**Isomers**

**2022**

1. Circle the form of isomerism that exists between **Compounds B** and **C**.



**constitutional (structural) isomerism geometric isomerism**

Explain your choice

2.



**Compounds A** and **D** both contain a carbon-carbon double bond, yet only one is capable of forming geometric (*cis* / *trans*) isomers.

(i) Identify which compound can form geometric isomers.

(ii) Draw the two isomers it forms

**(iii)** Explain why only one of these compounds can form geometric isomers.

In your answer you should:

• describe the requirements for geometric isomerism

• explain the importance of the C=C double bond

• refer to the structures of each compound.

**2021**

A variety of alkanes and alkenes are shown in the table below. Refer to these compounds in order to answer parts (a) and (b)

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(a) TWO compounds in the table above are constitutional (structural) isomers of one another.

(i) Name these two compounds.

(ii) Justify your choices.

(b) **Compound 3** from the table can form geometric (*cis* / *trans*) isomers.

(i) Draw the geometric isomers of this compound.

(ii) Elaborate on the features of **Compound 3** that allow it to form geometric isomers.

2. (i) Complete the table by classifying each as primary, secondary, or tertiary alcohols / haloalkanes.



(ii) Explain the difference in classification of propan-1-ol compared with methylpropan-2-ol.

**2020**

The C4H8 (butene) molecule can display different forms of isomerism.

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(i) Circle the form of isomerism that exists between molecules **A** and **B**.

**constitutional / structural geometric**

(ii) Circle the form of isomerism that exists between molecules **B** and **C**.

**constitutional / structural geometric**

(iii) Compare and contrast the two forms of isomerism. In your answer, you should:

• explain the requirements for each form of isomerism

• refer to molecules **A**, **B**, and **C** above.

**2019**

(a) Draw four structural (constitutional) isomers of C4H10O that are alcohols.

Classify the alcohols as either primary, secondary or tertiary.

(b)



(i) Draw and name the two geometric (*cis*-*trans*) isomers of compound **A**.

(ii) Explain why compound **A** exists as geometric (*cis*-*trans*) isomers while compound **B** does not.

**2018**

**1.** Justify whether or not the **monomer** used to produce Perspex® is a geometric (cis-trans) isomer by explaining the features required for this type of isomerism.

|  |
| --- |
|  |
| monomer |

**2.** Draw structural formulae for primary, secondary, and tertiary chloroalkane molecules that are

constitutional (structural) isomers with the molecular formula C4H9Cl.

**2017**

(i) Draw four alkene isomers for the organic compound C4H8

(ii)Identify the compounds from (i) that are *cis* and *trans* (geometric) isomers.

Justify your choices and explain why only these two compounds are *cis* and *trans* (geometric) isomers.

**2016**

(a) Draw and name the THREE constitutional (structural) isomers of the organic compound C5H12.

(b) (i) Classify the following haloalkanes as primary, secondary or tertiary.

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(ii) Explain your choice for haloalkane **A**.

(c)Some alkenes are able to form *cis* and *trans* (geometric) isomers.

(i) Complete the names of structures **A** and **B** in the table below.



(ii) Elaborate on the structure of the organic compound 1,2-dibromoethene to explain why it is able to form *cis* and *trans* (geometric) isomers.

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