NEET Express 2026

Complete Organic Chemistry by Shubh Karan Choudhary Sir (SKC) 2026

Chemistry

Isomerism part 01

Q1 Which of the following would exhibit cis-trans isomerism?

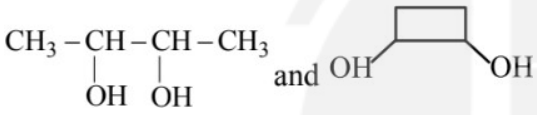
(A) $CH_3CH_2CH = CH_2$

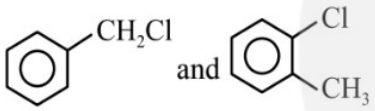
(B) $ClCH = CHCl$

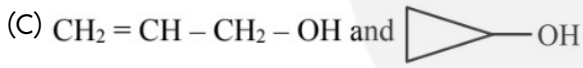
(C) $ClCH = CCl_2$

(D) CH_2=CH–COOH

Q2 Which of the following pairs of compounds is a ring-chain isomer?

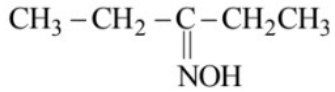
(A) 

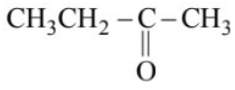
(B) 

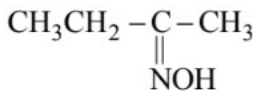
(C) 

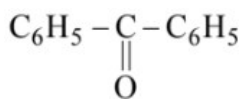
(D) 

Q3 Geometrical isomers are possible for:

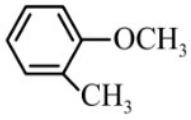
(A) 

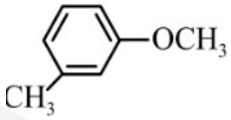
(B) 

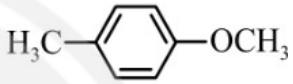
(C) 

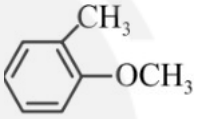
(D) 

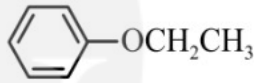
Q4 Which of the following is **not** a metamer of compound B is:

B : 

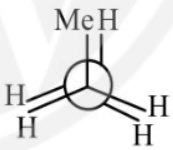
(A) 

(B) 

(C) 

(D) 

Q5 Following eclipsed form of propane is repeated after rotation of:



(A) 60° (B) 120°

(C) 180° (D) 360°

Q6 **Statement I:** cis–1, 3-Dihydroxy cyclohexane exists in boat conformation.

Statement II: In the chair form, there will not be hydrogen bonding between the two hydroxyl groups.

(A) Statement I and Statement II both are correct.

(B) Statement I is correct but Statement II is incorrect.

(C) Statement I is incorrect but Statement II is correct.

(D)

Statement I and Statement II both are incorrect.

Q7 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Trans-1-chloropropene has higher dipole moment than cis-1-chloropropene.

Reason R: The resultant of the two vectors in trans-1-chloropropene is more than cis-1-chloropropene.

In the light of the above statements, choose the **correct** answer from the options given below:

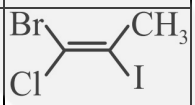
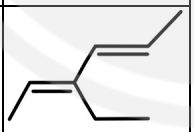
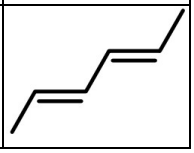
(A) A is true but R is false.

(B) A is false but R is true.

(C) Both A and R are true and R is the correct explanation of A.

(D) Both A and R are true but R is NOT the correct explanation of A.

Q8 Match **List-I** with **List-II** to find out the **correct** option.

List-I (Molecule Name)			**List-II (Structure)**
(A)	(Z)-Penta-1, 3-diene	(P)	
(B)	(2E, 4E)-Hexa – 2, 4-diene	(Q)	
(C)	(E)–1–Bromo–1–chloro–2–iodopropene	(R)	
(D)	(2E, 4E)–3 Ethylhexa– 2, 4–diene	(S)	

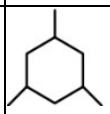
(A) (A) - (P), (B) - (S), (C) - (R), (D) - (Q)

(B) (A) - (P), (B) - (S), (C) - (Q), (D) - (R)

(C) (A) - (P), (B) - (Q), (C) - (R), (D) - (S)

(D) (A) - (S), (B) - (R), (C) - (P), (D) - (Q)

Q9 Match the List-I with List-II to find out the **correct** option.

List-I (Compounds)		**List-II (Geometrical Isomers)**
(A)	$CH_3 - CH = CH - CH = N - OH$	(P) 2
(B)		(Q) 4
(C)	$CH_3–CH=CH–CH=CH–CH=CH–CH_3$	(R) 6
(D)	$CH_3–CH=CH–CH=CH–CH=CH–Ph$	(S) 8

(A) (A) - (Q), (B) - (P), (C) - (R), (D) - (S)

(B) (A) - (Q), (B) - (P), (C) - (S), (D) - (R)

(C) (A) - (P), (B) - (Q), (C) - (R), (D) - (S)

(D) (A) - (P), (B) - (R), (C) - (S), (D) - (Q)

Q10 Which of the following compounds is isomeric with $2, 2, 4, 4$- Tetramethylhexane?

(A) 3-Ethyl -$2, 2$-dimethylpentane

(B) 4-Isopropylheptane

(C) 4-Ethyl-3-methyl-4-n-propyloctane

(D) 4,4-Diethyl-3-methylheptane

Q11 Cyanides and isocyanides are isomers of the type:

(A) position isomers.

(B) metamers.

(C) functional isomers.

(D) chain isomers.

Q12 Which of the following will **not** show geometrical isomerism?

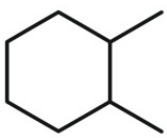
(A) $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH_2 - CH_3$

(B) $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH = CH - CH_2 - CH_3$

(C) $CH_3–CH = CH–CH_3$

(D) $CH_3–CH_2–CH = CH–CH_2–CH_3$

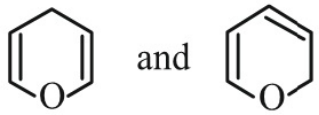
Q13 How many geometrical isomers are possible for given compound?

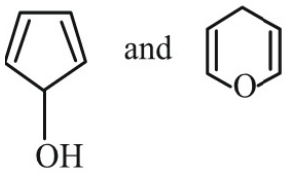


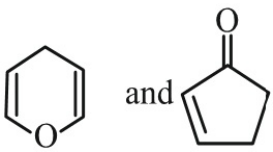
(A) 0 (B) 1

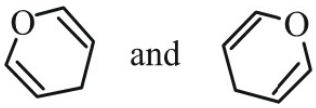
(C) 2 (D) 3

Q14 Which of the following pairs of structures does **not** represent isomers?

(A) 

(B) 

(C) 

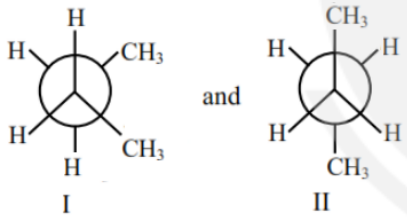
(D) 

Q15 How many structural formula are possible when one of the hydrogen is replaced by a chlorine atom in anthracene ?

(A) 3 (B) 7

(C) 4 (D) 6

Q16 The given compaunds are related as?



I II

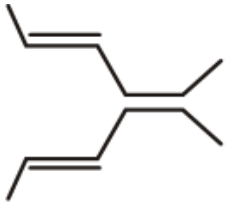
(A) Conformers

(B) Position isomers

(C) Geometrical isomers

(D) Chain isomers

Q17 How many geometrical isomers are possible for the below compound?



(A) 3 (B) 4

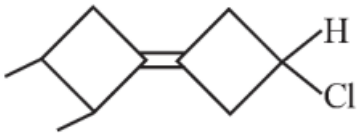
(C) 6 (D) 8

Q18 Which of the following compound will **not** show geometrical isomerism?

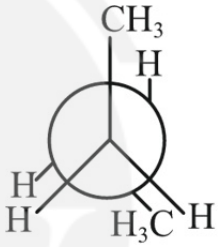
(A) 

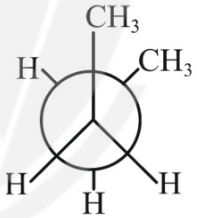
(B) 

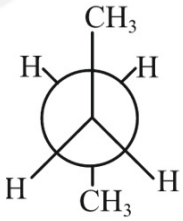
(C) 

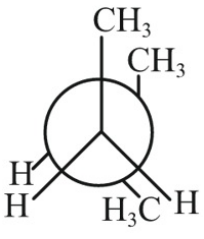
(D) 

Q19 Which of the following represents the most stable conformation of n-butane is:

(A) 

(B) 

(C) 

(D) 

Q20 Chair form of cyclohexane is more stable than boat form because:

(A)

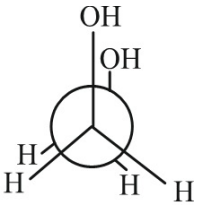
In chair form carbons are in staggered form and in boat form carbons are in eclipsed form

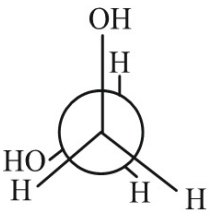
(B) In chair form carbons are in eclipsed form and in boat form all the carbons are in staggered form

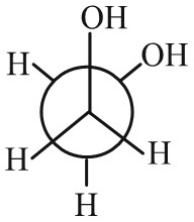
(C) Bond angle in chair form is 111° and bond angle in boat form is 109.5°(

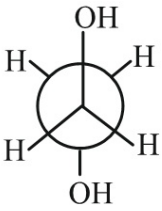
(D) Bond angle in chair form is 109.5° and in boat form 111°

Q21 Which of the following conformers for ethylene glycol is most stable?

(A) 

(B) 

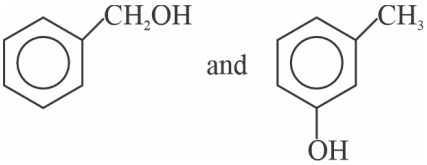
(C) 

(D) 

Q22 Given below are two statements:

Statement I: m-chorobromobenzene is an isomer of m-bromochlorobenzene

Statement II:



are position isomers

In the light of the above statements, choose the *most appropriate* answer from the options given below:

(A) Statement I is correct but Statement II is incorrect.

(B) Statement I is incorrect but Statement II is correct.

(C) Both Statement I and Statement II are correct.

(D) Both Statement I and Statement II are incorrect.

Q23 How many cyclic structural isomers are possible for C_4H_6?

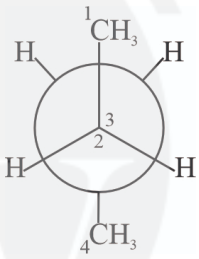
(A) 5 (B) 4

(C) 3 (D) 6

Q24 How many structural isomers are possible when one of the hydrogen atom of diphenylmethane is replaced by chlorine atom?

(A) 5 (B) 2

(C) 3 (D) 4

Q25 

C_2 is rotated anti-clockwise 120° about C_2-C_3 bond. The resulting conformer is;

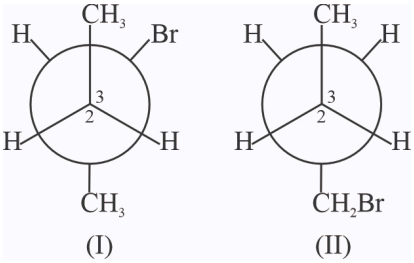
(A) partially eclipsed

(B) eclipsed

(C) gauche

(D) staggered

Q26 The given compounds are related as;



(A) Enantiomers

(B) Diasteromers

(C) structural isomers

(D) identical compounds

Q27 The **correct** statement regarding the conformers of ethane is;

(A) Bond angle changes but bond length remains same

(B) Bond angle remains same but bond length changes

(C) Both bond angle and bond length changes

(D) Both bond angle and bond length remain same

Q28 **Correct** option regarding cis-but-2-ene and trans-but-2-ene is/are;

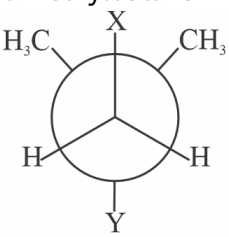
(A) are related as diastereomers

(B) trans isomers has more melting point

(C) cis isomers has more boiling point

(D) All of these

Q29 In the Newman's projection for 2,2-dimethylbutane



X and Y can respectively be

(A) H and CH_3 (B) H and C_2H_5

(C) C_2H_5 and H (D) C_2H_5 and CH_3

Q30 Given below are two statements:

Statement I: The dihedral angle between the H-atoms in staggered conformation of ethane is 60°.

Statement II: $C_2H_5NO_2$ does not show tautomerism.

In the light of the above statements, choose the most appropriate answer from the options given below:

(A) Statement I is correct but Statement II is incorrect.

(B) Statement I is incorrect but Statement II is correct.

(C) Both Statement I and Statement II are correct.

(D) Both Statement I and Statement II are incorrect.

Answer Key

Q1	(B)
Q2	(C)
Q3	(C)
Q4	(C)
Q5	(B)
Q6	(D)
Q7	(C)
Q8	(B)
Q9	(A)
Q10	(B)
Q11	(C)
Q12	(A)
Q13	(C)
Q14	(D)
Q15	(A)
Q16	(A)
Q17	(A)
Q18	(C)
Q19	(C)
Q20	(A)
Q21	(C)
Q22	(D)
Q23	(A)
Q24	(D)
Q25	(C)
Q26	(C)
Q27	(D)
Q28	(D)
Q29	(B)
Q30	(A)

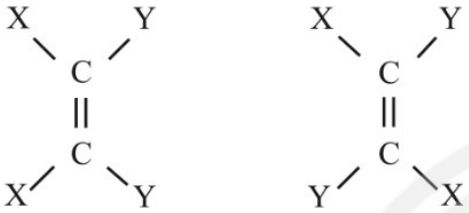
Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

(B)

Geometrical isomerism: Doubly bonded carbon atoms have to satisfy the remaining two valences by joining with two atoms or groups. If the two atoms or groups attached to each carbon atom are different, they can be represented by YXC=CXY like structure. YXC=CXY can be represented in space in the following two ways:



Q2 Text Solution:

(C)

Compounds with the same molecular formula but two different structures as cyclic and open-chain are called ring chain isomers of each other

Video Solution:

Q3 Text Solution:

In oximes, the two different group around sp^2 carbon makes the oxime geometrically active stereoisomerism.

Q4 Text Solution:

(C)

Metamers are the isomers having the same molecular formula but different alkyl groups on two sides of functions groups.

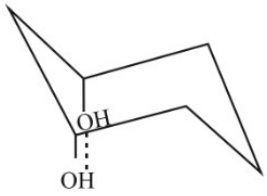
Q5 Text Solution:

(B)

The given conformer is fully eclipsed. The same conformer can be obtained by rotating one of the C-atom by 120°.

Q6 Text Solution:

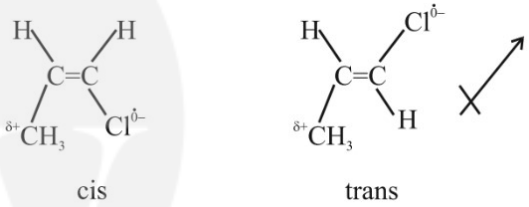
(4)



Cis 1, 3 dihydroxy cyclohexane exist in chair conformation because in chair conformation, there will be Hydrogen bonding between two hydroxyl group.

Q7 Text Solution:

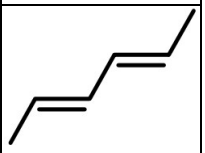
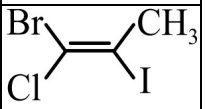
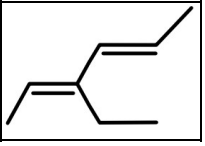
(C)



cis trans

Q8 Text Solution:

(B)

(Molecule Name)		(Structure)
(A)	(Z)-Penta-1, 3-diene	
(B)	(2E, 4E)-Hexa – 2, 4-diene	
(C)	(E)–1–Bromo–1–chloro–2–iodopropene	
(D)	(2E, 4E)–3 Ethylhexa– 2, 4–diene	

Q9 Text Solution:

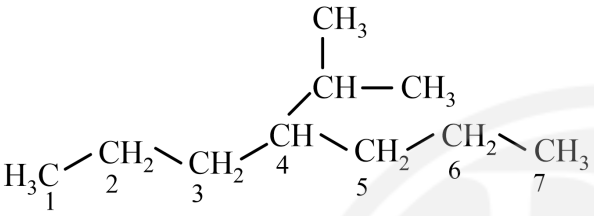
One C=C having different substituents at carbon generates two geometrical isomers.

Video Solution:

Q10 **Text Solution:**

(2)

4-Isopropylheptane



[New NCERT Class 11th Page No. 269]

Video Solution:

Q11 **Text Solution:**

(3)

Cyanides and isocyanides are functional isomers.

[New NCERT Class 11th Page No. 271]

Video Solution:

Q12 **Text Solution:**

✅ Geometrical isomerism (cis-trans or E/Z) requires:

1. **A C=C double bond**, and
2. **Each carbon of the double bond must have two different groups attached to it.**

Let's analyze each option:

A. $CH_3–C(CH_3)=CH–CH_2–CH_3$

Structure:

$$\begin{array}{l} \quad CH_3 \\ \quad | \\ CH_3–C = CH–CH_2–CH_3 \end{array}$$

- Left carbon of double bond: has **two methyl groups** (CH_3 and CH_3).
- Since **both substituents are identical**, **geometrical isomerism is not possible.** ❌

B. $CH_3–CH=C(CH_3)–CH_2–CH_3$

- Both ends of the double bond have **two different groups**:
  - Left C: H and CH_3
  - Right C: CH_3 and CH_2CH_3
- ✅ **Can show geometrical isomerism.**

C. $CH_3–CH=CH–CH_3$

- Left C: CH_3 and H
- Right C: CH_3 and H
- ✅ Can show **cis** and **trans** isomers.

D. $CH_3–CH_2–CH=CH–CH_2CH_3$

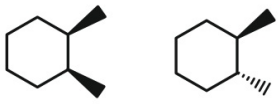
- Left C of double bond: CH_2CH_3 and H
- Right C: CH_2CH_3 and H
- ✅ Different groups → geometrical isomerism is possible.

✅ Final Answer: **A**

Compound A will *not* show geometrical isomerism because one carbon of the double bond has **two identical substituents (CH_3 and CH_3)**.

Q13 **Text Solution:**

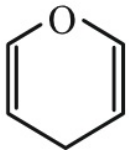
(3)



syn anti

Q14 **Text Solution:**

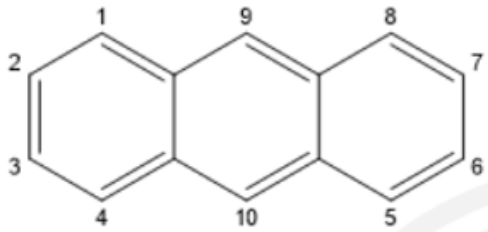
(4)



Both are same structures, so they are similar.

Q15 Text Solution:

Due to molecular symmetry, positions that are **symmetry-equivalent** will give **identical products** upon substitution.



After analyzing the symmetry:

- **Positions 1, 4, 5, 8** are equivalent in pairs
- **Positions 2, 3, 6, 7** are also symmetry-related
- **Positions 9 and 10** (the central carbons) are symmetry-equivalent.

So, distinct substitution positions are:

- Position 1 (equivalent to 4, 5, 8) → 1 type
- Position 2 (equivalent to 3, 6, 7) → 1 type
- Position 9 (equivalent to 10) → 1 type

Q16 Text Solution:

The two structures shown in the question are **Newman projections** of **butane** along the C_2–C_3 bond.

Structure I:

The methyl groups are **60° apart** (gauche conformation).

Structure II:

The methyl groups are **180° apart** (anti conformation), which is more stable due to less steric hindrance.

These two structures represent different **rotational conformations** of the same molecule — **they are not different compounds** and **not optical/geometrical/positional isomers**.

Q17 Text Solution:

To determine how many **geometrical isomers** are possible for the given compound, let's analyze its structure:

Structure Features:

- The compound contains **two double bonds**.
- Each double bond has **different groups** on each carbon, which allows for **cis-trans (E/Z) isomerism**.

Step-by-Step Analysis:

1. **Each double bond** can exist in **two forms**:
   - **Cis (Z)** form
   - **Trans (E)** form
2. Since there are **2 such double bonds**, and both can independently exhibit geometrical isomerism, the total number of isomers is:

$$2 \times 2 = 4$$

3. Also, check for **symmetry or identity** that might reduce the number of unique isomers.
   - In this case, the double bonds are **not conjugated** and are **not symmetric**, so **all 4 combinations are unique**:
     - (cis, cis)
     - (cis, trans)
     - (trans, cis)
     - (trans, trans)

✅ Final Answer: **B. 4** geometrical isomers.

Q18 Text Solution:

To determine which compound **will not show geometrical isomerism**, we need to examine **whether geometrical (cis-trans/E-Z) isomerism is possible** in each case.

Condition for geometrical isomerism:

A compound must have:

1. A **C=C double bond**, and
2. **Different groups attached** to **each carbon** of the double bond.

Option A:

- Contains a C=C double bond.
- Each double-bonded carbon is part of a ring **and attached to an oxygen atom on both sides**.
- **Each carbon has different groups (ring vs O) → Geometrical isomerism is possible** ✅

Option B:

- Symmetrical compound with two identical rings connected through a double bond.
- Even though symmetrical, **each carbon in the double bond connects to two different parts (ring junctions)**.
- **Geometrical isomerism is possible** (cis and trans forms) ✅

Option C:

- Both ends of the double bond are fused to **identical rings** in the same orientation.
- The groups on each double bonded carbon are **identical** (same ring structure directly bonded).
- So, **no difference in groups** on either carbon ⇒ **Geometrical isomerism is not possible** ❌

Option D:

- One carbon of the double bond has **Cl and H**, and the other carbon is part of a ring.
- **Different groups present** on each carbon of the double bond.
- So, **geometrical isomerism is possible** ✅

✅ Final Answer: **C.**

Option **C** will **not** show geometrical isomerism.

Q19 Text Solution:

(3)

In anti for, CH_3 groups are at maximum distance so, minimum repulsion and maximum stability.

Q20 Text Solution:

Chair Conformation:

- Most **stable** conformation of cyclohexane.
- All **C–H bonds** are in **staggered conformation** → **minimizes torsional strain**.
- No significant steric hindrance.

Boat Conformation:

- Less stable.
- Several **C–H bonds are eclipsed** → causes **torsional strain**.
- Also suffers from **steric repulsion** between flagpole hydrogens.

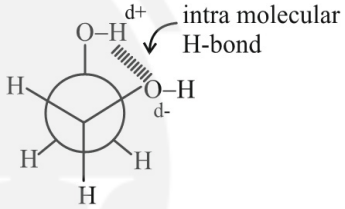
Therefore, the **chair form is more stable** because:

- It **avoids torsional strain** (due to staggered arrangement).
- It has **no flagpole interactions** like in the boat form.

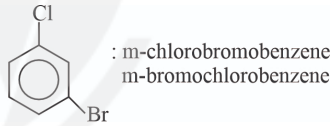
Q21 Text Solution:

(3)

The gauche conformer is most stable, due to intra molecular hydrogen bonding.

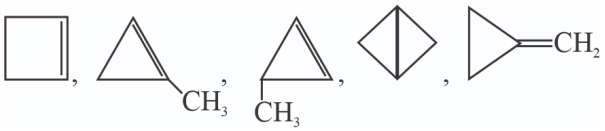


Q22 Text Solution:

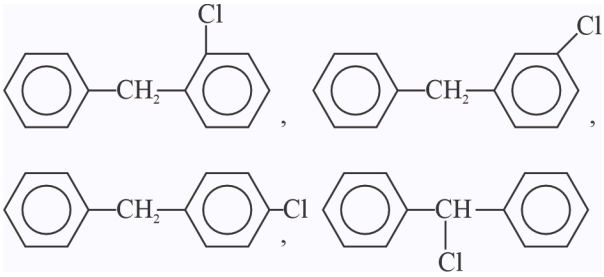
- 

- Aliphatic alcohols and phenols are different family.

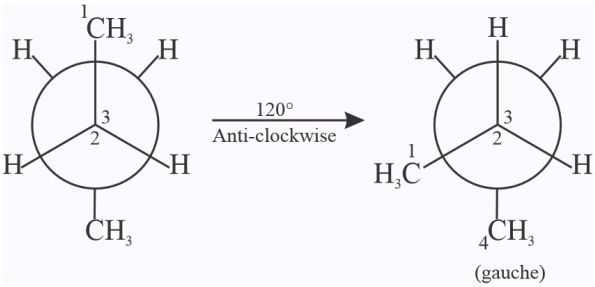
Q23 Text Solution:



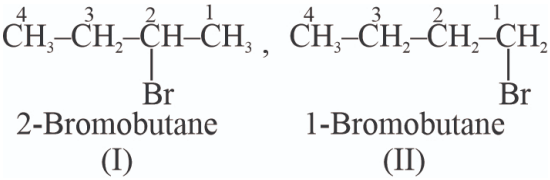
Q24 Text Solution:



Q25 Text Solution:



Q26 Text Solution:



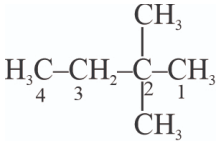
I and II are position isomers.

Q27 Text Solution:

In the conformers of ethane, dihedral angles changes but both bond angle and bond length remain same.

Q28 Text Solution:

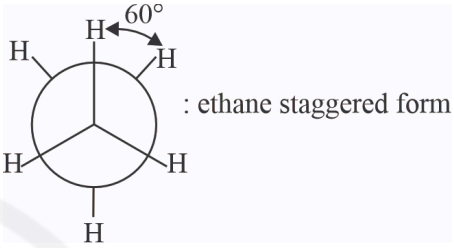
Q29 Text Solution:



On $C_2 - C_3$ axis, X = CH_3, Y = CH_3

On $C_1 - C_2$ axis, X = H, Y = C_2H_5

Q30 Text Solution:



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