OPTICAL ISOMERS

Optical isomerism is a form of stereoisomerism.

- same molecular and structural formula (connectivity between atoms is the same)
- different spatial arrangements of the atoms
- have non-superimposable mirror images / one cannot be superimposed on the other
- are described as chiral
- possess a chiral C atom / C atom bonded to 4 different atoms/groups

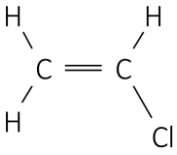
Each non-superimposable mirror image structure is called an enantiomer.

KEY IDEA: There must be 4 different atoms/groups.

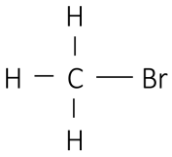
Optical isomers rotate the plane of plane-polarised light, one enantiomer rotates the plane anticlockwise while the other enantiomer rotates the plane clockwise (by the same number of degrees). A racemic mixture is a mixture containing equal amounts of the enantiomers and it is not optically active – it will not rotate the plane-polarised light.

Which of the following could exist as enantiomers / optical isomers? Highlight any chiral centre(s).

A.



B.



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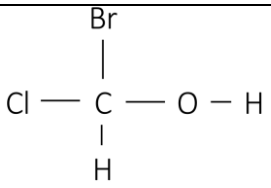

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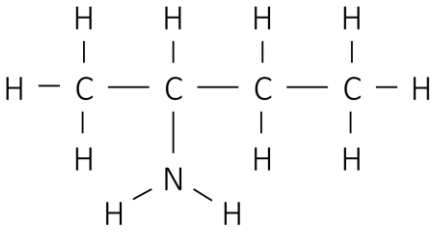

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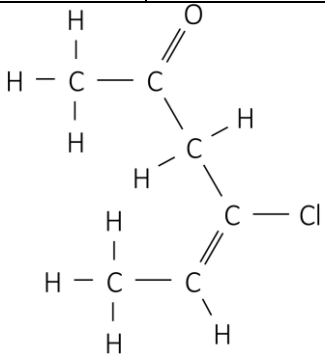

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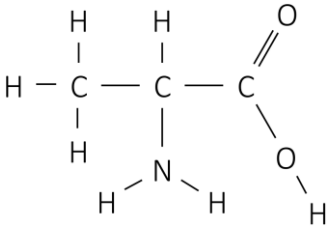

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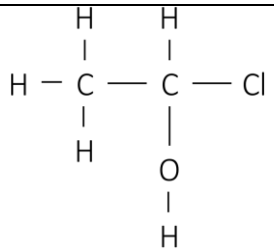
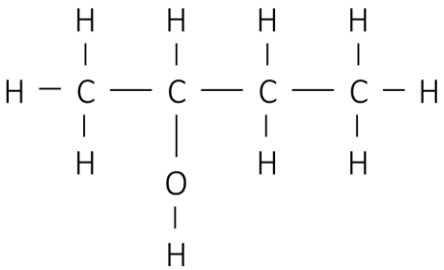


H.



Answers: