

Get some extra practice worksheets to accompany
Chemistry for the Biosciences, fourth edition

Chapter 6 Hydrocarbons: the framework of life

Chapter 7 Functional groups: adding function to the framework of life

Get some extra practice...

...drawing chemical structures

1. Draw the expanded structural formulae of each of the following:

a. Butane

b. Methanol

c. Propyne

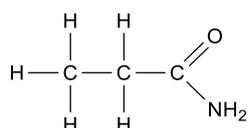
d. Ethene

e. Ethanoic acid

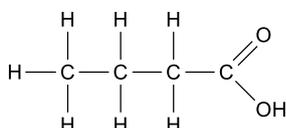
f. Propanone

2. Draw the following expanded structural formulae in simplified form:

a.



b.

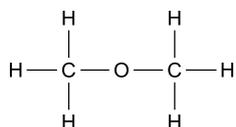


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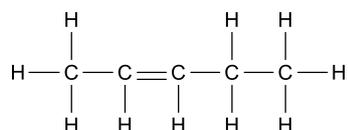
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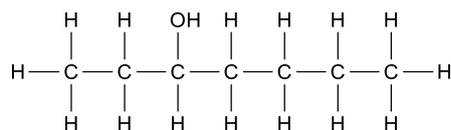
c.



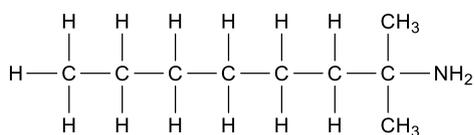
d.



e.



f.



3. Draw simplified structural formulae for each of the following:

a. Propanoic acid

b. 1-hexanamine

c. Methyl ethanoate

d. Decane

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e. Pentanal

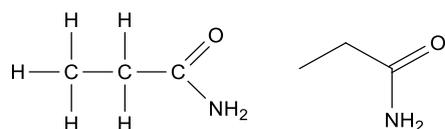
4. Draw simplified structural formulae for each of the compounds listed in question 1.
5. What are the names of the compounds listed in question 2?
6. Using dashed and wedged bonds, draw the structure of methane.

Scroll to the following pages to check your answers.

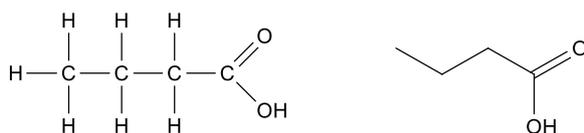
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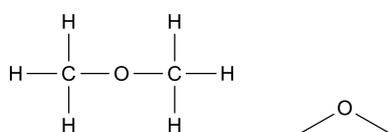
Chapter 7 Functional groups: adding function to the framework of life



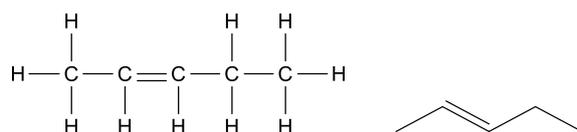
b.



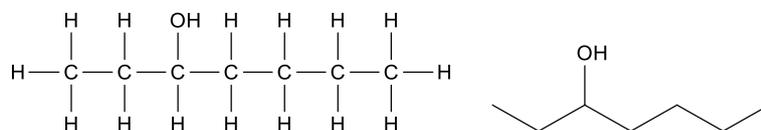
c.



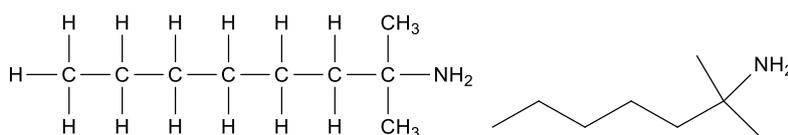
d.



e.

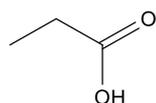


f.



3. Draw simplified structural formulae for each of the following:

a. Propanoic acid



b. 1-hexanamine



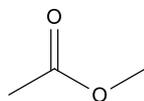
Remember: the '1' tells us that the -NH_2 group is attached to the first carbon in the chain.

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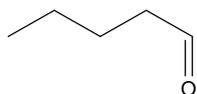
c. Methyl ethanoate



d. Decane



e. Pentanal



Remember: simplified formulae don't show hydrogen atoms. In reality, however, the carbonyl carbon (to which the =O is attached) also has a H attached to complete the aldehyde group.

4. Draw simplified structural formulae for each of the compounds listed in question 1.

a. Butane

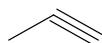


b. Methanol



Remember: each end of a straight line in a simplified formula represents a CH₃ group

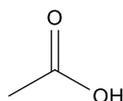
c. Propyne



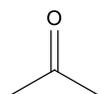
d. Ethene



e. Ethanoic acid



f. Propanone



5. What are the names of the compounds listed in question 2?

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a. Propanamide

b. Butanoic acid

c. Methoxymethane

d. Pent-2-ene

Remember: we number the position of the double bond by using the carbon at the earliest position in the chain – in this case, carbon 2.

e. Heptan-3-ol

f. 2-methyl-2-heptanamine

Remember: we need to look out for the longest carbon backbone in order to find the 'base' compound. In this case, there is a continuous seven-carbon chain, so the compound is based on heptane. The two '2-' tell us that both the amine and methyl groups are attached to the second carbon. (An alternative would be to think that this was hexanamine (a six-carbon amine) with two methyl groups attached to the second carbon, but this misses the fact that the longest continuous chain is seven carbons long.)

6. Using dashed and wedged bonds, draw the structure of methane.

