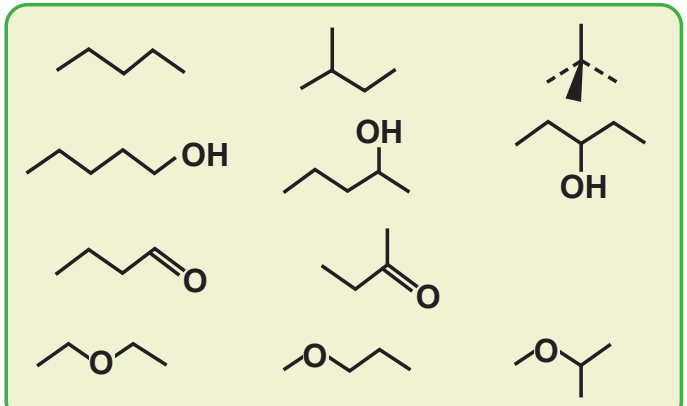
PHYSICS WALLAH

CONSTITUTIONAL ISOMERISM



Pair of functional isomers:

- Alcohols and ethers ($C_nH_{2n+2}O$)
- Aldehydes and ketones ($C_nH_{2n}O$)
- Carboxylic acids and esters ($C_nH_{2n}O_2$)
- 1°, 2° & 3° amines ($C_nH_{2n+3}N$)

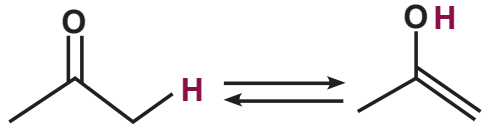
$$DBE = \frac{\sum n\,(v-2)}{2} + 1 = \text{sum of no. of } \pi \text{ bonds + rings in the molecule}$$

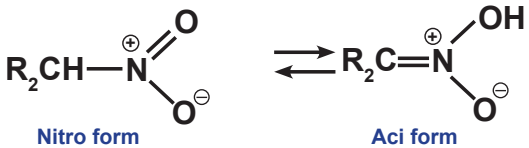
(n is no of atoms of particular element & ν is corresponding valency in given molecule).

CONSTITUTIONAL ISOMERISM [STRUCTURAL]

- CHAIN [SKELETAL] ISOMERISM
- POSITION ISOMERISM [REGIOISOMERISM]
- FUNCTIONAL ISOMERISM
- METAMERISM

- PROTOTROPIC TAUTOMERISM [PROTOTROPY]
  H – X – Y = Z , X = Y – Z – H





Q. The number of structural isomers possible from the molecular formula is
(a) 4 (b) 5 (c) 2 (d) 3

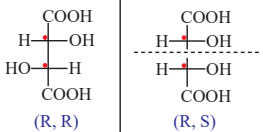
Q. Identify the compound that exhibits tautomerism
(a) 2-Pentanone (b) Phenol
(c) 2-Butene (d) Lactic acid

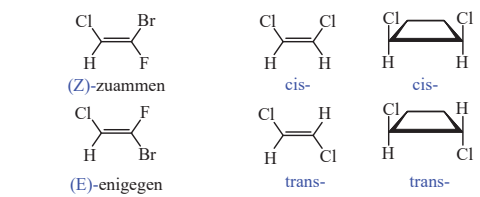
Q. The number of structural isomers for C_6H_{14} is
(a) 3 (b) 4 (c) 5 (d) 6

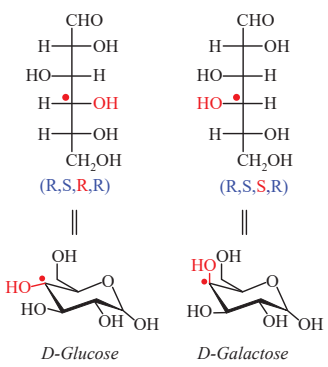
STEREOISOMERISM

STEREOISOMERISM

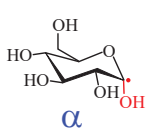
- CONFIGURATIONAL ISOMERISM
  - OPTICAL ISOMERISM [(+)/d dextrorotatory (–)/l levorotatory]
    - DIASTEREOMER
      - GEOMETRIC ISOMERISM
        - ABSOLUTE stereochemistry E/Z-ISOMER
        - RELATIVE stereochemistry cis/trans-ISOMER
      - EPIMER
      - ANOMER
    - ENANTIOMER
- CONFORMATIONAL ISOMERISM
  - CONFORMER
    - RING CONFORMATIONS
    - ROTAMER
    - ATROPISOMER

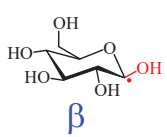


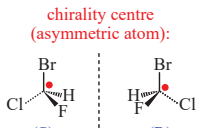


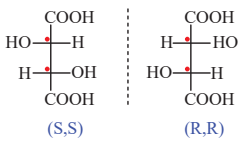


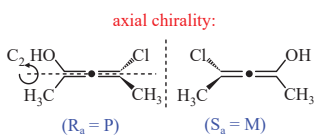
glycosides, hemiacetals, sugars

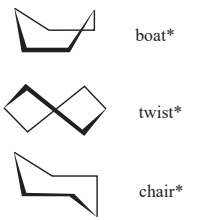


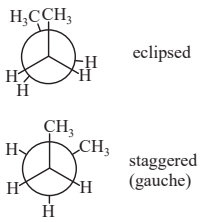


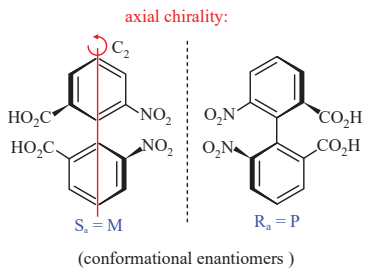












Q. With respect to the conformers of ethane, which of the following statements is true?
(1) Both bond angles and bond length remains same
(2) Bond angle remains same but bond length changes
(3) Bond angle changes but bond length remains
(4) Both bond angle and bond length change

Q. Which of the following does not show geometrical isomerism?
(1) 1, 2-dichloro-1-pentene
(2) 1, 3-dichloro-2-pentene
(3) 1, 1-dichloro-1-pentene
(4) 1, 4-dichloro-2-pentene

Q. Out of the following, the alkene that exhibits optical isomerism is:
(1) 2-methyl-2-pentene
(2) 3-methyl-2-pentene
(3) 4-methyl-1-pentene
(4) 3-methyl-1-pentene