Isomers Quiz PDF

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Which of the following are examples of structural isomers? (Select all that apply)

- [ ] Ethanol and dimethyl ether
- [ ] Cis-2-butene and trans-2-butene
- [ ] Propanol and isopropanol
- [ ] Glucose and fructose

What factors can differ between isomers? (Select all that apply)

- [ ] Boiling point
- [ ] molecular formula
- [ ] Chemical reactivity
- [ ] Density

Which of the following is a characteristic of optical isomers?

- ◯ They can be separated by distillation.
- ◯ They rotate plane-polarized light.
- ◯ They have the same chemical reactivity.
- ◯ They are always superimposable.

Which statements are true about enantiomers? (Select all that apply)

- [ ] They have identical physical properties except for optical activity.
- [ ] They can be separated by ordinary physical methods.
- [ ] They rotate plane-polarized light in opposite directions.
- [ ] They have different molecular formulas.

Explain the difference between structural isomers and stereoisomers.

Which characteristics are associated with geometric isomers? (Select all that apply)

- [ ] They have different physical properties.
- [ ] They are non-superimposable mirror images.
- [ ] They differ in the arrangement around a double bond.
- [ ] They have the same connectivity of atoms.

Describe how chirality affects the properties of optical isomers.

Which property is most likely to differ between structural isomers?

- ◯ molecular formula
- ◯ Boiling point
- ◯ Atomic number
- ◯ molecular weight

Which of the following is a type of structural isomer?

- ◯ Geometric isomer
- ◯ Optical isomer
- ◯ Chain isomer
- ◯ Enantiomer

Which of the following is an example of a geometric isomer?

- ◯ Butane and isobutane
- ◯ Cis-2-butene and trans-2-butene
- ◯ Ethanol and dimethyl ether
- ◯ Lactic acid and pyruvic acid

Which type of isomerism is most relevant in the pharmaceutical industry due to different biological effects?

- ◯ Chain isomerism
- ◯ Geometric isomerism
- ◯ Optical isomerism
- ◯ Position isomerism

What type of isomerism involves different spatial arrangements around a double bond?

- ◯ Chain isomerism
- ◯ Functional group isomerism
- ◯ Geometric isomerism
- ◯ Optical isomerism

What is the main characteristic of enantiomers?

- ◯ They have different functional groups.
- ◯ They are non-superimposable mirror images.
- ◯ They have different connectivity of atoms.
- ◯ They differ in the position of a double bond.

Discuss the significance of isomerism in the pharmaceutical industry.

How can NMR spectroscopy be used to distinguish between different isomers?

Provide an example of a functional group isomer and explain how it differs from its counterpart.

What is the term for molecules with the same molecular formula but different connectivity of atoms?

- ◯ Stereoisomers
- ◯ Structural isomers
- ◯ Enantiomers
- ◯ Diastereomers

Describe a real-world application where geometric isomerism plays a crucial role.

Which of the following can be used to distinguish between isomers? (Select all that apply)

- ☐ NMR spectroscopy
- ☐ Mass spectrometry
- ☐ IR spectroscopy
- ☐ Melting point analysis

Which of the following are types of stereoisomers? (Select all that apply)

- [ ] Chain isomers
- [ ] Geometric isomers
- [ ] Optical isomers
- [ ] Position isomers