
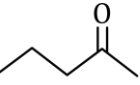
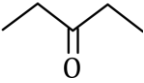
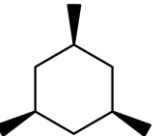
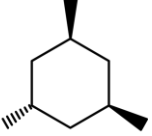
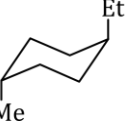
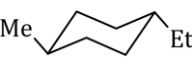
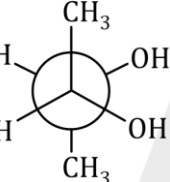
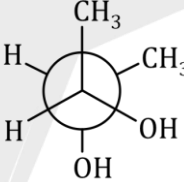
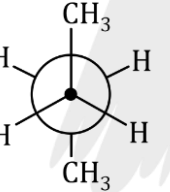
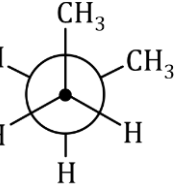
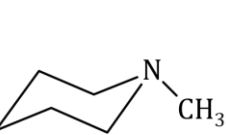


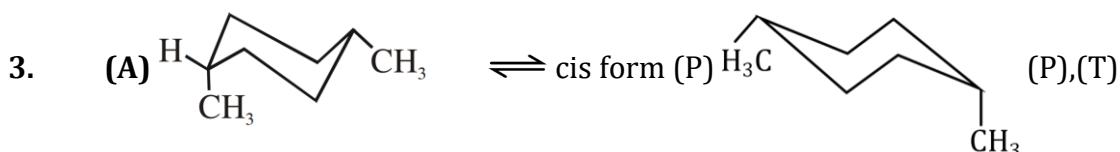


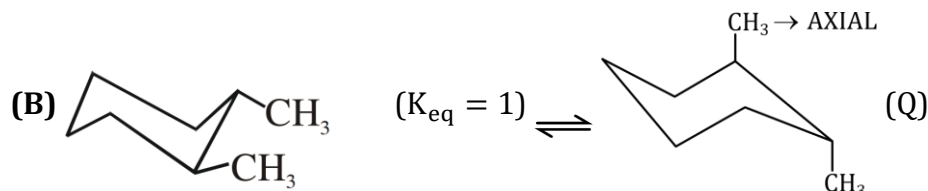
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1. (A)  &  (R) Metamer & (T) Structural isomers
- (B)  &  (Q) Geometrical isomers
- (C)  &  (S) Conformational isomers
- (D) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$ & $\text{H}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{CH}_3$ (P) Functional isomers & (T) Structural isomers
2. Correct stability order is:
 (A) $\text{CH}_3\text{SO}_3^- > \text{CH}_3\text{CO}_2^- > \text{CH}_3\text{O}^- > \text{CH}_3\text{CH}_2^- \rightarrow$ Apply EN factor, (O) is more EN than (C) atom
- (B)  > 
 In first diagram NO steric crowding between methyl groups + H-Bonding between OH groups.
- (C)  > 
 First structure is Anti form and second one is gauche form, hence I > II.
- (D)  < 
 Bulky group at equatorial is more stable than Bulky group at axial position.

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\Rightarrow Hence both are Equal stable. ($K_{eq} = 1$)

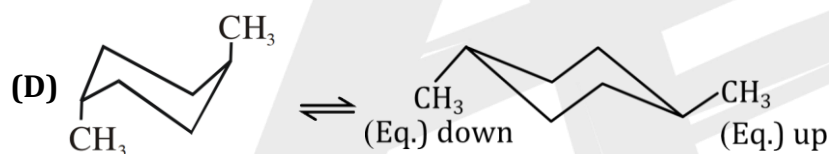


\Rightarrow More stable (Trans Form)

less stable



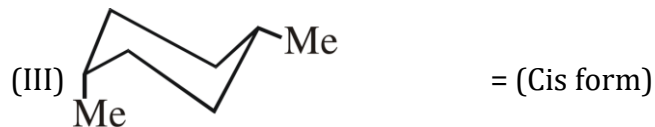
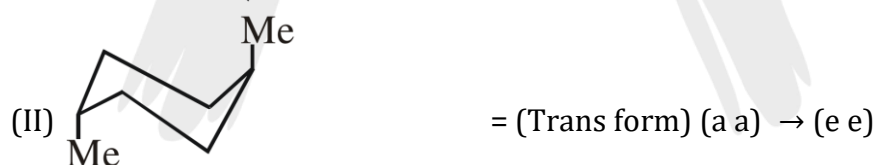
\Rightarrow Both are Equal stable (Cis form)



\Rightarrow less stable (Trans Form)

more stable

(A) \rightarrow (P), (T); (B) \rightarrow (Q), (S); (C) \rightarrow (P), (T); (D) \rightarrow (Q), (R)



(I) & (III) \rightarrow Geometrical Isomers.

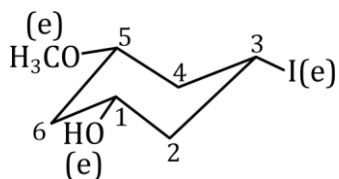
(II) & (IV) \rightarrow Geometrical Isomers.

(I) & (II) \rightarrow Identical Isomers.

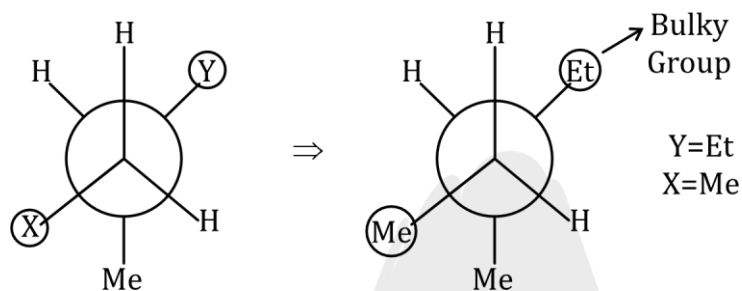
(II) & (III) \rightarrow Geometrical Isomers.

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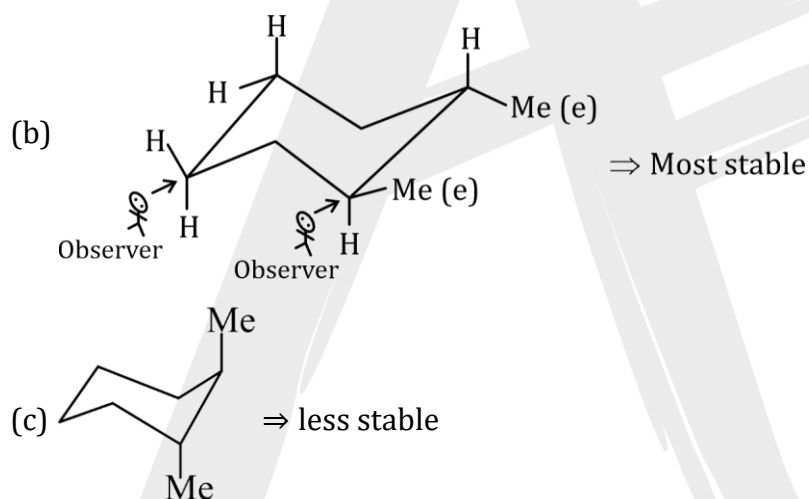
5. (C) e, e, e



6. X & Y = Option is (A) Me, Et



7. (a) = most-stable (e e)




Correct order of stability = (a) = (b) > (c)

8. (D) is the correct Ans.

(*) Most stable

(*) Lowest energy

Order= (D) > (C) > (A) > (B)

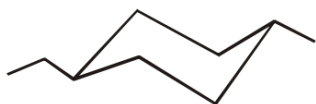
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9. (C) $\text{II} > \text{IV} > \text{III} > \text{I}$



(I)

(*) Both are on Axial (*) least stable (*) High energy



(II)

(*) Both are on Eq. position (*) most stable (*) lowest energy



(III)

Bulky group on (axial)



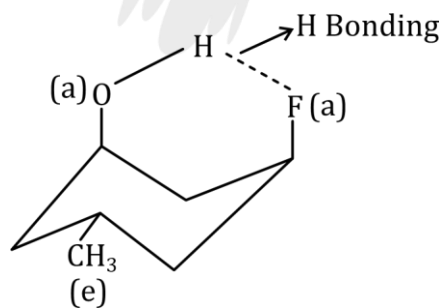
(IV)

Bulky group on (Eq.)

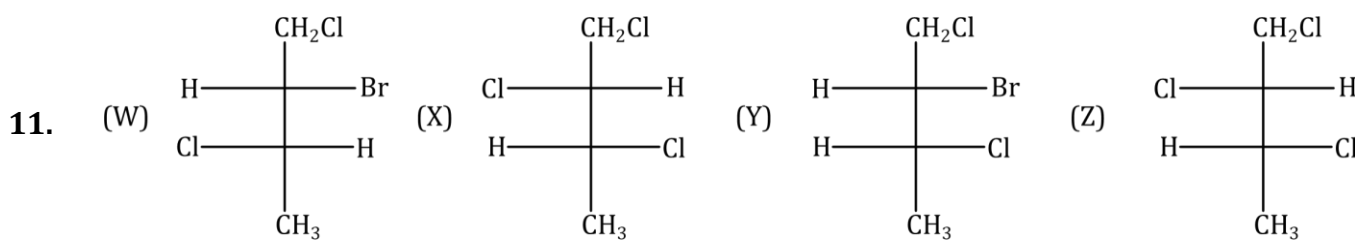
Stability order = $\text{II} > \text{IV} > \text{III} > \text{I}$

10. (*) due to H-Bonding between (OH) group & (F) it will attached on Axial position.

Hence (a,a,e)

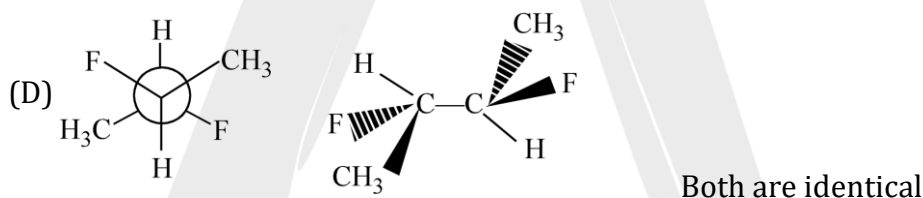
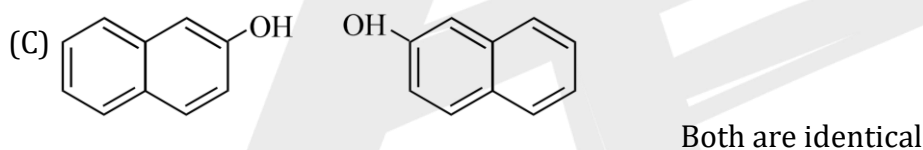
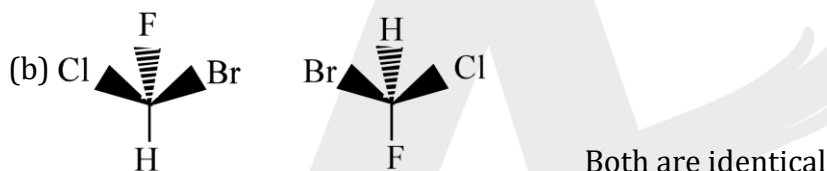


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- (A) W & Y are diastereoisomers → correct
 (B) Z is the newmann projection of X → correct
 (C) W, X, Y and Z are optically active → correct
 (D) Y & Z are meso. → not correct

12. (a) They are enantiomer



Hence

$$a = 1$$

$$b = 4$$

$$c = 4$$

$$d = 4$$

$$\Rightarrow a + b + c + d$$

$$\Rightarrow 1 + 4 + 4 + 4 = 13 \text{ Ans.}$$