

# **Stereochemistry of Organic Compounds**

*B. Sc. (Chem. Hons.) Semester II*

**(Core course - 3)**

**PART - I**

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# Isomerism

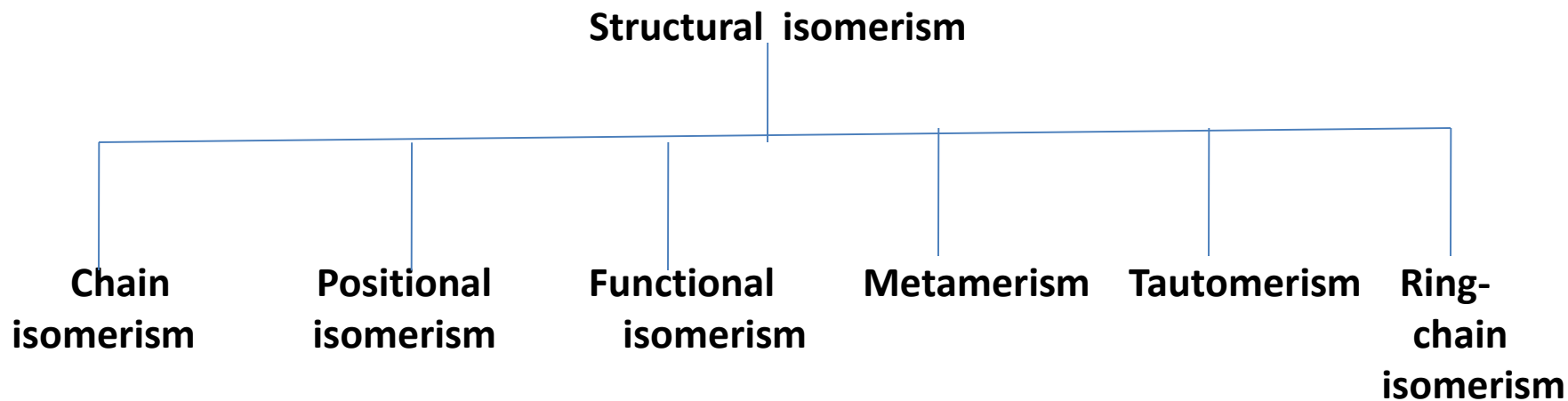
The compounds having same molecular formula but having different physical and chemical properties are known as isomer and the phenomena is known as isomerism.

Isomerism is of two types :

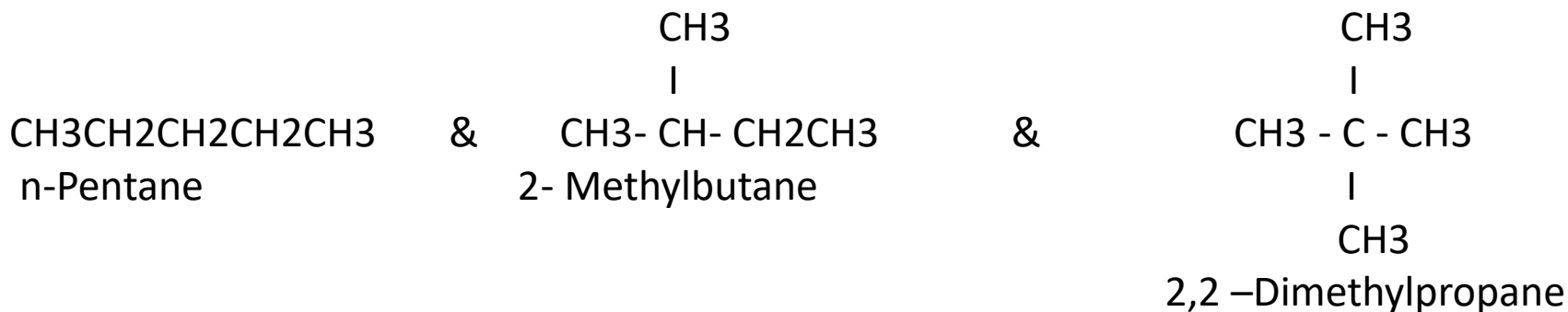
1. Structural isomerism
2. Stereo isomerism

1. Structural isomerism – The compounds having same molecular formula but having different arrangements of atoms within the molecule is known as structural isomer and the phenomena is known as structural isomerism..

Structural isomerism is further classified as :



**Chain isomerism** – Structural isomers having different carbon chain or carbon skeleton.  
 e.g. C<sub>5</sub>H<sub>12</sub> molecular formula have three chain isomers.



**Positional isomerism** – Structural isomers having different position of double bond or triple bond or functional groups e.g.

i) Alkene having molecular formula C<sub>4</sub>H<sub>8</sub>



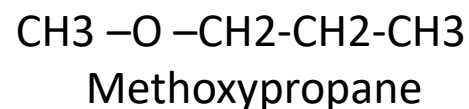
ii) Alkyne having molecular formula C<sub>4</sub>H<sub>4</sub>.



iii) Ether having molecular formula  $C_4H_{10}O$

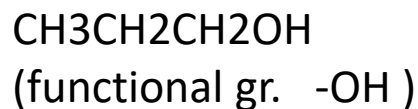


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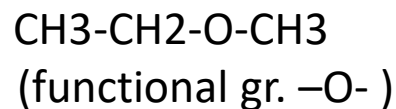


**Functional isomerism** - The compounds having same molecular formula but different functional groups are called functional isomers and the phenomena is known as functional isomerism. e.g.

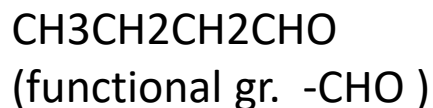
i) Molecular formula  $C_3H_8O$



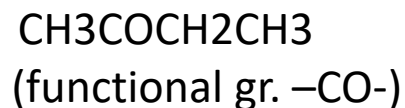
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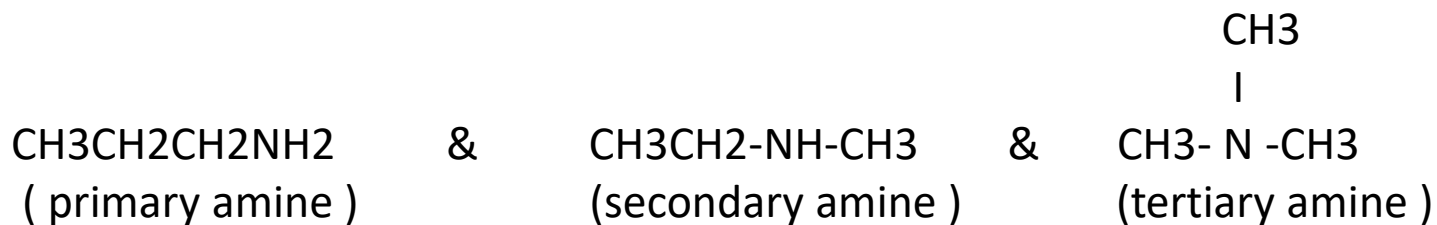
ii) Mol. Formula  $C_4H_8O$



&



iii) Molecular formula  $C_3H_9N$



**Metamerism** - Structural isomers having different numbers of carbon atoms on either side of the functional group.

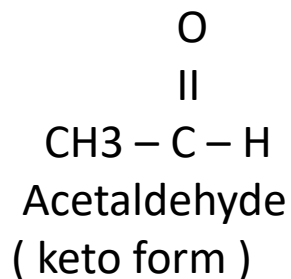
i)  $C_4H_{10}O$



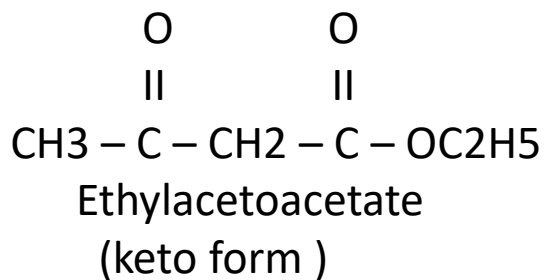
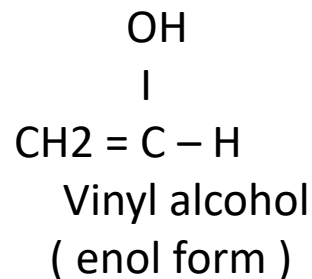
**Tautomerism** – The compounds having same molecular formula, which differs only in the 1,3-migration of protons within the molecule are called tautomers and the phenomena is called tautomerism.

## Examples :

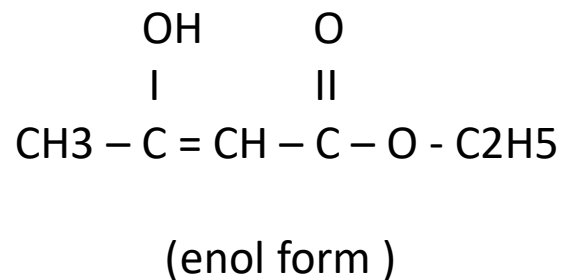
Molecular formula C<sub>2</sub>H<sub>4</sub>O



&



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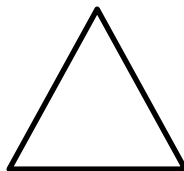
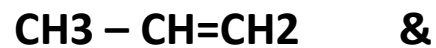


**Ring -chain isomerism** - The structural isomers in which one having open chain structure and another having cyclic structure.e.g.

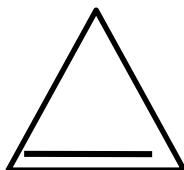
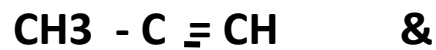
Molecular formula C<sub>4</sub>H<sub>8</sub>



Cyclobutane



Cyclopropane



Cyclopropene

*(..... to be continued in next class lecture ,  
Stereochemistry - Part II).*

**THANK YOU**