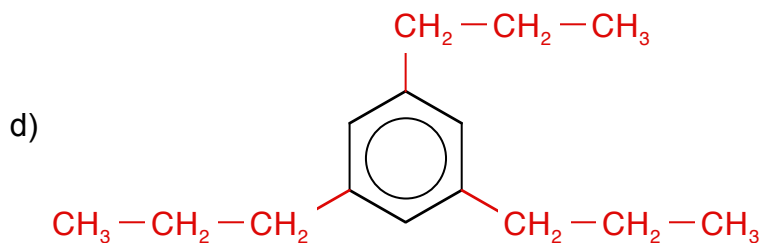
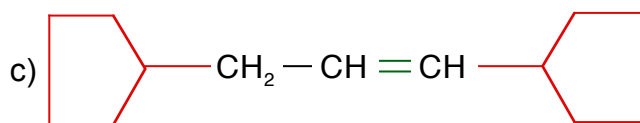
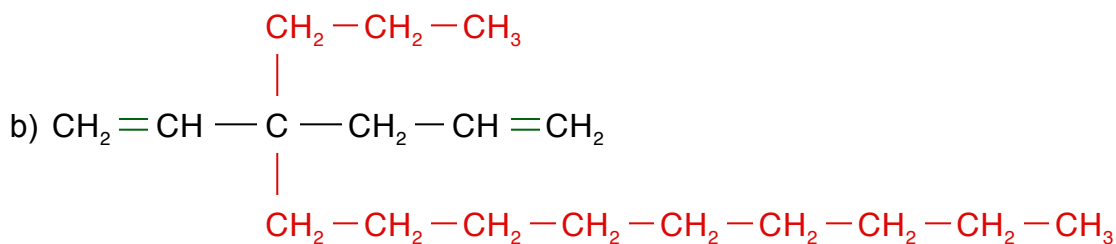
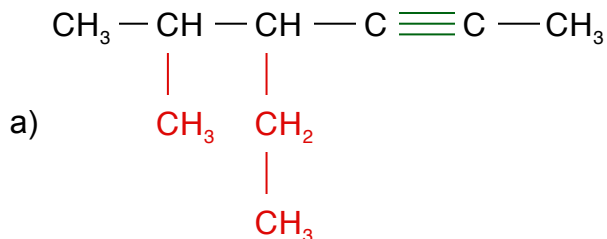


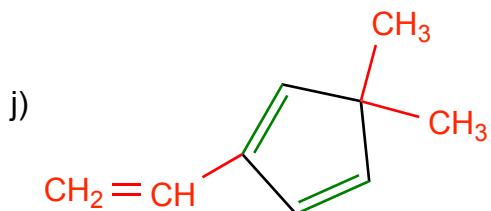
Réponse : 1,2-dicyclopentyléthane

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-butyl-octane
 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 :





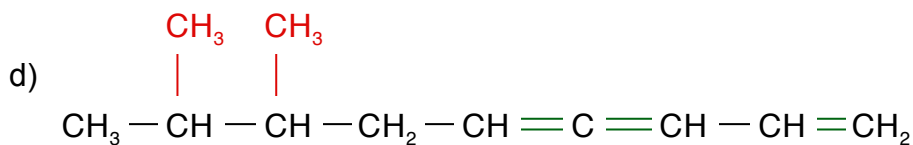
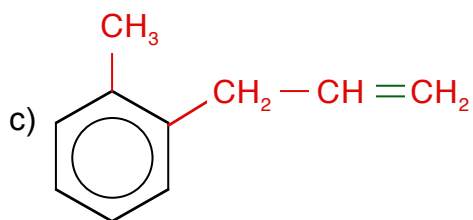
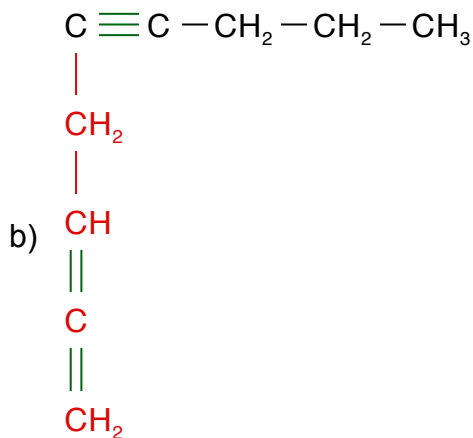
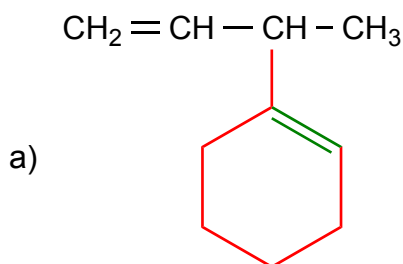
Réponse : 5,5-diméthyl-2-vinylcyclopenta-1,3-diène

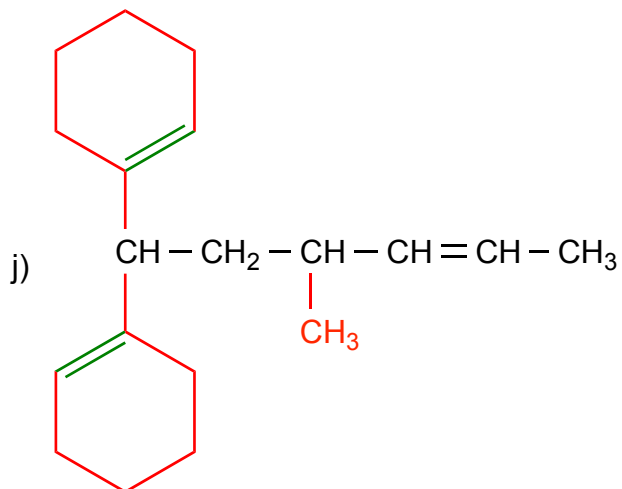
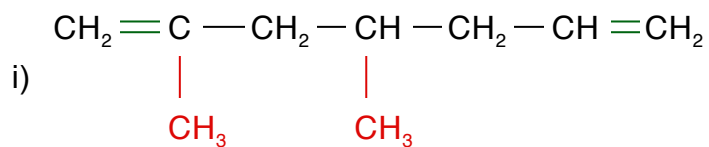
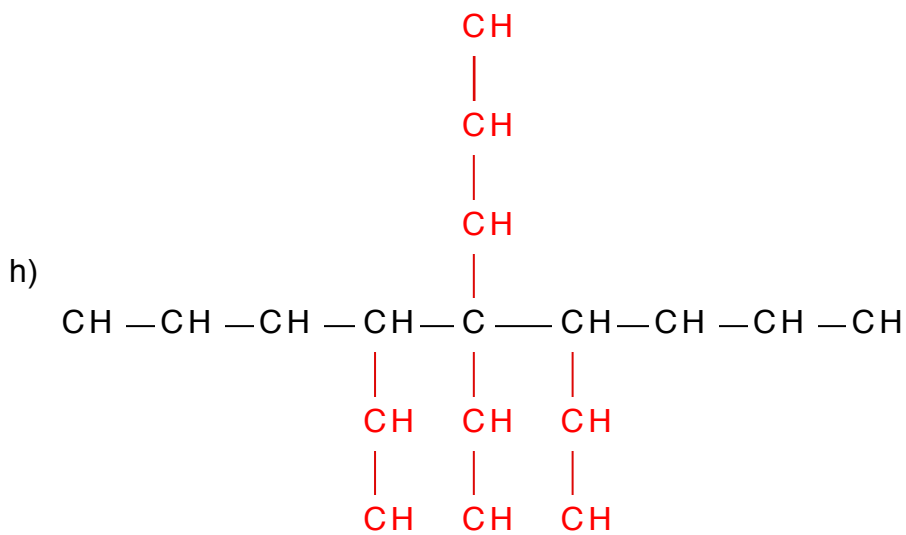
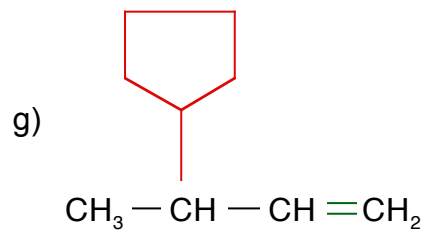
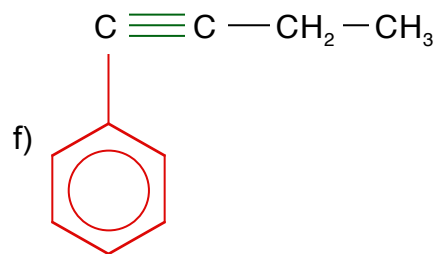
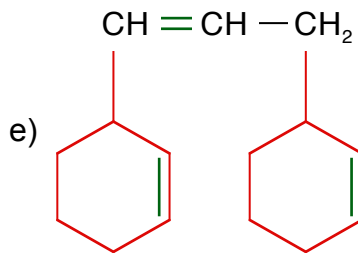
12

Dessiner les molécules ci-dessous :

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

Réponses :



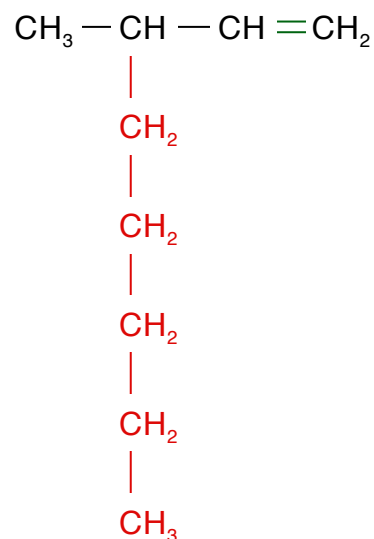
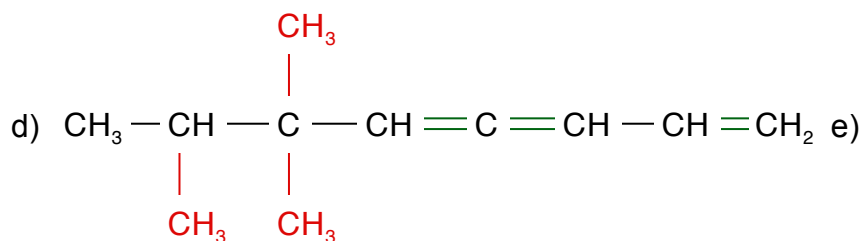
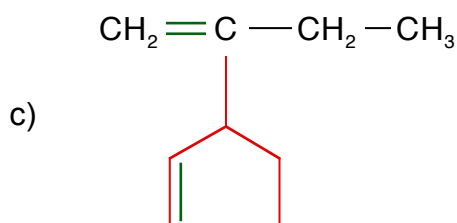
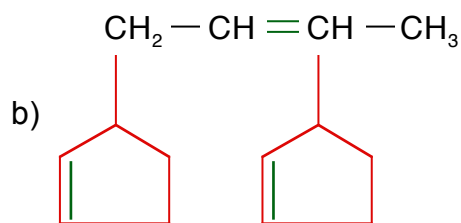
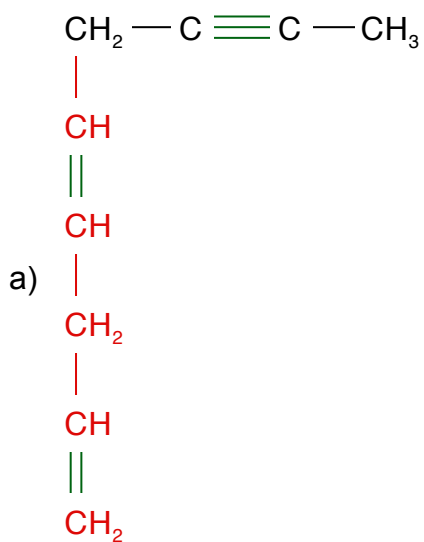


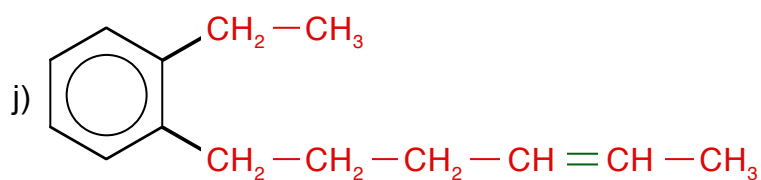
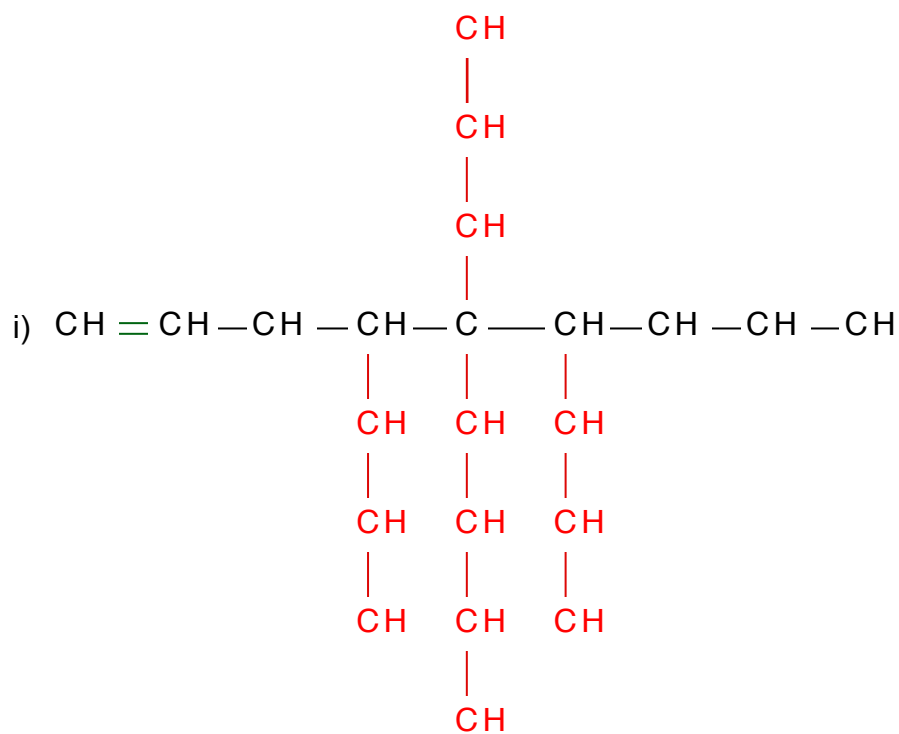
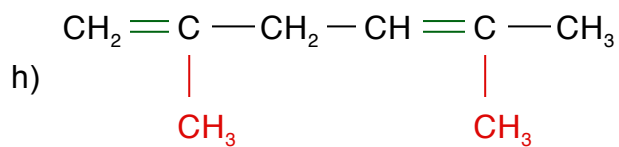
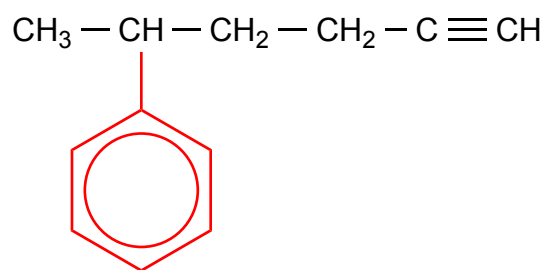
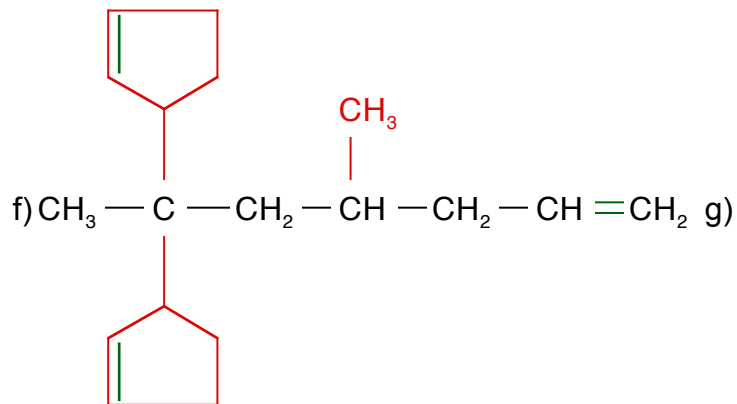
Dessiner les molécules ci-dessous :

- 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-triméthyl-octa-4,5,7-triène
 e) 2-pentylbut-3-ène

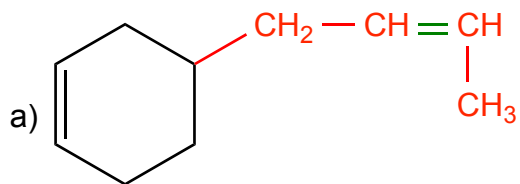
- f) 2,2-dicyclopent-2-ényl-4-méthylhept-6-ène
 g) 2-phénylhex-5-yne
 h) 2,5-diméthylhexa-1,4-diène
 i) 5-butyl-4,5,6-tripropyl-non-1-ène
 j) 2-éthyl-3-hex-4-énylbenzène

Réponses :

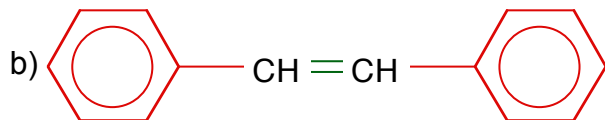




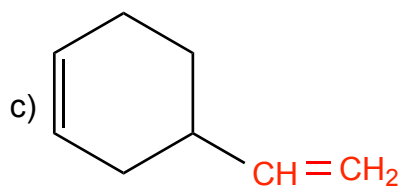
Nommer les molécules ci-dessous :



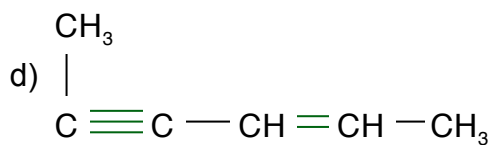
Réponse : 4-(but-2-én-1-yl)cyclohex-1-ène



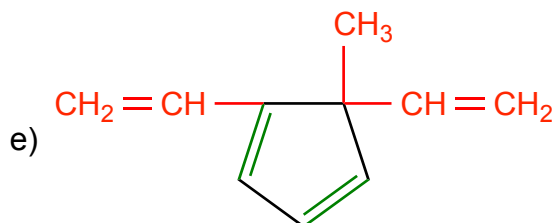
Réponse : 1,2-diphényléthène



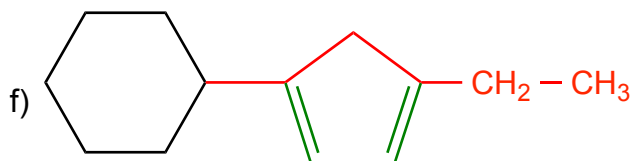
Réponse : 4-vinylcyclohex-1-ène



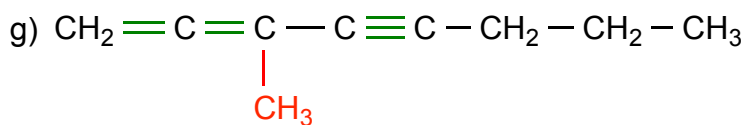
Réponse : hex-2-ène-4-yne



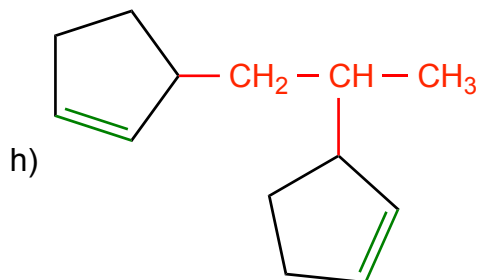
Réponse : 5-méthyl-1,5-divinylcyclopenta-1,3-diène



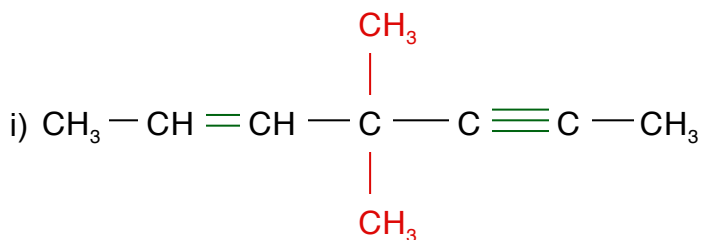
Réponse : (4-éthylcyclopenta-1,3-dièn-1-yl)cyclohexane



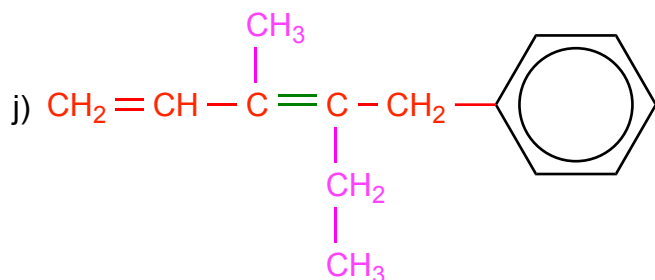
Réponse : 3-méthyl-octa-1,2-diène-4-yne



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



Réponse : 4,4-diméthylhept-2-én-5-yne



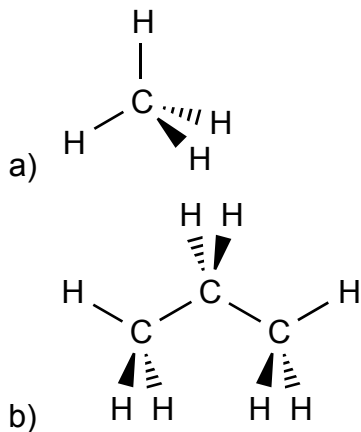
Réponse : (2-éthyl-3-méthylpenta-2,4-dién-1-yl)benzène

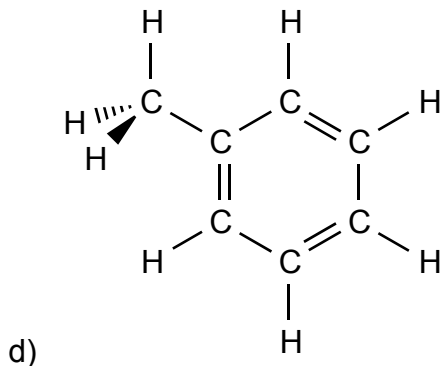
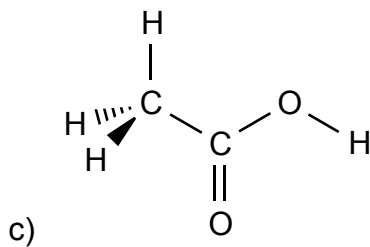
15

Dessiner en "coins-volants" les molécules ci-dessous :

- Méthane.
- Propane.
- Acide acétique.
- Toluène (méthylbenzène).

Réponses :



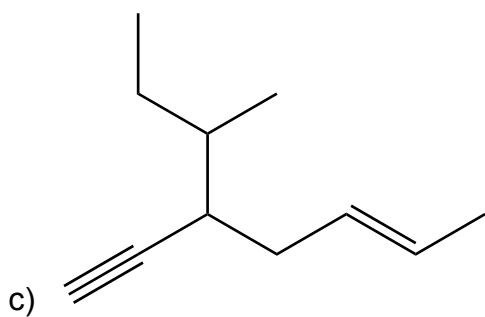
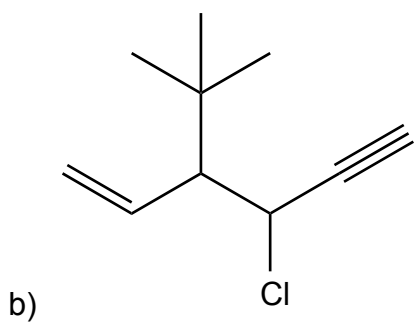
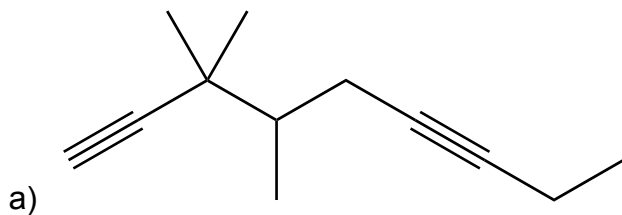


16

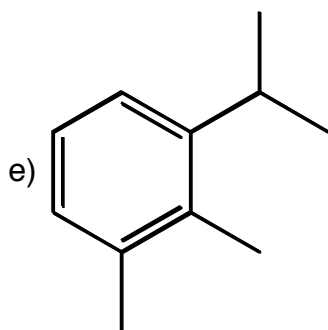
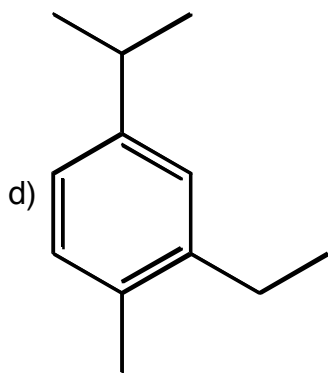
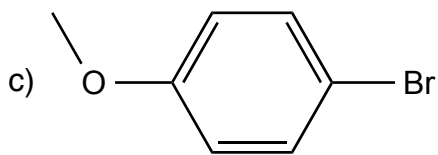
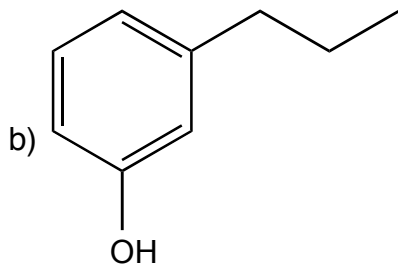
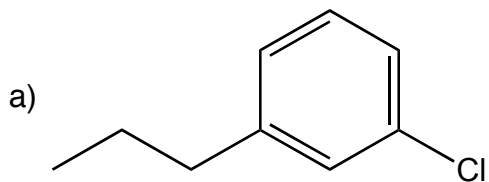
Dessinez en formule topologique (zig-zag), les molécules suivantes :

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

Réponses :



Indiquez le nom IUPAC des molécules suivantes :

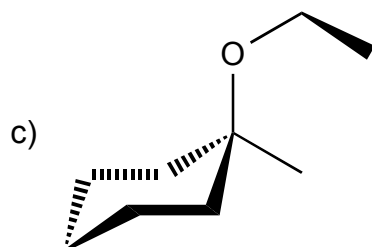
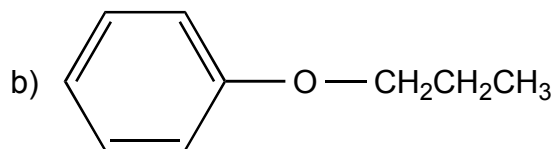
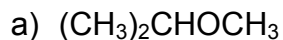


Réponses :

- 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 :



Réponses :

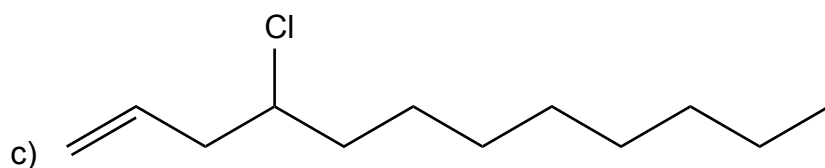
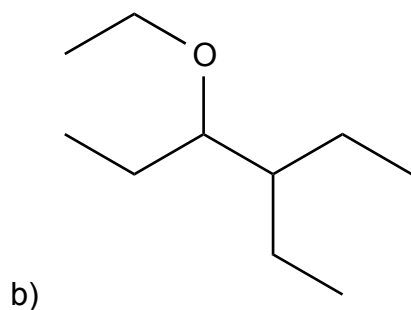
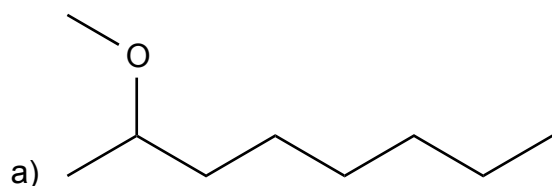
- a) 3-methylbutan-2-one.
- b) Propoxybenzène.
- c) 1-éthoxy-1-méthylcyclohexane.

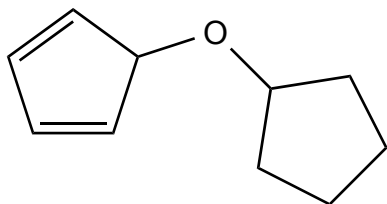
19

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-cyclopentyloxy-cyclopenta-1,3-diène.

Réponses :



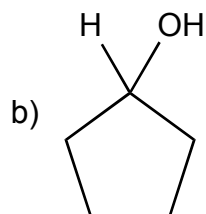


d)

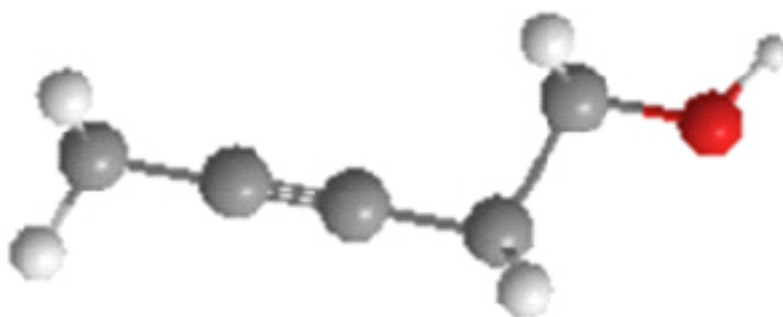
20

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

a) $\text{ClCH}_2\text{CH}_2\text{OH}$



c)



Réponses :

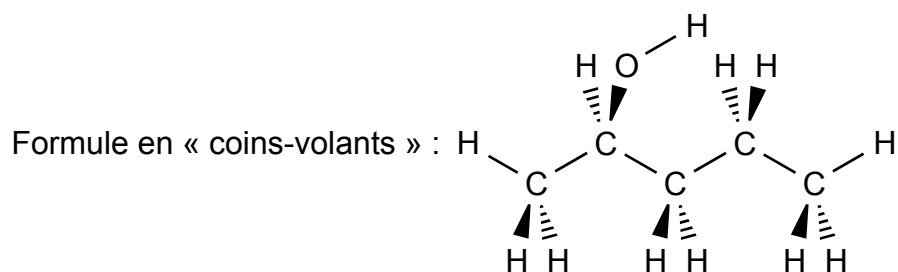
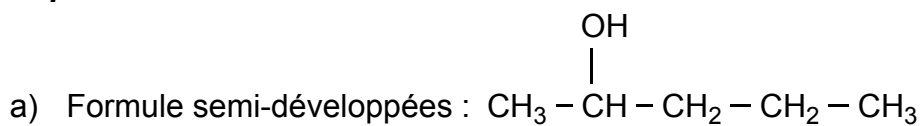
- a) 2-chloroéthanol.
- b) Cyclopentanol.
- c) Pent-3-yn-1-ol.

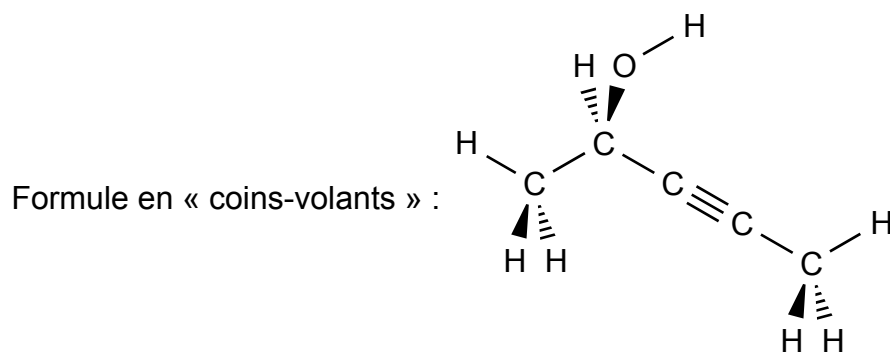
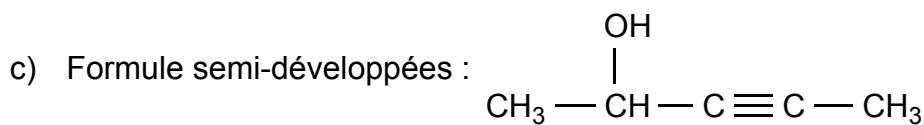
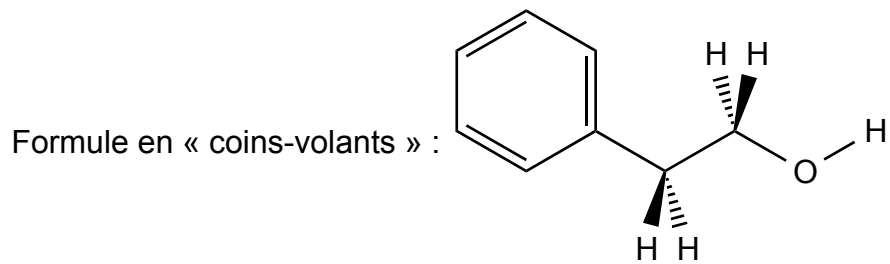
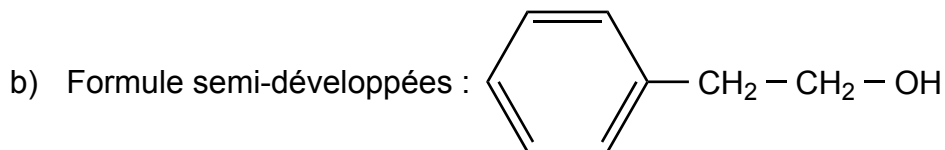
21

Dessinez les molécules ci-dessous en formules semi-développées et en "coins-volants" :

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

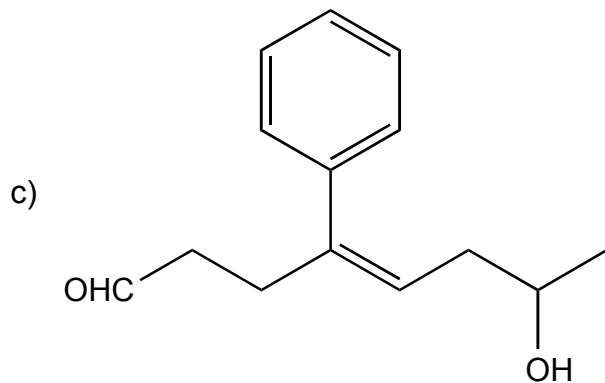
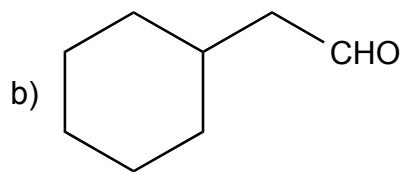
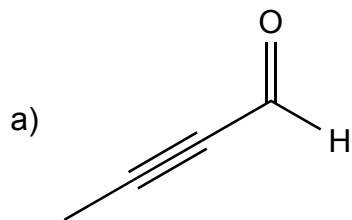
Réponses :

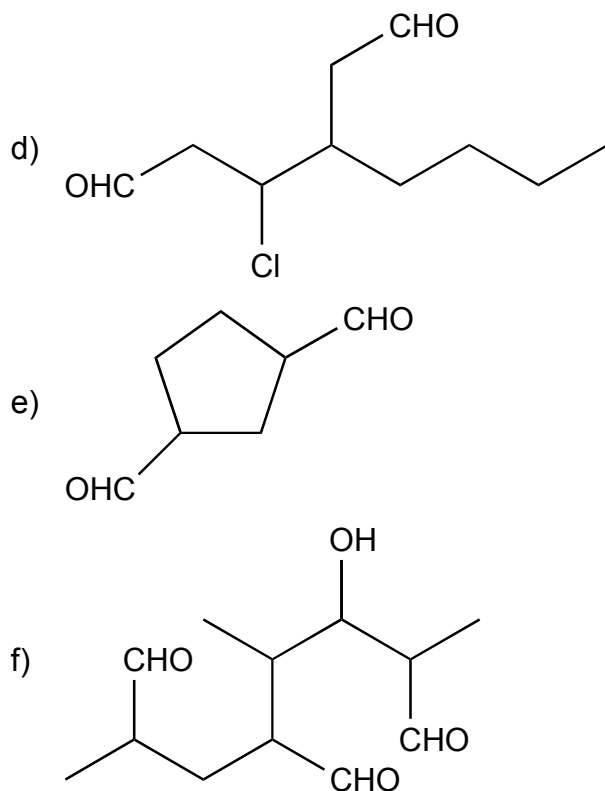




22

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



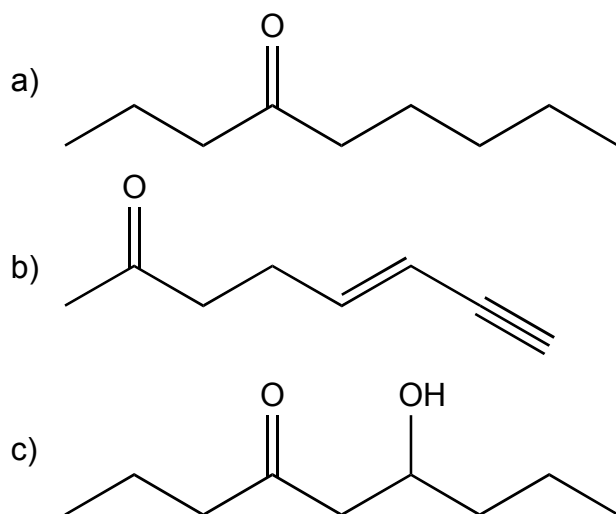


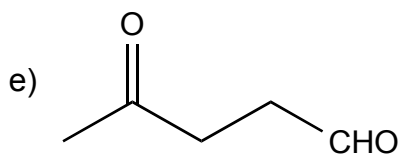
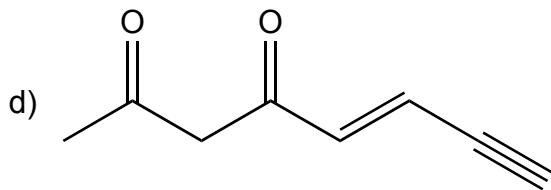
Réponses :

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

23

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



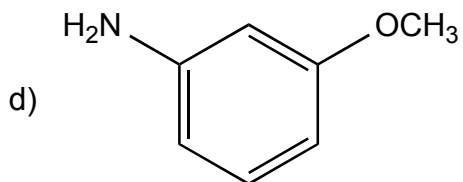
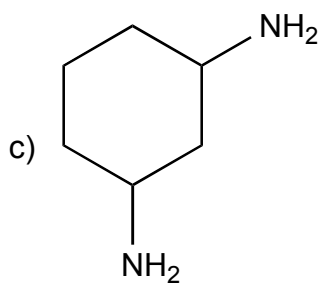
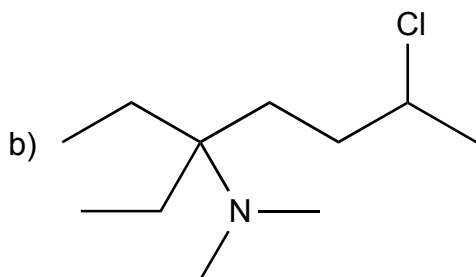
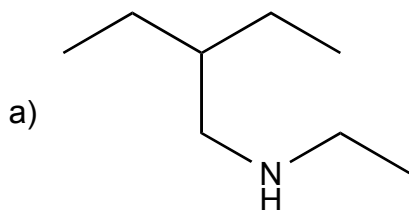


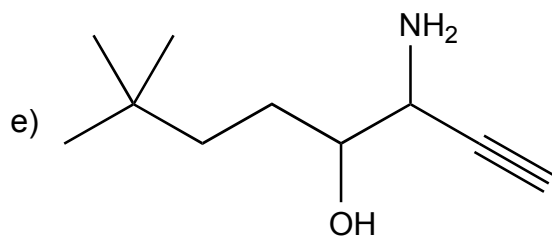
Réponses :

- 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.

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





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.