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(#) By Electrophilic attack on multiple Bond (C=C) & (C≡C)

(17) $CH_2=CH_2 + H^{\oplus} \longrightarrow CH_3-CH_2^{\oplus}$

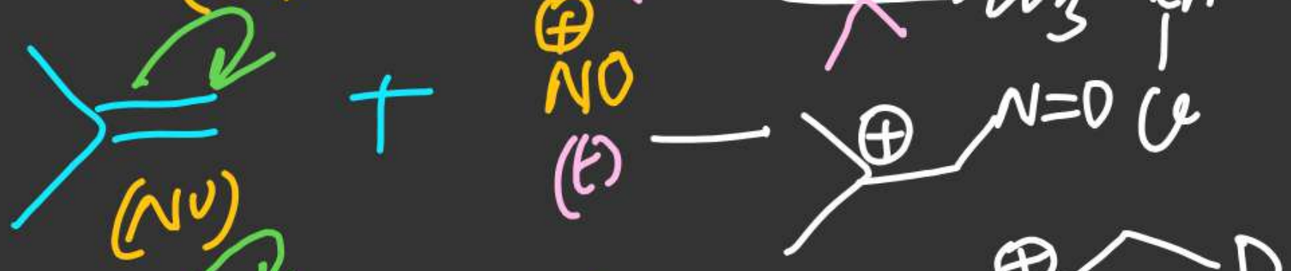
($H^{\oplus}$: E)

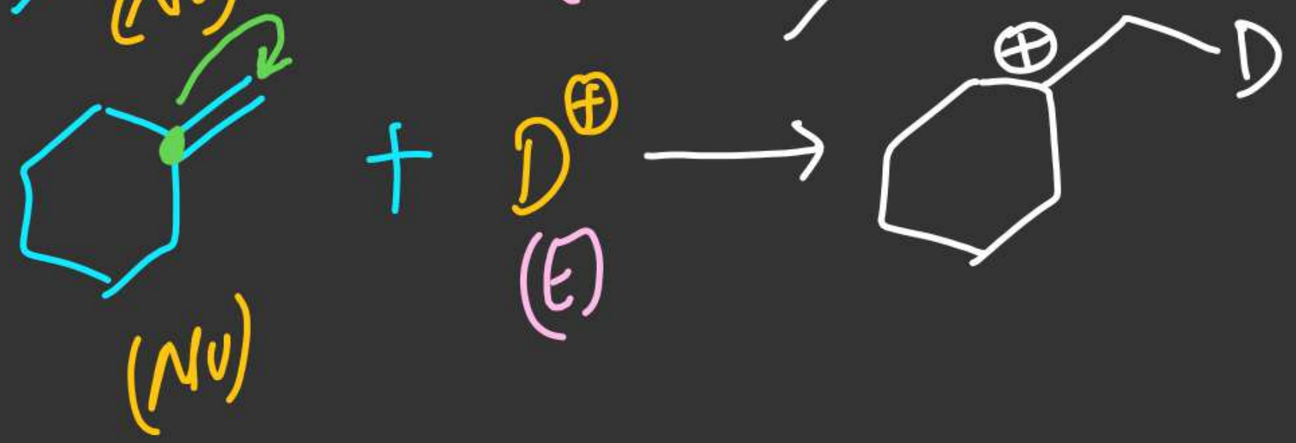
($CH_2=CH_2$: Nu)

(18) $CH_3-CH=CH_2 + Cl^{\oplus} \longrightarrow CH_3-\overset{\oplus}{C}H-CH_2-Cl$ (more stable)

$CH_3-CH(Cl)-CH_2^{\oplus}$ (less stable)

($CH_3-CH=CH_2$: Nu; $Cl^{\oplus}$: E)

(19) 

(20) 

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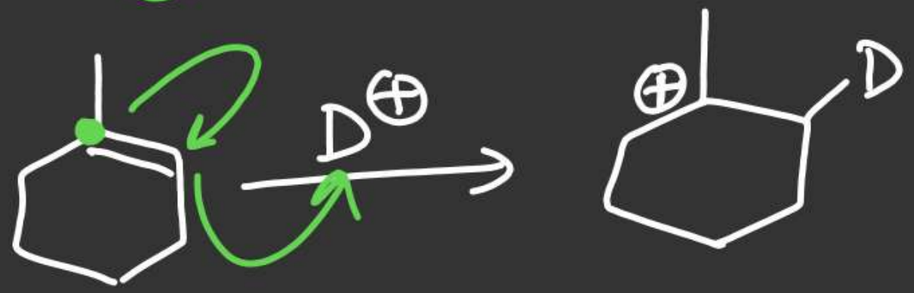
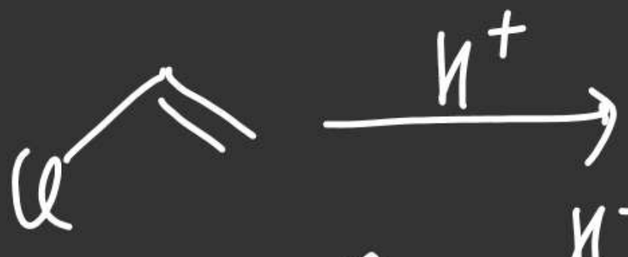
(21) 

(22) 

(23) 

(24) 

(25) 

(#) Reactions shown By CarboCation :-

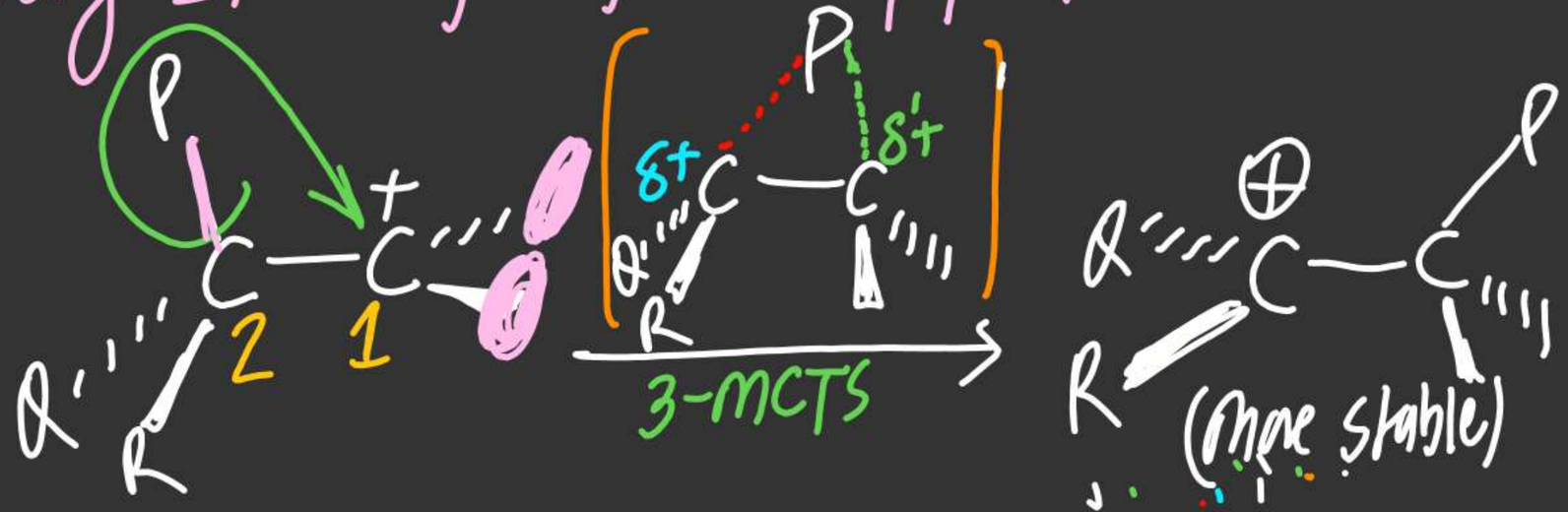
CarboCation can show either

(i) Rearrangement (to get higher stable CarboCation)

(ii) Combination / Elimination (to give Product)

Rearrangement

⇒ CarboCations get rearranged to attain higher stability By using 1,2 Shift of Atom / group.



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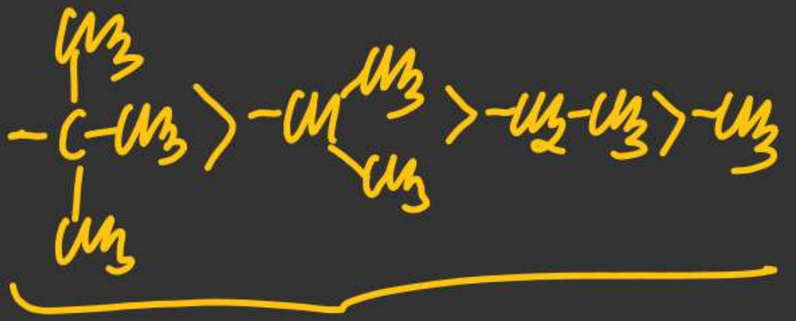
Note (i) 1,2 shift

(ii) 3-MCTS involved.

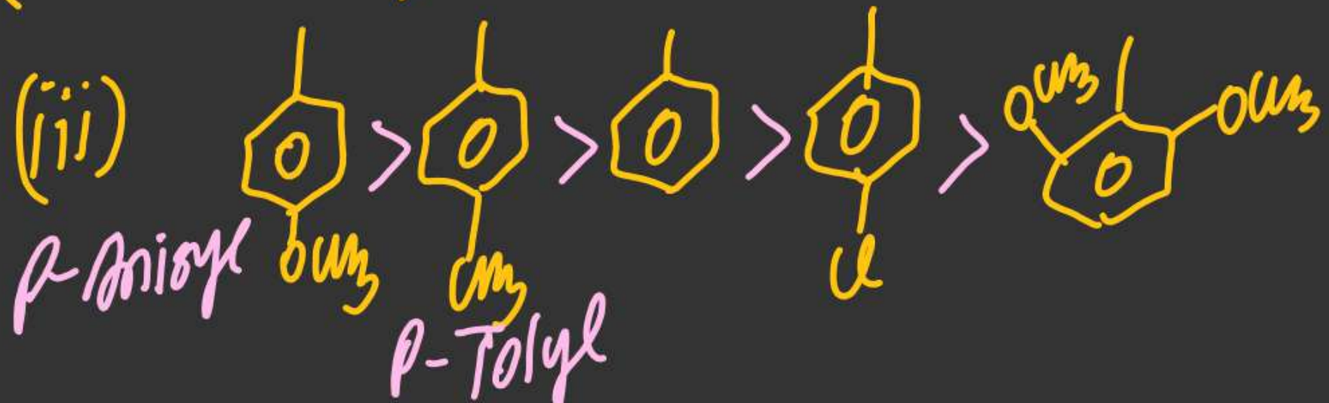
(iii) Rearrangement takes place only when new carbocation is more stable than previous carbocation

(iv) 

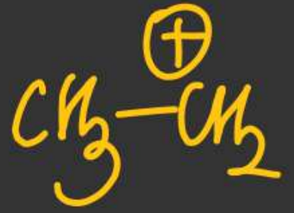
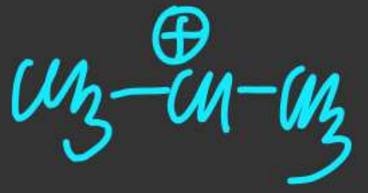
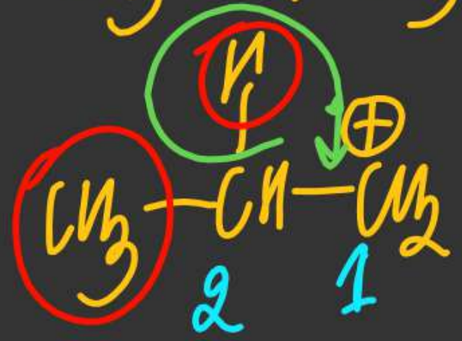
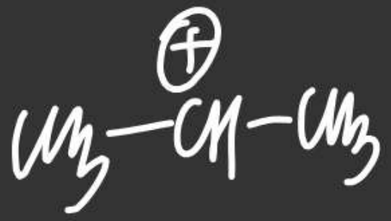
(iv) **Migratory aptitude order**

(i) $-H > -Ar > -R$

(ii) $-H > -D > -T$

(iii) 

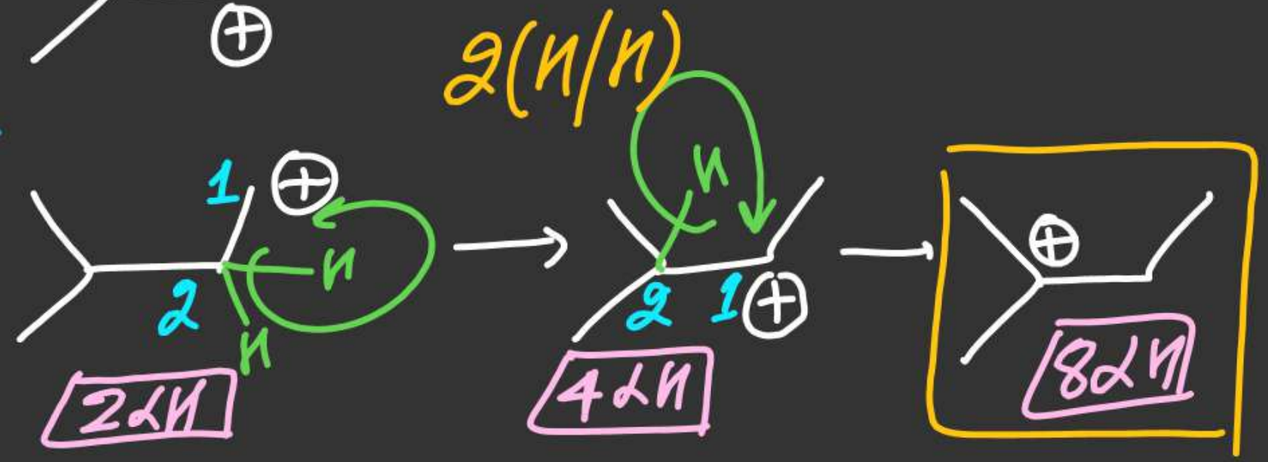
⇒ Find Total No. of 1,2 shift & also draw final most stable Carbocation

Carbocation	Total No. of 1,2 shift	Final Carbocation
(1) 	0	
(2) 	0	
(3) 	0	
(4) 	1 (Hydride shift)	

(5)

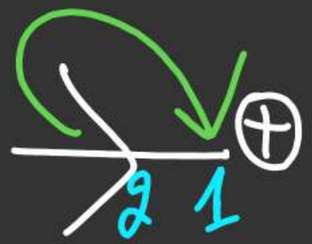
(6)

(7)

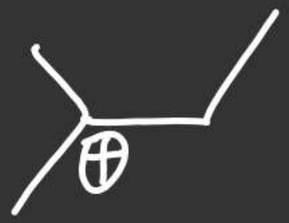


(8)

(9)



1(me)



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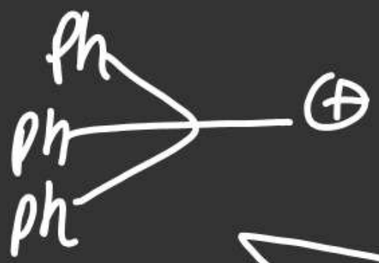
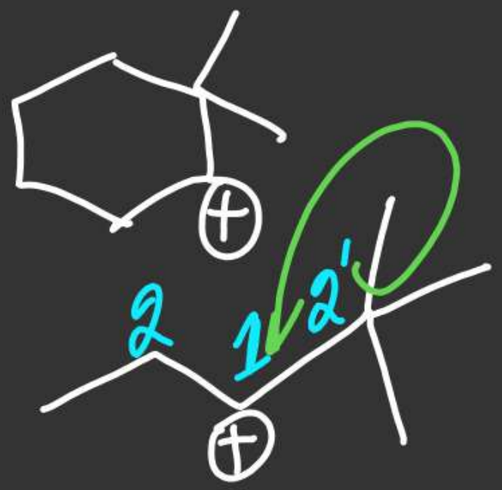
(10)

(11)



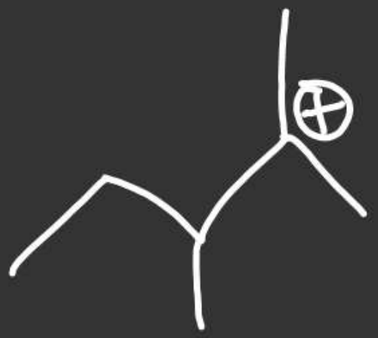
(12)

(13)



(14)

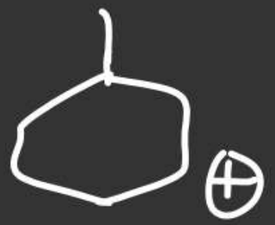
1 (me shift)



(15)

(16)

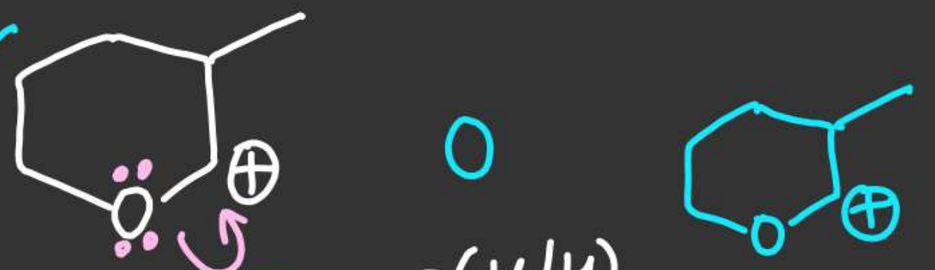
(17)



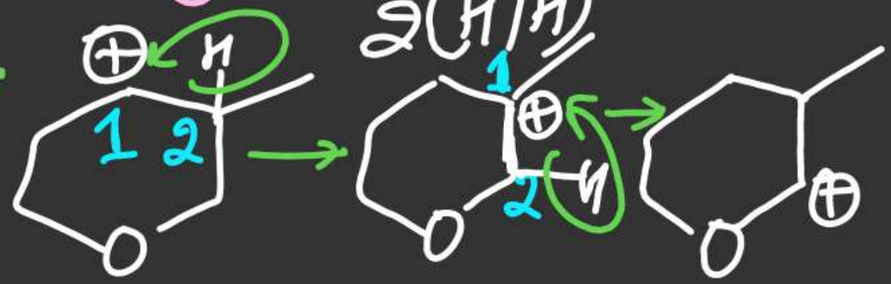
(18)

(19)

(20)



(21)

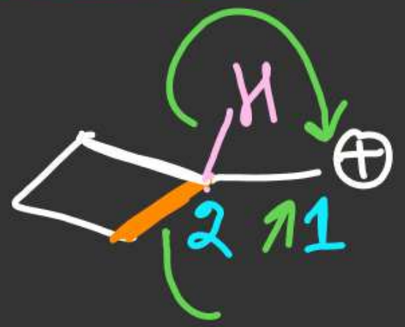


(22)

(23)

Ring Expansion :-

(24)



$(n_{\alpha H} = 1)$

$\delta_2 = 109°28' - 90°$

$= 19°28'$

Hydride shift

Ring Expansion

$(n_{\alpha H} = 7)$

$\delta_2 = 120° - 90°$

$= 30°$

$(n_{\alpha H} = 4)$

$\delta_2 = 120° - 108°$

$= 12°$

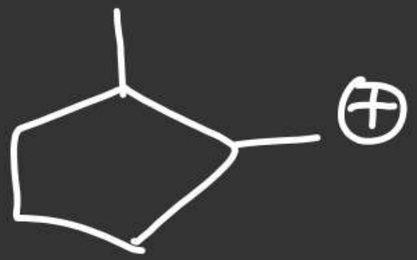
Note (i) Relief in Angle strain is driving force during Ring Expansion

(ii) 1,2 shift (not αH).

(25)

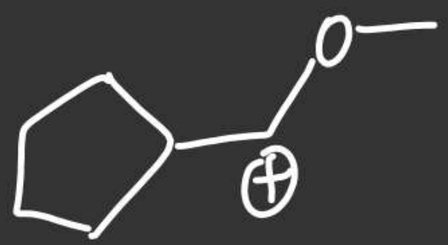
(26)

(27)



(28)

(29)



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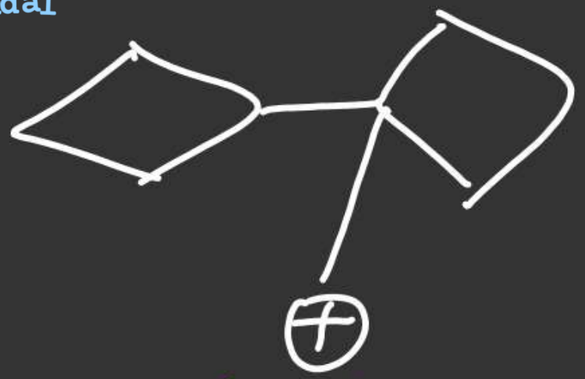
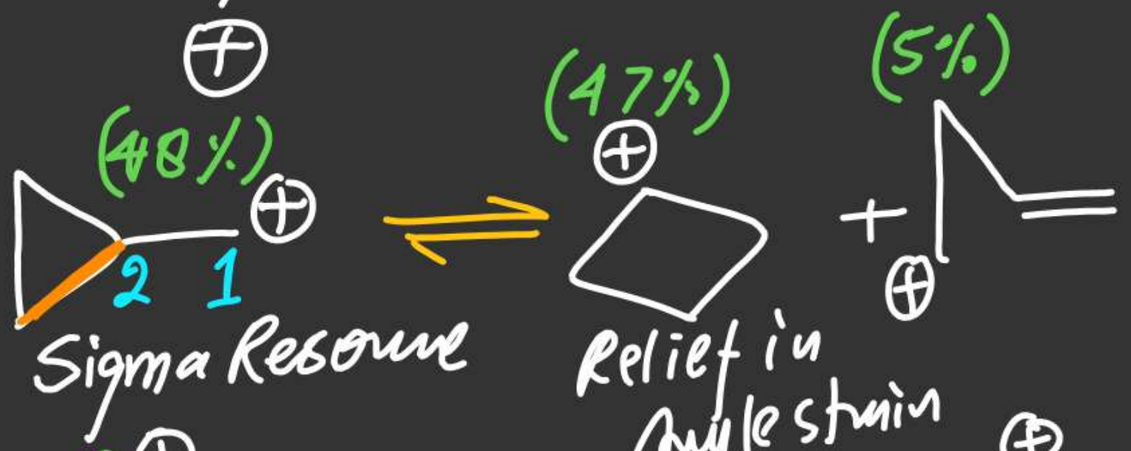
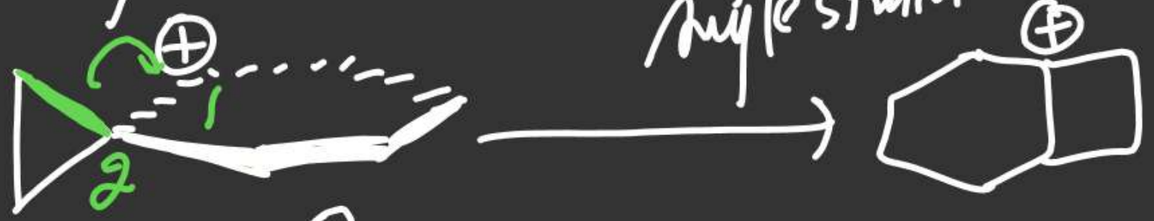
(30)



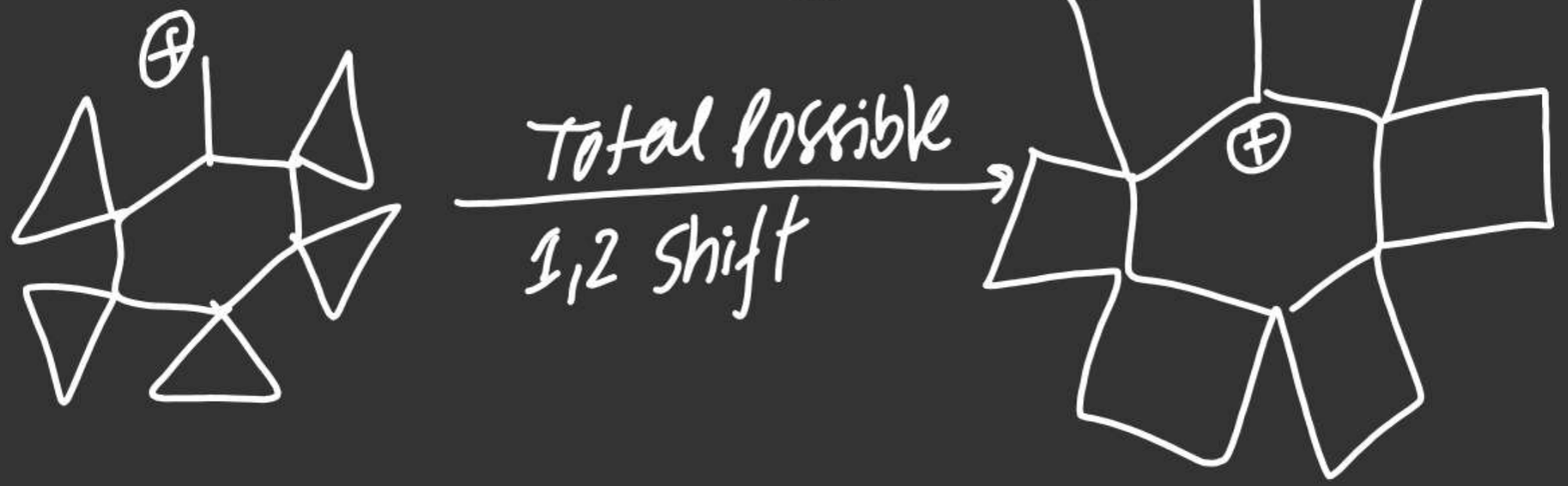
(31)



(32)



(33)



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(34) 

(35) 

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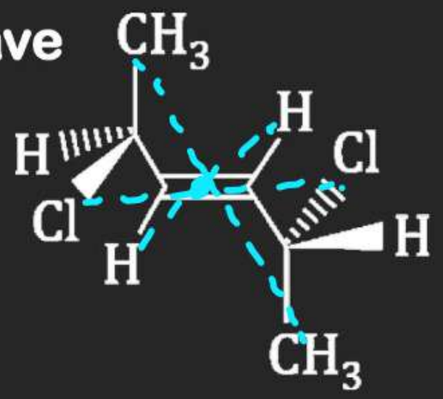
Stereo Isomerism

Q.7 Compound have



(A) Plane of symmetry

(B) Centre of symmetry

(C) Axis of symmetry

(D) None

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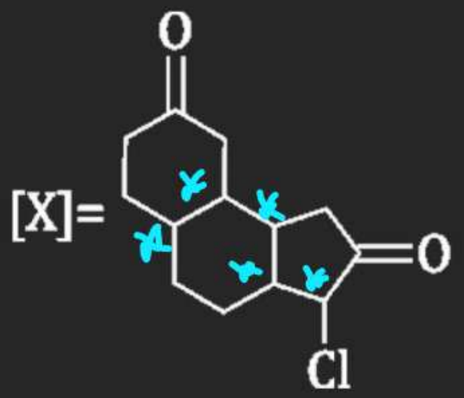
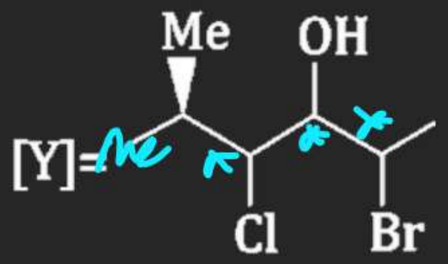
Stereo Isomerism

Q.22 Number of chiral centres in [X] & [Y] is a & b respectively. The value of (a–b) is

[X]= 

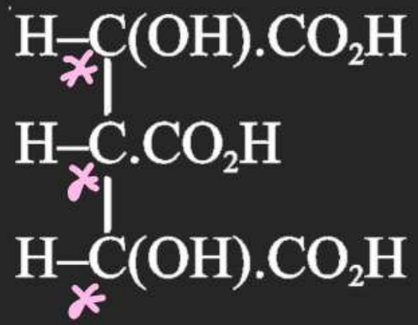
[Y]= 

5 − 3 = 2

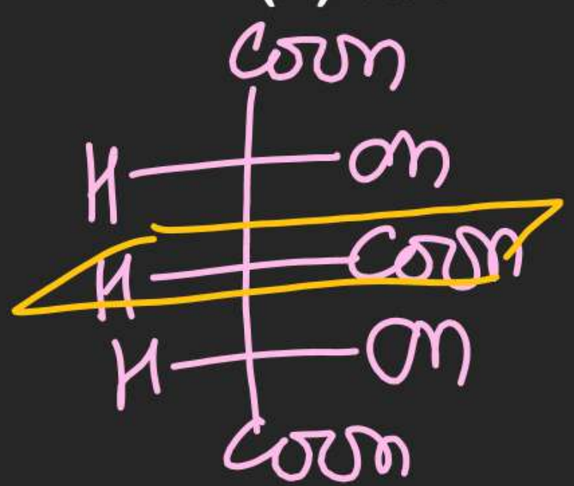
(A) 1 (B) 2 (C) 3 (D) 4

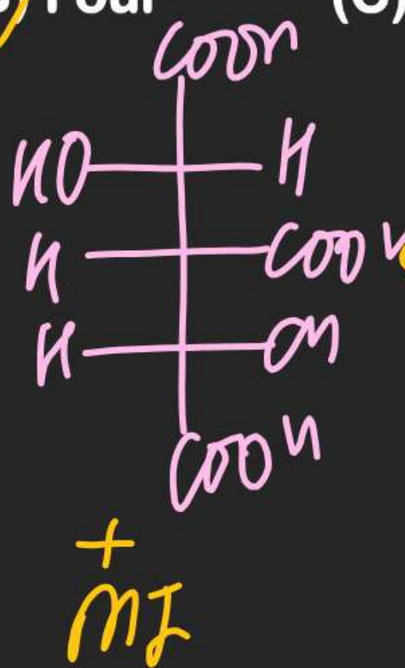
Stereo Isomerism

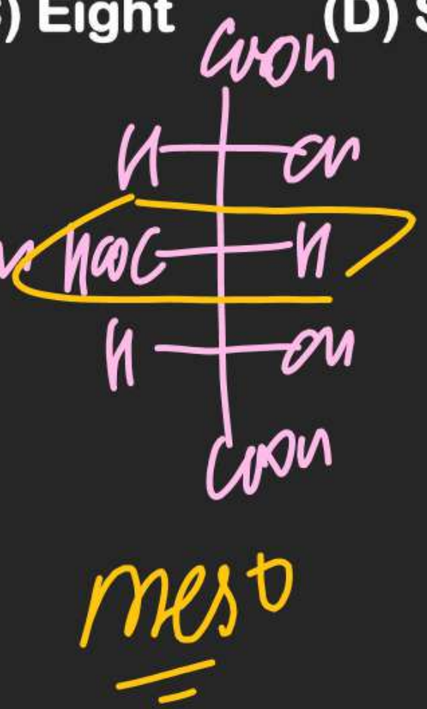
Q.24 How many stereoisomers can exist for the following acid.



(A) Two (B) Four (C) Eight (D) Six

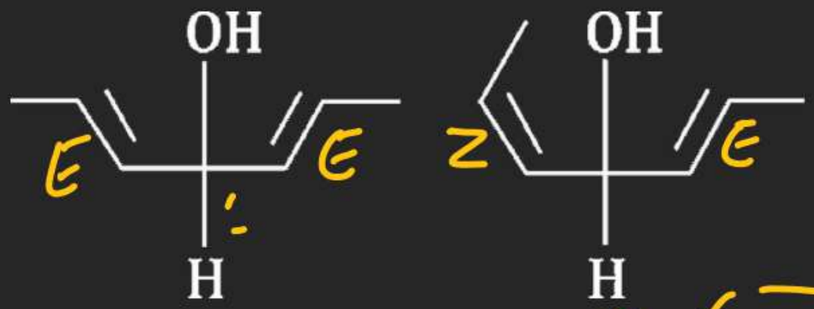






Stereo Isomerism

Q.25 Incorrect relationship between given compounds are



(A) Both are geometrical isomers

(B) Both are stereo isomers

(C) Both are enantiomers

(D) Both are diastereomers

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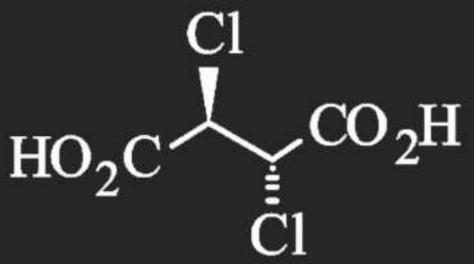
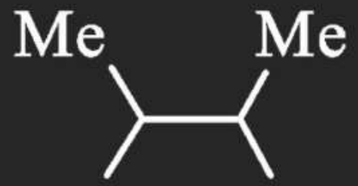
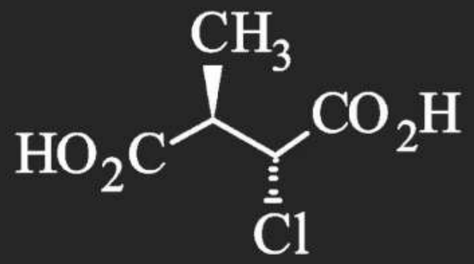
Stereo Isomerism

Q.26 Identify meso compound.

(A) 

(B) 

(C) 

(D) 

CC=O

No meso

Stereo Isomerism

Q.28 When an optically active compound is placed in a 10dm tube is present 20gm in a 200ml solution rotates the PPL by 30°. Calculate the angle of rotation & specific angle of rotation if above solution is diluted to 1 Litre.

(A) $16^\circ \& 36^\circ$ (B) $6^\circ \& 30^\circ$

(C) $3^\circ \& 30^\circ$ (D) $6^\circ \& 36^\circ$

$l = 10\,dm$

$C = \frac{20}{200}\ gm/ml$

$\alpha_{obs} = 30^\circ$

$[\alpha]^{EC}_{\lambda} = \frac{\alpha_{obs}}{l \times C}$

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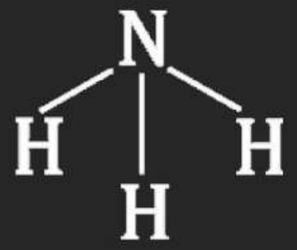
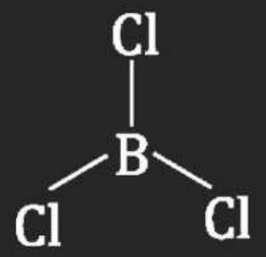
Stereo Isomerism

Q.32 Which of the following has C_2 & C_3 axis of symmetry?

(A) 

(B) H_2CCl_2

(C) $H_3C - Cl$

(D) 

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Stereo Isomerism

Q.33 Which of the following pair of cyclohexane is flexible?

(A) Chair

(B) Twist boat

(C) Half boat

(D) All of these

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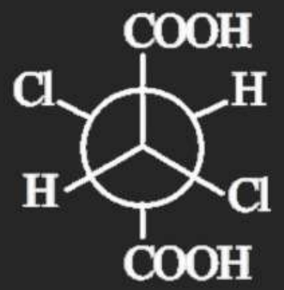
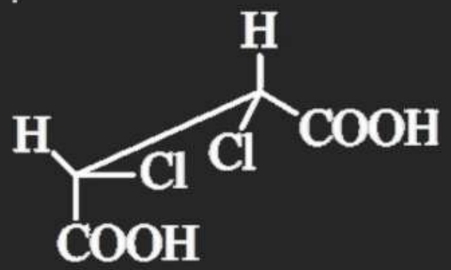
Stereo Isomerism

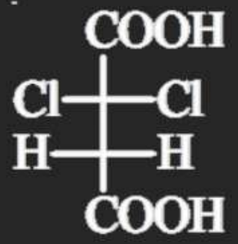
Q.35 For the given configuration :



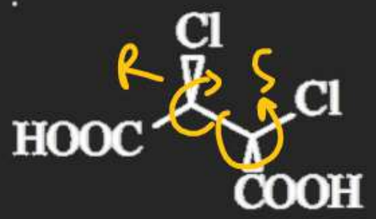
(I)



(II)



(III)



(IV)

Inactive.

Which of the compound/configuration are optically active :

(A) I (B) II (C) III (D) IV

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Stereo Isomerism

EXERSICE - 2

Q.1 Molecular formula $C_5H_{10}O$ can have :

(A) 6-Aldehyde, 4-Ketone

(B) 5-Aldehyde, 3-Ketone

(C) 4-Aldehyde, 3-Ketone

(D) 5-Aldehyde, 2 -Ketone

$C_5H_{10}O$ (DOU = 1)