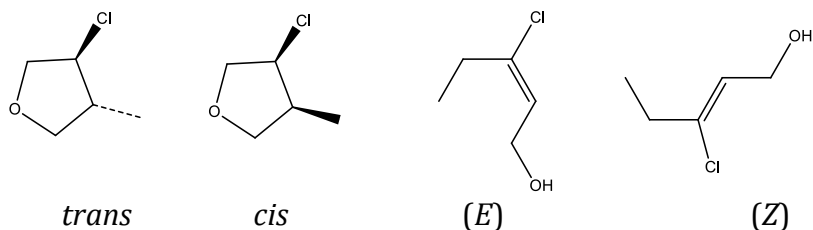


CHEM1002 Worksheet 6 – Answers to Critical Thinking Questions

The worksheets are available in the tutorials and form an integral part of the learning outcomes and experience for this unit.

Model 1: Enantiomers and Diastereomers

1. Examples include:



2. See class.

3. They are the same as each other.

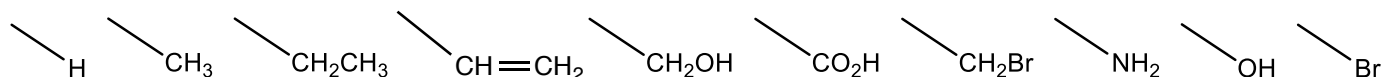
4. Mirror images.

5. The molecules are the same.

6. 4 different groups around a tetrahedral carbon atom. In general, lack of an internal reflection plane or centre of symmetry.

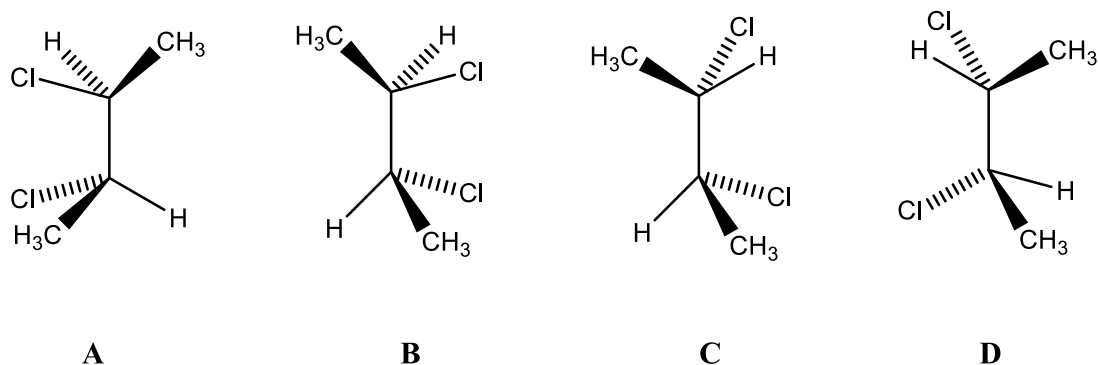
7. Chiral, achiral, achiral, chiral and achiral.

8. In order of increasing priority:



9. (*R*), (*S*), (*S*) and (*R*).

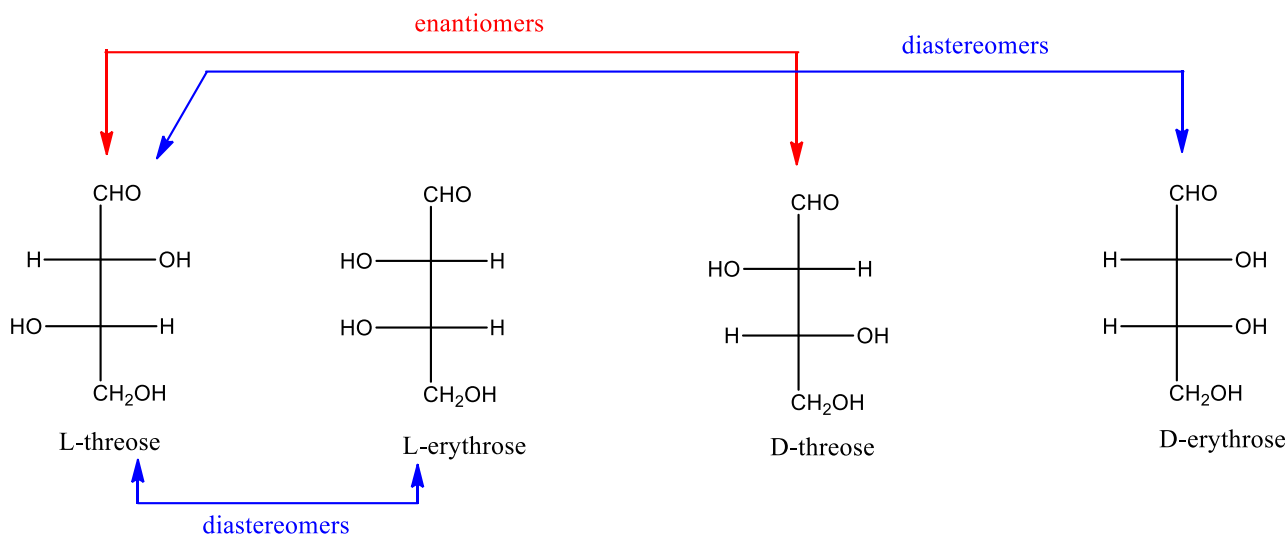
10. See below.



11. **A** and **B** are identical. This is the *meso* form.
C and **D** are enantiomers.
{**C**, **D**} and **A** (\equiv **B**) are diastereomers.

Model 2: Fischer Projections

1. See below.

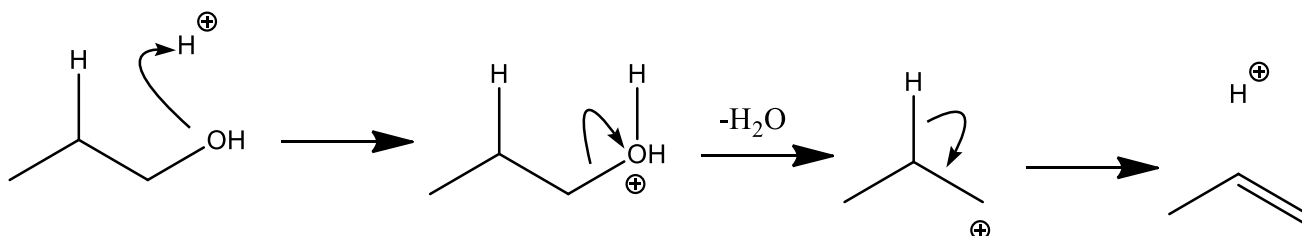


2. With Fischer projections, molecules are drawn with a standard orientation and conformation and this allows easy direct comparison of absolute configurations at the stereogenic centres (one set of enantiomers and diastereomers is highlighted above).

The naturally occurring enantiomers are also readily apparent (OH on the bottom stereogenic carbon on the right hand side = D).

Model 3: Elimination Reactions

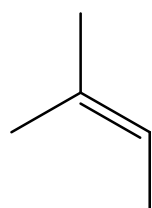
1. See below.



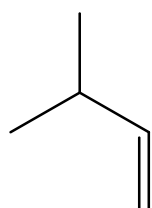
2. H_2O is a better leaving group than OH^- .

3. Catalyst.

4. See below.



major



minor

5. See above.

6. See below.

