

EXERCISE - I (Conceptual Questions)

Build Up Your Understanding

Structural Isomerism

1. $\text{HC}\equiv\text{C}-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$ & $\text{CH}_3-\text{C}\equiv\text{C}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$ are

- (1) Chain isomer
(2) Homologous
(3) Position isomer
(4) None

CIS001

2. Which similarity is necessary for isomerism-

- (1) Molecular formula
(2) Structural formula
(3) Physical properties
(4) Chemical properties

CIS007

3. Which of the following compound is isomeric with propanoic acid :-

- (1) $\text{CH}_3-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{OC}_2\text{H}_5$
(2) $\underset{\text{OH}}{\underset{|}{\text{CH}_2}}-\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{H}$
(3) $\text{CH}_3-\text{CH}(\text{OH})-\text{CH}_3$
(4) $\text{CH}_3\text{O}-\text{CH}_2-\text{CH}_2\text{OH}$

CIS002

4. The minimum number of carbon atoms in ketone to show position isomerism :-

- (1) 3 (2) 4 (3) 5 (4) 6

CIS005

5. $\text{CH}_3-\text{NH}-\text{C}_2\text{H}_5$ and $(\text{CH}_3)_3\text{N}$ show which type of isomerism :-

- (1) Position
(2) Functional
(3) Chain
(4) None

CIS003

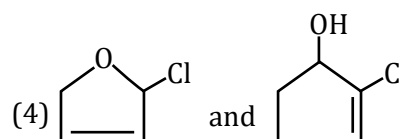
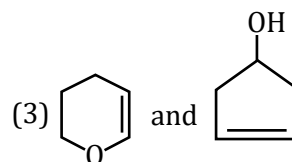
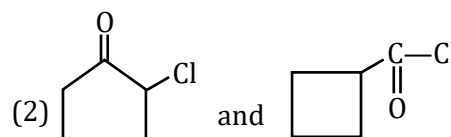
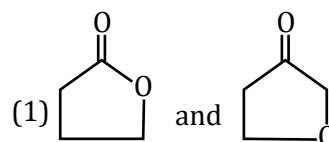
6. $\text{CH}_3-\underset{\text{Cl}}{\underset{|}{\text{CH}}}-\underset{\text{H}}{\underset{|}{\text{CH}_2}}-\text{C}=\text{O}$ and $\text{CH}_3-\text{CH}_2-\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{Cl}$

are constitute a pair of :-

- (1) Position isomers
(2) Metamers
(3) Optical isomers
(4) Functional group isomers

CIS004

7. Which are not functional isomers ?



CIS038

8. Which are metamers :-

- (1) $\text{CH}_3-\text{O}-\text{CH}_2\text{CH}_2\text{CH}_3$, $\text{CH}_3-\text{O}-\text{CH} \begin{matrix} \text{CH}_3 \\ \text{CH}_3 \end{matrix}$
(2) $\text{C}_2\text{H}_5-\text{O}-\text{C}_2\text{H}_5$, $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$
(3) $\text{CH}_3-\text{O}-\text{C}_2\text{H}_5$, $\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_3$
(4) $\text{CH}_3-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{CH}_3$, $\text{CH}_3-\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{H}$

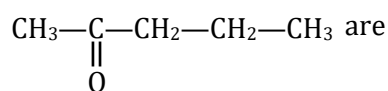
CIS006

9. Which compound shows metamerism ?

- (1) $\text{CH}_3\text{—CH}_2\text{—O—CH}_3$
- (2) $\begin{array}{c} \text{CH}_3\text{—CH—OH} \\ | \\ \text{CH}_3 \end{array}$
- (3) $\begin{array}{c} \text{CH}_3\text{—C—CH}_2\text{—CH}_3 \\ || \\ \text{O} \end{array}$
- (4) $\begin{array}{c} \text{CH}_3\text{—CH}_2\text{—C—O—CH}_3 \\ || \\ \text{O} \end{array}$

CIS036

10. $\text{CH}_3\text{—CH}_2\text{—}\underset{\text{O}}{\underset{\parallel}{\text{C}}}\text{—CH}_2\text{—CH}_3$ and



- (1) Metamers
- (2) Functional isomers
- (3) Chain isomers
- (4) None

CIS037

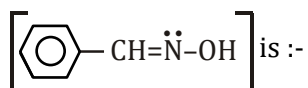
11. Number of structural isomers of C_6H_{14} is -

- (1) 3 (2) 4 (3) 5 (4) 6

CIS008

Geometrical Isomerism

12. The isomerism shown by Benzaldoxime



- (1) Position (2) Functional
(3) Metamerism (4) Geometrical

CIS009

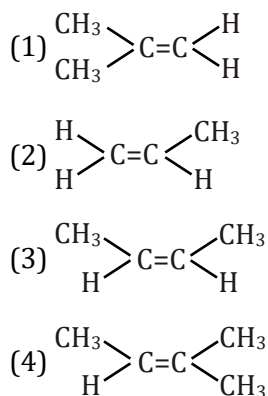
13. Which is a pair of geometrical isomers :-



- (1) I and II (2) I and III
(3) II and IV (4) III and IV

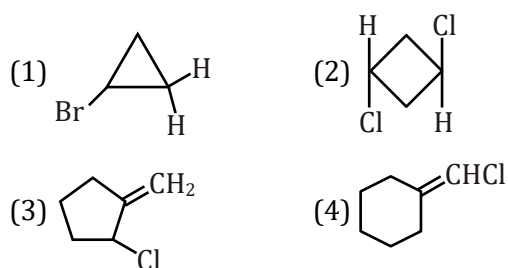
CIS012

14. Which shows 'Geometrical isomerism' :-



CIS013

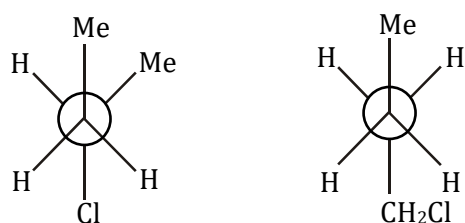
15. Geometrical isomerism is shown by :



CIS014

Conformational Isomerism

16. The pair of structures represents :-



- (1) Chain isomer (2) Position isomers
(3) Conformers (4) None

CIS015

17. Which conformation of butane will have the minimum energy :-

- (1) Gauche (2) Anti/staggered
(3) Eclipsed (4) None

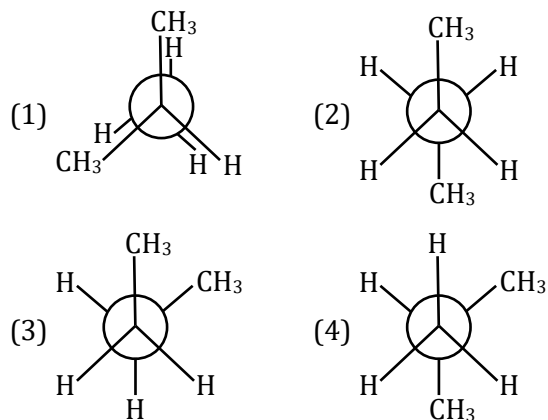
CIS017

18. Rotational angle require to get maximum stable conformer from minimum stable conformer in n-butane is :

- (1) 360° (2) 180° (3) 120° (4) 240°

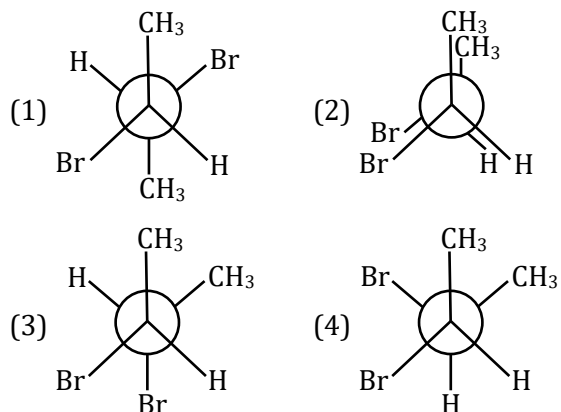
CIS016

19. Max. Stable conformation of isobutane is



CIS039

20. Following are conformers of each other except ?



CIS040

EXERCISE-I (Conceptual Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	3	1	2	3	2	4	4	1	4	1	3	4	3	3	2
Question	16	17	18	19	20										
Answer	2	2	2	4	3										

EXERCISE - II (Previous Year Questions)

AIPMT/NEET

Re-AIPMT-2015

1. The number of structural isomers possible from the molecular formula C_3H_9N is :
(1) 2 (2) 3 (3) 4 (4) 5

CIS022

NEET-I 2016

2. The **correct** statement regarding the comparison of staggered and eclipsed conformation of ethane, is :-
(1) The staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has torsional strain
(2) The eclipsed conformation of ethane is more stable than staggered conformation, because eclipsed conformation has no torsional strain
(3) The eclipsed conformation of ethane is more stable than staggered conformation even through the eclipsed conformation has torsional strain
(4) The staggered conformation of ethane is more stable than eclipsed conformation, because staggered conformation has no torsional strain.

CIS023

NEET(UG) 2017

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

CIS024

NEET(UG) 2021

4. Dihedral angle of least stable conformer of ethane is :
(1) 120° (2) 180° (3) 60° (4) 0°
5. The compound which shows metamerism is:
(1) C_5H_{12} (2) C_3H_8O
(3) C_3H_6O (4) $C_4H_{10}O$

CIS025

CIS026

NEET(UG) 2023

6. Which amongst the following compounds will show geometrical isomerism ?
(1) Pent-1-ene
(2) 2,3-Dimethylbut-2-ene
(3) 2-Methylprop-1-ene
(4) 3,4-Dimethylhex-3-ene

CIS041

EXERCISE-II (Previous Year Questions)

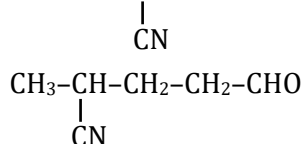
ANSWER KEY

Question	1	2	3	4	5	6	
Answer	3	4	3	4	4	4	

EXERCISE - III (Analytical Questions)

Master Your Understanding

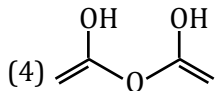
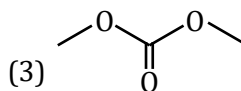
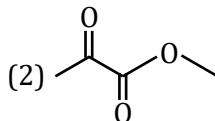
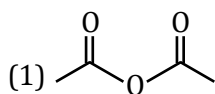
1. What is relation between following compounds
 $\text{CH}_3\text{-CH}_2\text{-CH(CN)-CH}_2\text{-CHO}$ &



- (1) Positional isomers (2) Chain isomers
 (3) Optical isomers (4) Metamers

CIS031

2. Following are functional isomers except ?



CIS042

3. Which of the following is not a metamer of $\text{C}_4\text{H}_{10}\text{O}$

- (1) Diethyl ether
 (2) Methyl n-propyl ether
 (3) 2-Methoxy propane
 (4) Isobutyl alcohol

CIS029

4. Match the column :-

Column-I (Compound)	Column-II (Isomeric relationship)
(a) and	(p) Positional isomers
(b) and	(q) Chain isomers
(c) and	(r) Functional group isomers
(d) and	(s) Metamers

- (1) a = s, b = p, c = q, d = r
 (2) a = s, b = q, c = r, d = p
 (3) a = p, b = q, c = r, d = s
 (4) a = p, b = q, c = s, d = r

CIS035

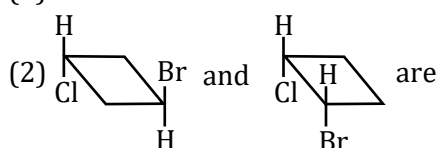
5. How many structures of aldehydes are possible for molecular formula $\text{C}_5\text{H}_{10}\text{O}$?

- (1) 4 (2) 7 (3) 6 (4) 8

CIS032

6. Incorrect Statement is

- (1) Conformations are interconvertible



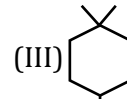
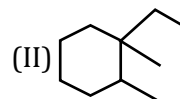
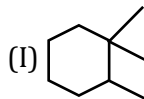
geometrical isomerism

- (3) Optical isomerism and geometrical isomerism are stereoisomers

- (4) All are correct

CIS045

7. Which of these will exhibit geometrical isomerism?

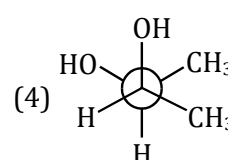
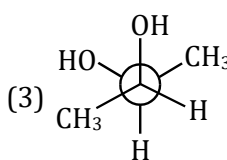
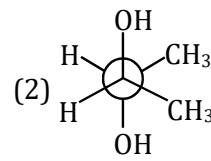
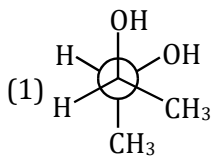


- (1) I
 (3) III

- (2) II
 (4) All of these

CIS030

8. Which one of the following is the most stable conformation of 2,3-butanediol :-



CIS027

EXERCISE-III (Analytical Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	
Answer	2	3	4	2	1	2	2	3	

Important Notes