

## \* Isomerism

Same molecular formula but different structural arrangement and different physical & chemical properties

Isomerism  $\left\{ \begin{array}{l} \text{structural isomerism} \\ \text{stereoisomerism} \end{array} \right.$

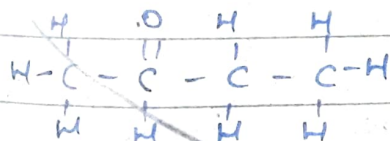
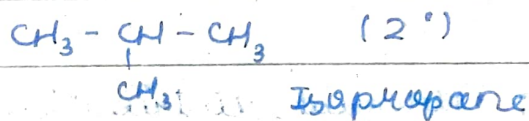
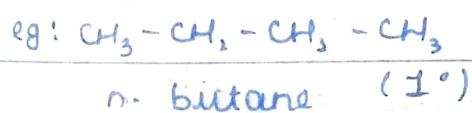
### Structural isomerism -

- chain isomerism
- Position isomerism
- Ring chain isomerism
- Functional isomerism
- Metamerism Metamerism
- Tautomerism

### STRUCTURAL ISOMERISM -

Same molecular formula but different connectivity of atoms. Also known as 'constitutional isomerism'.

#### i) Chain Isomerism:

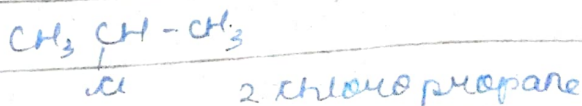
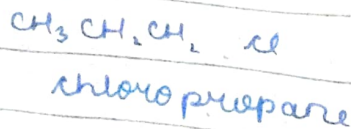
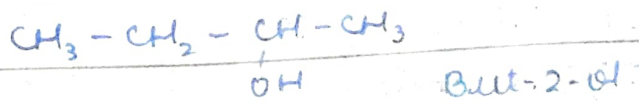
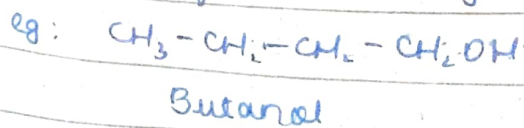


Butan-2-ol

#### ii) Position Isomerism: difference in the position of functional group.

To show position isomerism, following conditions must be followed -

- Same molecular formula
- Same length of carbon chain
- Same functional group



iii) Ring chain Isomerism: Difference of carbon chain or ring.



Propene



cyclopropane



Butene

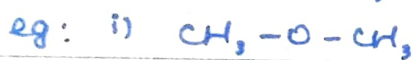


cyclobutane

Note: Saturated alkanes do not show ring chain isomerism.

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iv) Functional group isomerism: Same molecular formula but differing in the type of functional group.



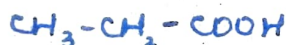
Dimethyl ether



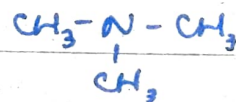
Ethyl alcohol



Methyl methanoate

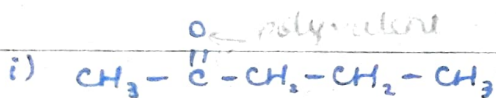


Propanoic acid

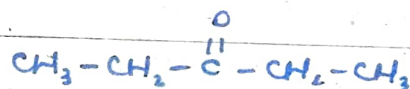


v) Metamerism: Unequal distribution of alkene substituents around a polyvalent functional group.

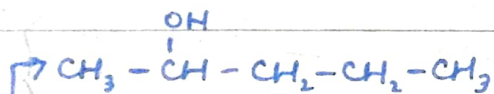
eg:



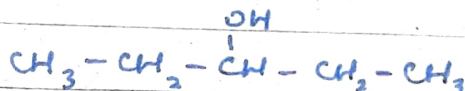
Pentan-2-one



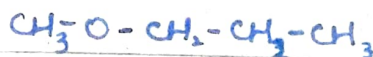
Pentan-3-one



(Position isomerism)



Diethyl ether



Propyl ethyl methyl ether



Diethyl amine



Methyl propyl amine

(Functional group is a part of chain, not a substituent)