Topic _____ Date _____

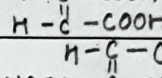
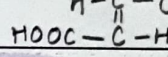
ISOMERISM

Structural Isomerism

- difference in the arrangement of the atoms in the molecule.
- migration of atom from one position to another.
- chain isomerism – variation in C chains
  position " – diff. in position of groups.
  func. " – diff. in molecular chains.
- TAUTOMERISM – due to migration of an atom from one position to another.

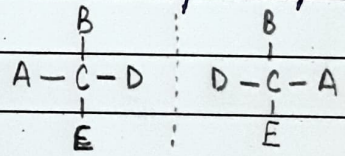
Stereoisomerism

- same structural formula but different spatial arrangement.

- GEOMETRICAL ISOMERISM –
  - cis-trans isomerism
  - cis – same side trans – opposite
  - Maleic acid –  cis
    Fumaric acid –  trans
- OPTICAL ISOMERISM –
  - enantiomers – presence of asymmetric C
  - differ from each other in optical activity

ASYMMETRIC CARBON –

- Carbon is chiral or asymmetric when attached to four different groups.
- no. of possible optical isomers of molecule depends upon specific number of chiral carbon (n)
- given by 2^n.

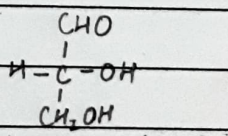


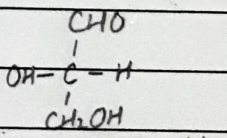
OPTICAL ACTIVITY –

- optical isomers – exhibit optical activity – rotates the plane in left or right
- levorotatory [(-) or l] – left  - dextrorotatory [(+) or d] – right 
- racemic mixture – equal concentration of d and l form – cannot rotate

CONFIGURATION OF CHIRAL MOLECULES –

- configuration of glyceraldehyde – standard


D-glyceraldehyde


L-glyceraldehyde.

EXISTENCE OF CHIRAL BIOMOLECULES –

- naturally occuring amino acids → L-type
  carbohydrates → D-type.