

13.3 ISOMERISM IN ORGANIC CHEMISTRY

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13.5 Structural isomerism and its types: chain isomerism, position isomerism, functional isomerism, metamerism and tautomerism

- Chain and position isomers of alcohol of formula $C_4H_{10}O$ are
 - 2
 - 3
 - 4
 - 1
1. 1-chloropropane and 2-chloropropane have same molecular formula (C_3H_7Cl) but are different compounds. The pair of compounds represent;
 - Functional isomers
 - Positional isomers
 - Metamers
 - Optical isomers
- Compounds which have the same molecular formula but possess different properties are called
 - isotopes
 - isomers
 - isobars
 - isochors
 - isotherms
- Compounds having the same molecular formula but different structural formulas are called
 - Isotopes
 - Structural isomers
 - Isobars
 - polymers
- Isomers must have
 - Same chemical properties
 - Same structural formula
 - Same molecular formula
 - Same functional group
- Structural isomers have the same molecular formula but different
 - Structure
 - Functional group
 - Physical properties
 - Chemical properties
- Two isomeric forms of saturated hydrocarbons have
 - Same structure
 - Same molecular formula
 - Same properties
 - Different composition of elements
- CH_3-O-CH_3 and C_2H_5OH are
 - Isomers
 - Allotropes
 - Isobars
 - Isomorphs
- Which of the following compounds is a functional isomer of C_2H_5OH ?
 - CH_3CHO
 - CH_3COOH
 - $(CH_3)_2O$
 - $(C_2H_5)_2O$
- Which of the following groups of compounds is a functional isomer of alcohol?
 - Ether
 - Ester
 - Carboxylic acid
 - Aldehyde

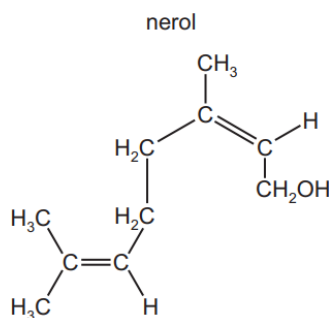
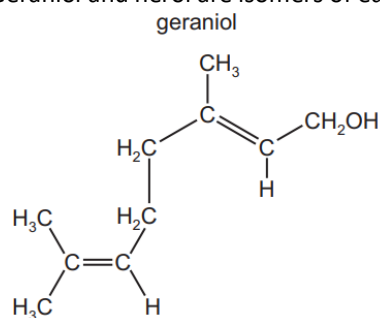
11. How many structural isomers does pentane have?
 a. 1 b. 2 c. 3 d. 4
12. Chain isomers differ in
 a. Molecular formula
 b. Empirical formula
 c. Molecular weight
 d. Length of the carbon chain
13. Which compound is not an isomer of the other three?
 a. Pentane
 b. 2-methylbutane
 c. 2,2-dimethylpropane
 d. 2,3-dimethylbutane
14. But-1-yne and But-2-yne are
 a. Chain isomers
 b. Metamers
 c. Functional isomers
 d. Positional isomers
15. Which two formulae correctly represent a pair of structural isomers?
- | | |
|----------|---|
| A | $\text{CH}_3\text{CH}(\text{CH}_3)\text{COOH}$ and $(\text{CH}_3)_2\text{CHCOOH}$ |
| B | $\text{CH}_3\text{CH}(\text{COOH})\text{CH}_3$ and $(\text{CH}_3)_2\text{CHCOOH}$ |
| C | CH_3CHCOOH and $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ |
| D | $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ and $(\text{CH}_3)_2\text{CHCOOH}$ |
16. Which pair of alcohols are isomers of each other?
A butan-1-ol and 2,2-dimethylpropan-1-ol
B butan-2-ol and 2-methylpropan-2-ol
C pentan-1-ol and 2-methylpropan-2-ol
D propan-2-ol and 2-methylpropan-2-ol
17. Metamerism is shown by
 a. Ketones
 b. Alkanes
 c. Aldehydes
 d. Alcohols
18. The number of possible alcoholic isomers of $\text{C}_4\text{H}_{10}\text{O}$ is
 a. 2
 b. 3
 c. 4
 d. 8
19. How many isomeric ethers can be formed from $\text{C}_4\text{H}_{10}\text{O}$?
 a. 2
 b. 3
 c. 4
 d. 5
20. The maximum number of isomeric alkenes with molecular formula C_4H_8 is
 a. 2

- b. 3
 - c. 4
 - d. 5
21. Which of the following are isomers?
- a. Propanone and Ethanal
 - b. Ethanol and Methoxymethane
 - c. Propanone and Propanoic acid
 - d. Methanol and Methoxymethane
22. Isomerism in which a single compound exists in two or more readily interconvertible structures is called
- a. Chain isomerism
 - b. Metamerism
 - c. Tautomerism
 - d. Stereoisomerism

13.6 Concept of geometrical isomerism (cis & trans) & optical isomerism (d & l form)

1. Which alkene shows geometric isomerism?
- A** $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}=\text{CH}_2$
- B** $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_3$
- C** $\begin{array}{c} \text{CH}_3\text{CH}_2\text{C}=\text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$
- D** $\begin{array}{c} \text{CH}_3\text{CH}=\text{CCH}_3 \\ | \\ \text{CH}_3 \end{array}$
23. Geometrical isomerism is generally found in
- a. alkanes
 - b. alkenes
 - c. alcohols
 - d. alkynes
24. cis-but-2-ene and trans-but-2-ene are
- a. position isomers
 - b. optical isomers
 - c. conformational isomers
 - d. geometrical isomers
25. Optical activity is measured by
- a. Nicol prism
 - b. Analyzer
 - c. Polarimeter
 - d. Polaroid
26. Which of the following compound is chiral?

- a. 2-chloropropane
 - b. 2-methoxybutane
 - c. Propan-2-ol
 - d. Methanal
27. Which can exist in optically active form
- a. Butan-1-ol b. butan-2-ol c. pentan-3-ol d. heptan-4-ol
28. But-1-ene exhibits
- a. Geometrical isomerism c. optical isomerism
 - b. Position isomerism d. none of these
29. Geraniol and nerol are isomers of each other.



- Which type of isomerism is shown here?
 A chain B geometrical (cis /trans) C optical D positional
30. Which compound shows stereoisomerism?
- A 2-methylbut-2-ene
 - B 2-chloropropan-1-ol
 - C difluorochlorobromomethane
 - D pent-1-ene

Higher level

56. The IUPAC name of iso-butane is
- (a) **2-methylpropane**
 - (b) 2,2-dimethylpropane
 - (c) 2-methylpropene
 - (d) 2-methylbutane
57. The number of ethers metamers represented by the formula $C_4H_{10}O$ is
- a) 4
 - b) 3
 - c) 2
 - d) 1

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