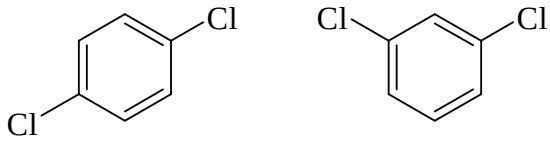
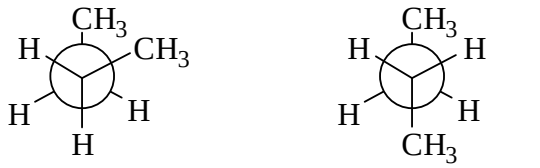
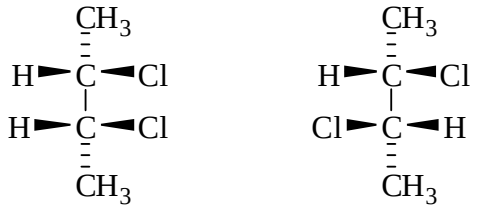
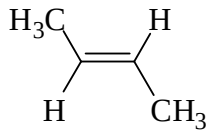
Marks 8

- Consider the following pairs of compounds. Indicate the isomeric relationship that exists between the compounds in each set.

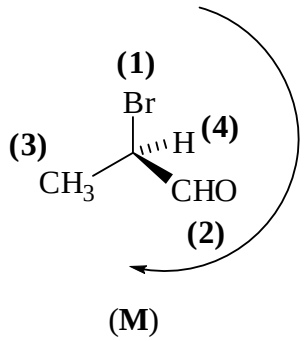
	**Constitutional isomers.** **They differ in the interatomic connectivity.**
	**Conformational isomers.** **They differ only be rotation about the central C-C bond.**
 (**L**)	**Diastereomers.** **They differ in the arrangement of the atoms in space. They are *not* mirror-image stereoisomers.**
 (**M**)	**Identical.** **They are superimposable mirror images of each other.**
 (**N**)	**Diastereomers.** **They differ in the arrangement of the atoms in space. They are *not* mirror-image stereoisomers.**

Give the name of compound (**L**) that unambiguously describes its stereochemistry.

 (**L**)	**(*E*)-but-2-ene**	**The two CH_3 groups on either end of the double bond have higher priority than the two H groups. As they are located on opposite sides of the double bond, the stereochemistry is designated as (*E*).**

ANSWER CONTINUES ON THE NEXT PAGE

Give the name of compound (**M**) that unambiguously describes its stereochemistry.



(**M**)

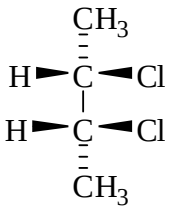
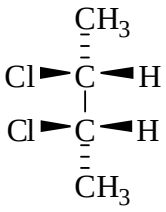
(*R*)-2-bromopropanal

The priority of the groups is Br > CHO > CH_3 > H. With the lowest priority (H) at the back, the path from highest to lowest ((1)-(2)-(3)) is clockwise. The stereochemistry is designed as (*R*).

Is compound (**N**) optically active? Give a reason for your answer.

Compound (N) is meso and is *not* optically active. It is superimposable on its mirror image. Simple rotation of the mirror image on the right generates the molecule on the left.

(N) possesses an internal mirror plane (between the carbon atoms) and is thus not chiral.



(**N**)