IUPAC Organic Nomenclature Overview

Isomerism in Organic Chemistry Multiple Choice Questions

1. Which type of isomerism is exhibited by pentane (C_5H_{12}) and isopentane (C_5H_{12})?
   - a) Position isomerism
   - b) Functional group isomerism
   - c) Chain isomerism
   - d) Geometric isomerism
2. What type of isomerism is shown by 1-butanol ($CH_3CH_2CH_2CH_2OH$) and 2-butanol ($CH_3CH_2CH(OH)CH_3$)?
   - a) Chain isomerism
   - b) Position isomerism
   - c) Functional group isomerism
   - d) Tautomerism
3. Which of the following pairs are functional group isomers?
   - a) Ethanol (CH_3CH_2OH) and Dimethyl ether (CH_3OCH_3)
   - b) Propane ($CH_3CH_2CH_3$) and Propene ($CH_3CH=CH_2$)
   - c) 1-Butene ($CH_2=CHCH_2CH_3$) and 2-Butene ($CH_3CH=CHCH_3$)
   - d) Ethylamine ($CH_3CH_2NH_2$) and Acetamide (CH_3CONH_2)
4. Which of the following exhibits geometric isomerism?
   - a) Propane ($CH_3CH_2CH_3$)
   - b) 2-Butene ($CH_3CH=CHCH_3$)
   - c) 1-Butene ($CH_2=CHCH_2CH_3$)
   - d) Cyclohexane (C_6H_{12})
5. Which type of isomerism is exhibited by lactic acid ($CH_3CH(OH)COOH$)?
   - a) Chain isomerism
   - b) Position isomerism
   - c) Geometric isomerism
   - d) Optical isomerism
6. Which pair of compounds are tautomers?
   - a) Ethanol and Dimethyl ether
   - b) Acetone and Propanal
   - c) 2-Butene and Cyclobutane
   - d) Acetone (CH_3COCH_3) and Prop-2-en-1-ol ($CH_2=CHCH_2OH$)
7. Which of the following compounds can exhibit cis-trans isomerism?
   - a) 1-Butene
   - b) 2-Butene
   - c) Propane
   - d) Ethane
8. Which of the following is an example of metamerism?
   - a) Ethanol and Dimethyl ether
   - b) Propanal and Propanone
   - c) Diethyl ether ($CH_3CH_2OCH_2CH_3$) and Methyl propyl ether ($CH_3OCH_2CH_2CH_3$)
   - d) Ethylamine and Acetamide

9. Which of the following statements is true about enantiomers?
    - a) They have different molecular formulas.
    - b) They are non-superimposable mirror images.
    - c) They exhibit geometric isomerism.
    - d) They have different functional groups.
10. What type of isomerism is exhibited by glucose and fructose?
    - a) Chain isomerism
    - b) Functional group isomerism
    - c) Position isomerism
    - d) Tautomerism
11. Which of the following exhibits optical isomerism?
    - a) 2-Methylpropane
    - b) Butane
    - c) 2-Butanol
    - d) Cyclopropane
12. Which of the following pairs are position isomers?
    - a) Ethanol and Ethanal
    - b) Propanol and Propanone
    - c) 1-Chloropropane and 2-Chloropropane
    - d) 1-Butyne and 2-Butyne
13. Which type of isomerism is shown by ethylamine ($CH_3CH_2NH_2$) and dimethylamine (CH_3NHCH_3)?
    - a) Chain isomerism
    - b) Position isomerism
    - c) Functional group isomerism
    - d) Metamerism
14. Which of the following is an example of chain isomerism?
    - a) 1-Propanol and 2-Propanol
    - b) Butane and 2-Methylpropane
    - c) Ethanol and Methoxymethane
    - d) 1-Butene and 2-Butene
15. Which of the following compounds can exist as diastereomers?
    - a) 2-Butene
    - b) 2,3-Dibromobutane
    - c) Propane
    - d) Cyclohexane

13. d) Metamerism
14. b) Butane and 2-Methylpropane
15. b) 2,3-Dibromobutane

Answer Key
1. c) Chain isomerism
2. b) Position isomerism
3. a) Ethanol (CH_3CH_2OH) and Dimethyl ether (CH_3OCH_3)
4. b) 2-Butene ($CH_3CH=CHCH_3$)
5. d) Optical isomerism
6. d) Acetone (CH_3COCH_3) and Prop-2-en-1-ol ($CH_2=CHCH_2OH$)
7. b) 2-Butene
8. c) Diethyl ether ($CH_3CH_2OCH_2CH_3$) and Methyl propyl ether ($CH_3OCH_2CH_2CH_3$)
9. b) They are non-superimposable mirror images.
10. b) Functional group isomerism
11. c) 2-Butanol
12. c) 1-Chloropropane and 2-Chloropropane