

413.4 Exercise 2 – Isomerism

1. Draw all the possible structural isomers of $C_5H_{11}Br$ (there are 8 in total). Label the isomers A – H and name them.
 - a) Identify two molecules which are positional isomers.
 - b) Identify two molecules which are chain isomers.
 - c) Identify two molecules which are chiral and draw the two optical isomers of each. Explain briefly how they could be distinguished.
2. Draw all the possible structural isomers of C_5H_{10} which contain a double bond (there are five in total). Label the isomers A – E and name them.
 - a) Identify two molecules which are positional isomers.
 - b) Identify two molecules which are chain isomers.
 - c) Identify one molecule which shows stereoisomerism, state the type of stereoisomerism shown and draw and name the two stereoisomers.
 - d) Draw the structure of a molecule which is a functional isomer of all the molecules A to E.
3.
 - a) Draw the two possible structures of a molecule with molecular formula $C_4H_8O_2$ and containing a carboxylic acid group. Name both of the isomers.
 - b) Draw four possible structures of molecules with the same molecular formula but containing a different functional group. Name the functional group and the molecules containing it. What is the type of isomerism shown between these molecules and the molecules drawn in 3 (a)?
4.
 - a) Draw the structure of pentan-2-one
 - b) Draw a positional isomer of pentan-2-one
 - c) Draw a chain isomer of pentan-2-one
 - d) Draw a functional isomer of pentan-2-one (not an aldehyde)
5. State whether the following preparations will produce a racemate or a single enantiomer:
 - a) butan-2-ol from but-2-ene
 - b) butan-2-ol from 2-bromobutane
 - c) 2-hydroxybutanenitrile from propanal