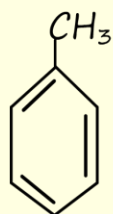


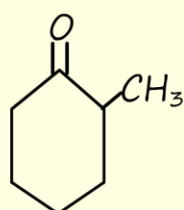
Finding chiral centres

Answer all the questions below as fully as you can then check your answers

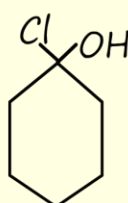
- If a molecule is said to be optically active what does this mean?
 - What is a chiral or asymmetric carbon atom?
 - What is an enantiomer?
- Draw fully structural formula for the following molecules.
 - 2-methylpentan-2-ol
 - 1-chloroethanol
 - 2-hydroxypropanoic acid
 - $\text{HOCH}_2\text{CH}(\text{NH}_2)\text{COOH}$
- For each of the molecules in question 2 identify any chiral carbon atoms in the molecules by placing an asterisk(*) beside them.
 - For any optically active molecules in question 2 draw a 3d representation to show the structure of each pair of enantiomers.
- Identify any chiral carbon atoms in each of the following molecules:



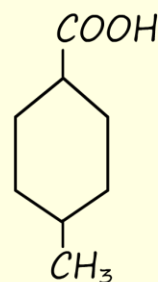
molecule a



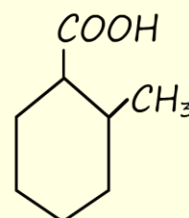
molecule b



molecule c



molecule d



molecule e

Answers

1. If a molecule is said to be optically active what does this mean?

It will rotate plane polarised light.

a. What is a chiral or asymmetric carbon atom?

A carbon atom with four different groups or atoms attached to it.

b. What is an enantiomer?

Non-super imposable mirror image forms of a molecule.

2. Draw fully structural formula for the following molecules.

a. 2-methylpentan-2-ol

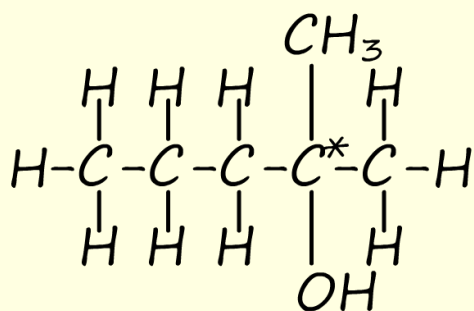
b. 1-chloroethanol

c. 2-hydroxypropanoic acid

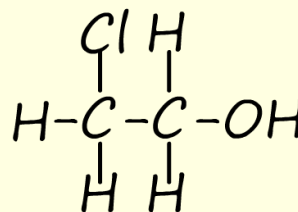
d. $\text{HOCH}_2\text{CH}(\text{NH}_2)\text{COOH}$

Although the diagrams below do not use full structural formula or displayed formula for all bonds, the structures are unambiguous.

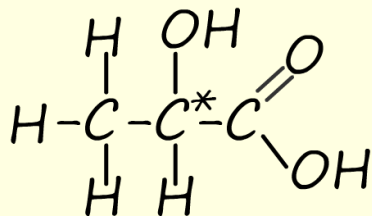
chiral centres are shown by the use of an asterisk (*)



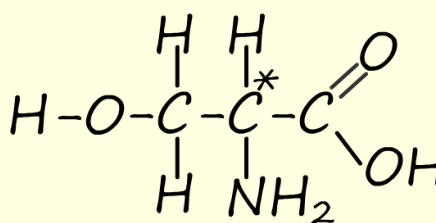
2-methylpentan-2-ol



2-chloroethanol



2-hydroxypropanoic acid



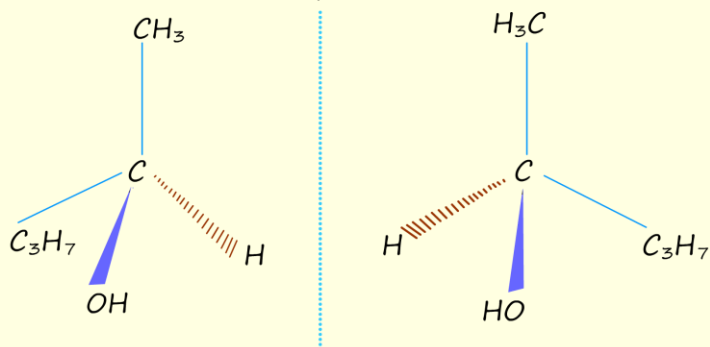
amino acid serine

3. For each of the molecules in question 2 identify any chiral carbon atoms in the molecules by placing an asterisk(*) beside them.

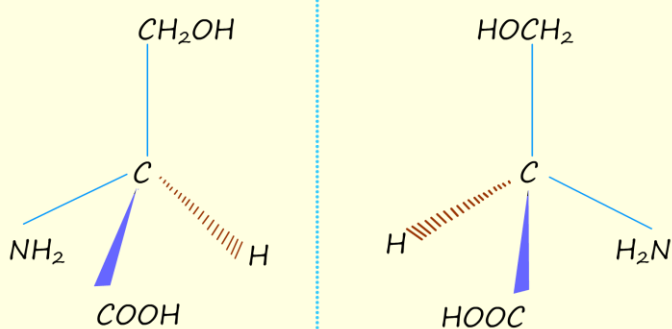
See diagram above

- a. For any optically active molecules in question 2 draw a 3d representation to show the structure of each pair of enantiomers.

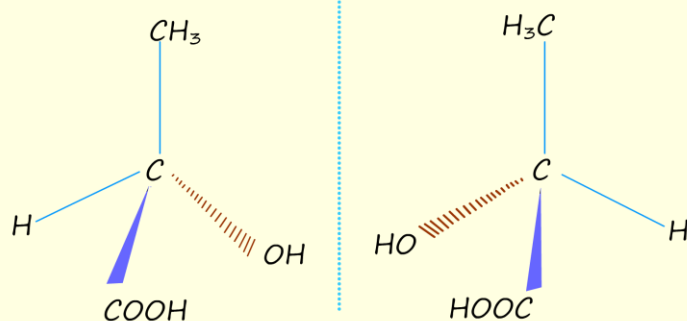
enantiomers of 2-methylpentan-2-ol



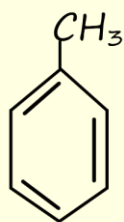
enantiomers of amino acid serine



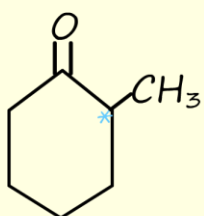
enantiomers of 2-hydroxypropanoic acid



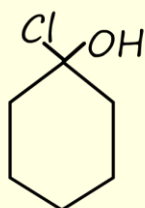
4. Identify any chiral carbon atoms in each of the following molecules:



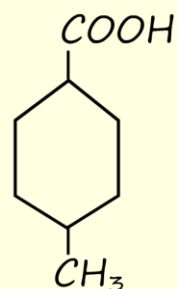
molecule a
no chiral
carbon atoms



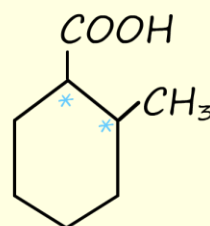
molecule b
* marks location
of chiral carbon
atom



molecule c
no chiral
carbon atoms



molecule d
no chiral carbon
atoms



molecule e
* marks location
of chiral carbon
atoms.