Structural Isomerism - Functional Isomerism, Metamerism, Tautomerism - I

Course on Structural Isomerism & Geometrical Isomerism

SURENDRA K MISHRA • Lesson 2 • Sept 14, 2021

H₂O

(31) 3 > 2 > 1

Aromatic

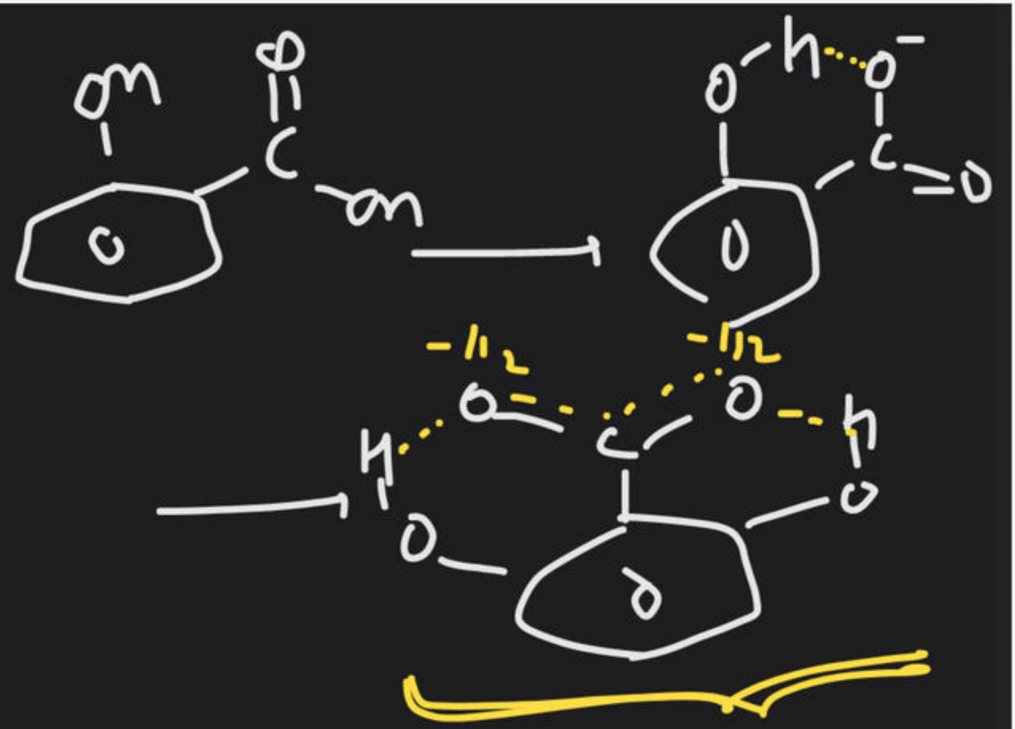
(32) 2 > 1 (Size factor)

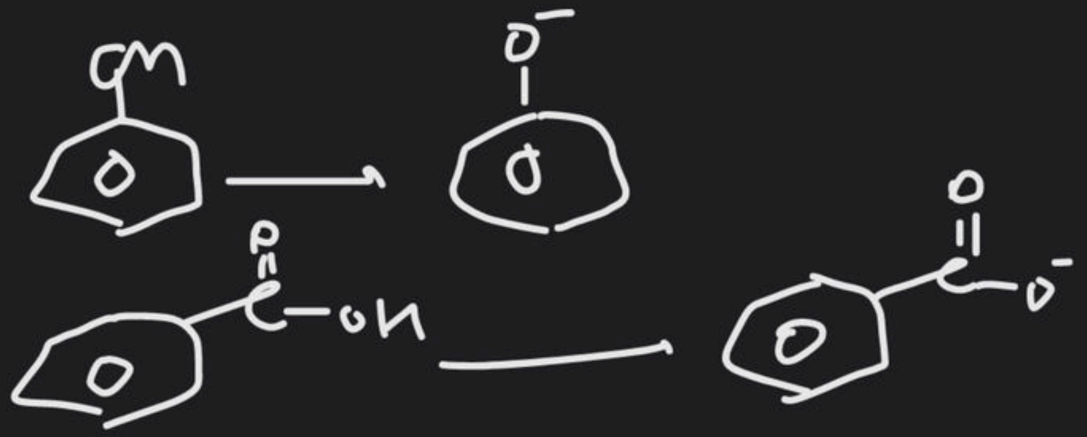
(33) 1 > 2 ($-NO_2 > -CN$)

(34) 2 > 1

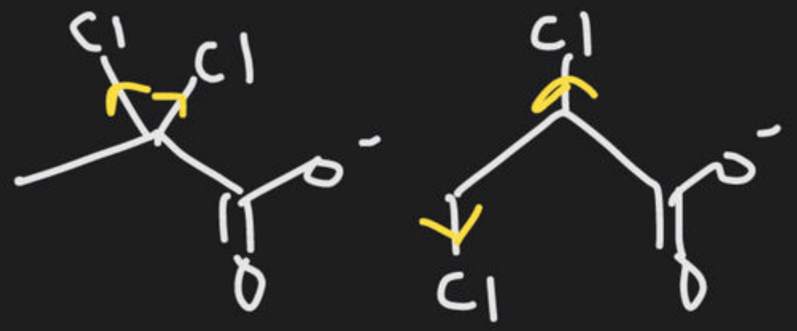
(SER) NO_2

(35) 4 > 3 > 2 > 1



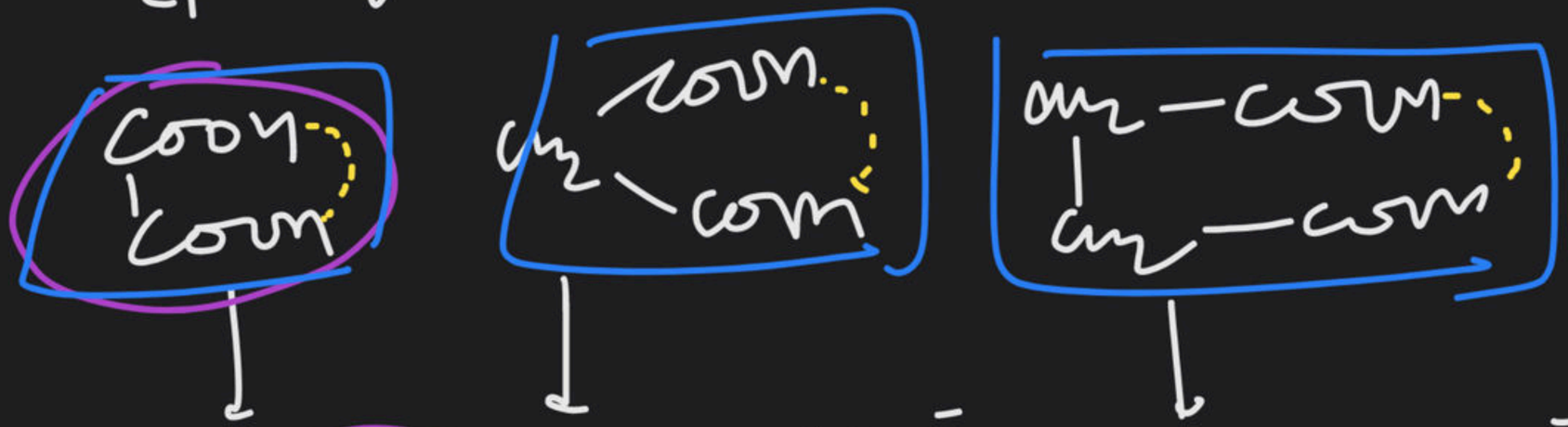


(36) 2 > 3 > 4 > 1



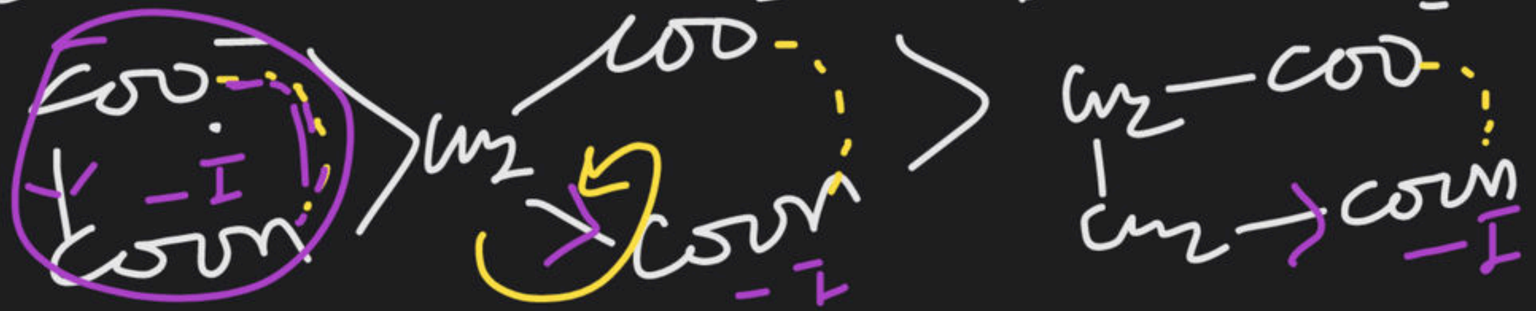
Neutral = H Bond
= No effect on
(X) Acidic Strength

(37)



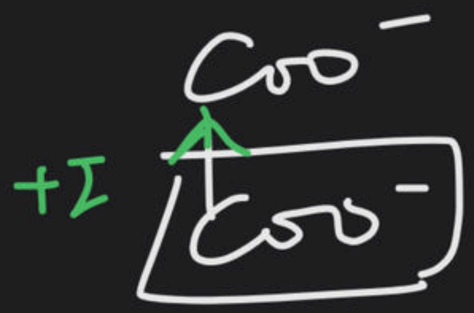
(1 > 2 > 3)

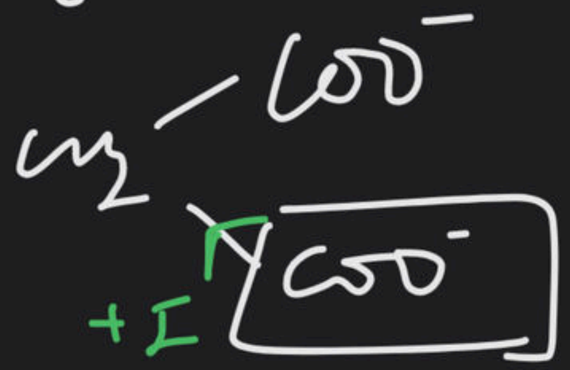
$-COOH$ (I)



(38)

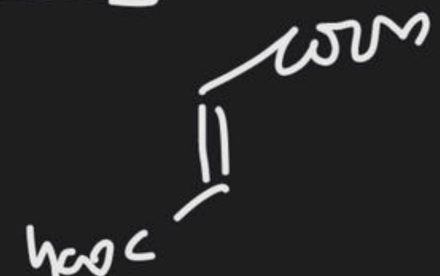
(37>71)



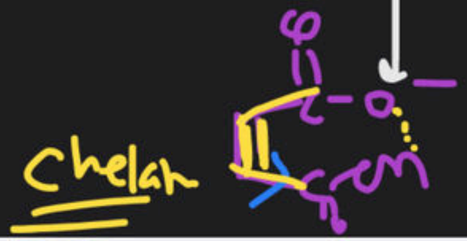


(37>71)

(39)

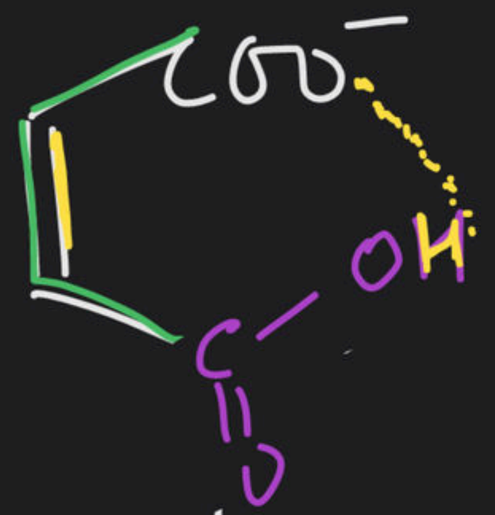


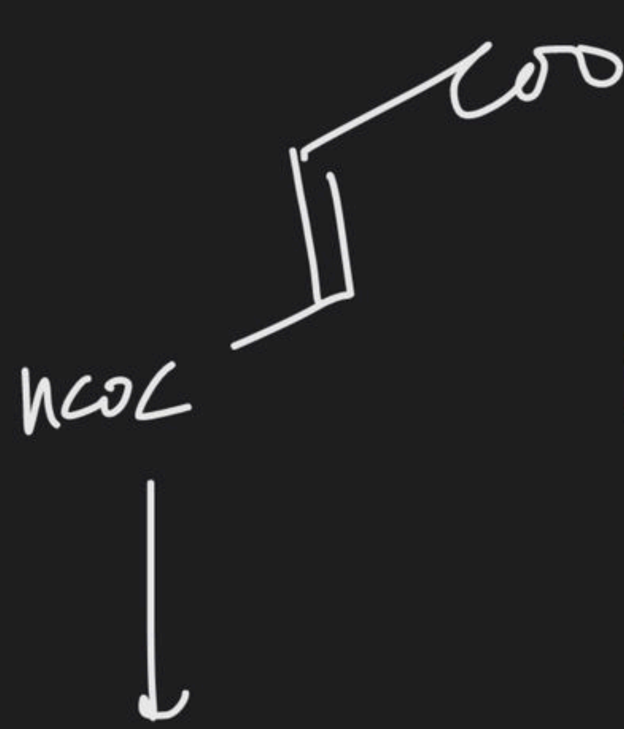
(172)



(172)

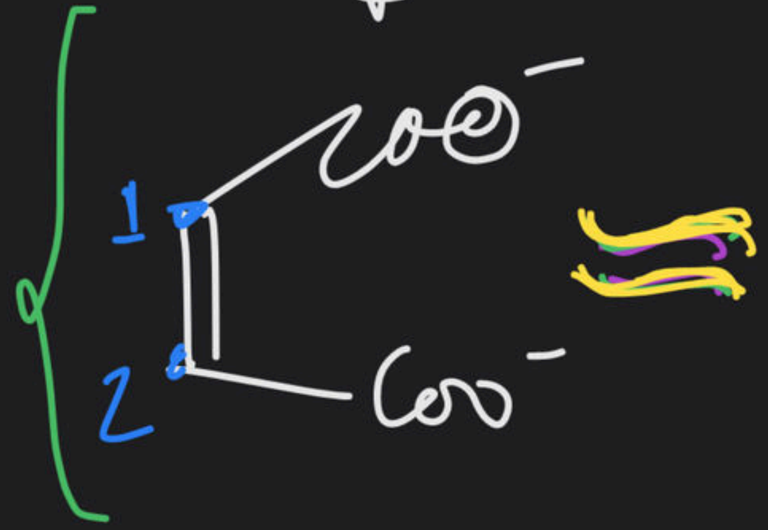
(40)

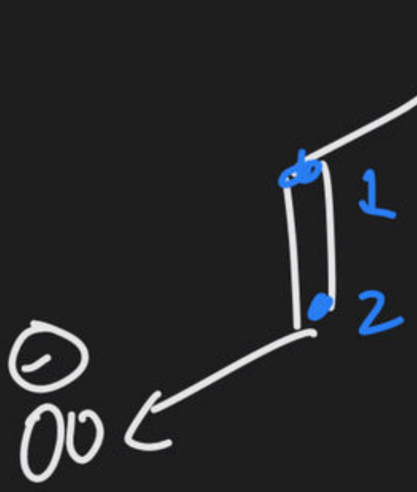




(271)

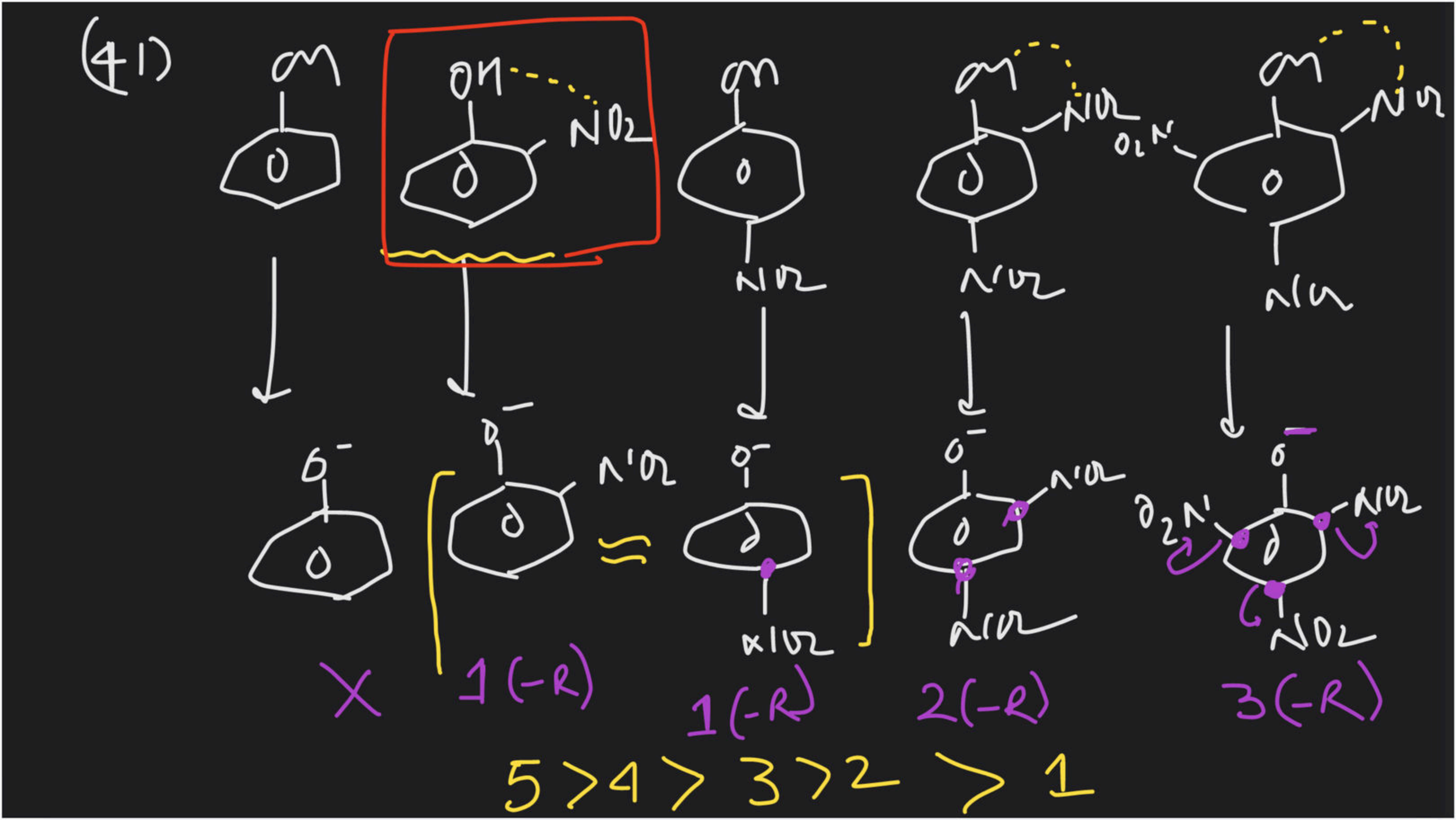
Acid



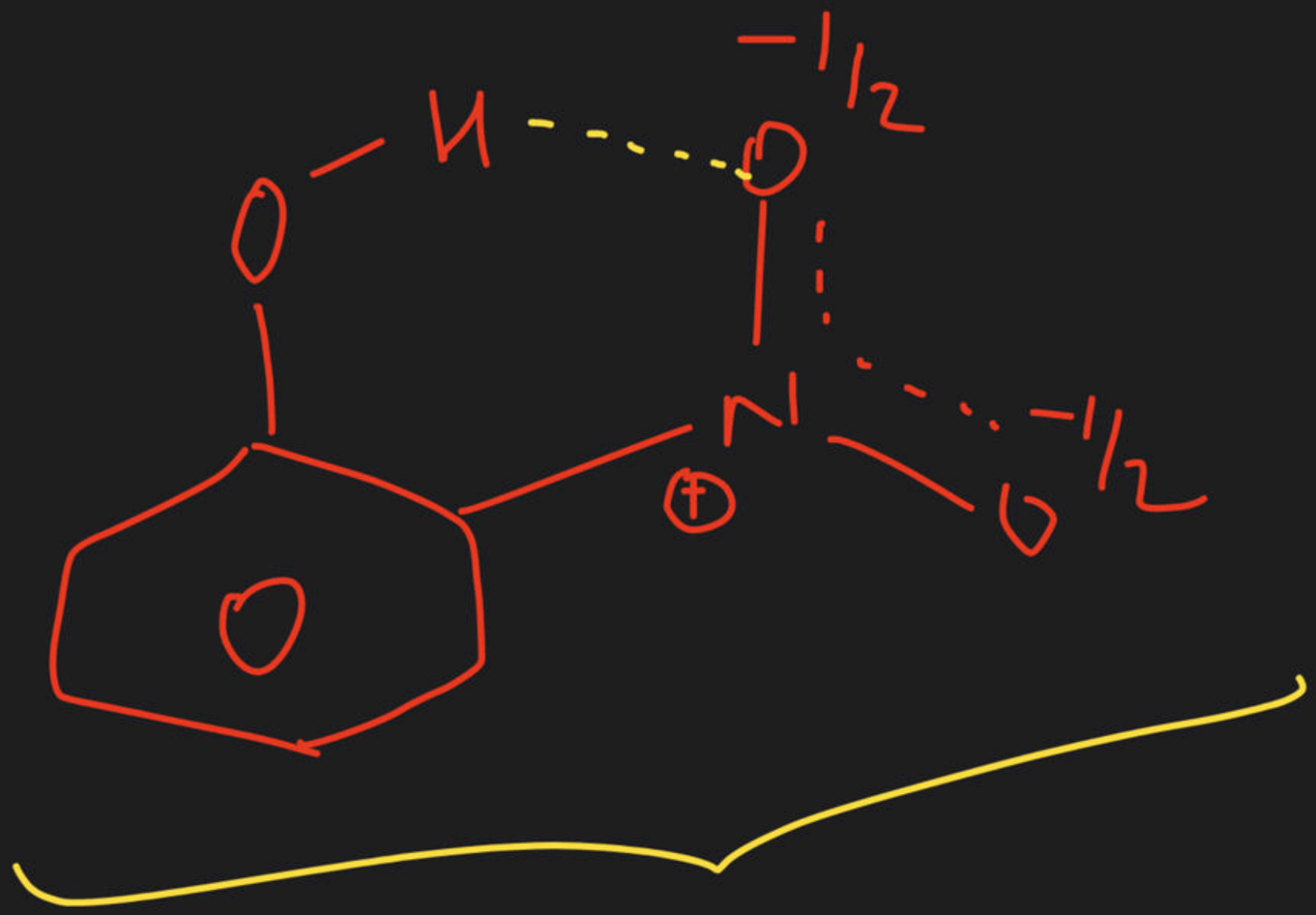


(Stability)

(41)

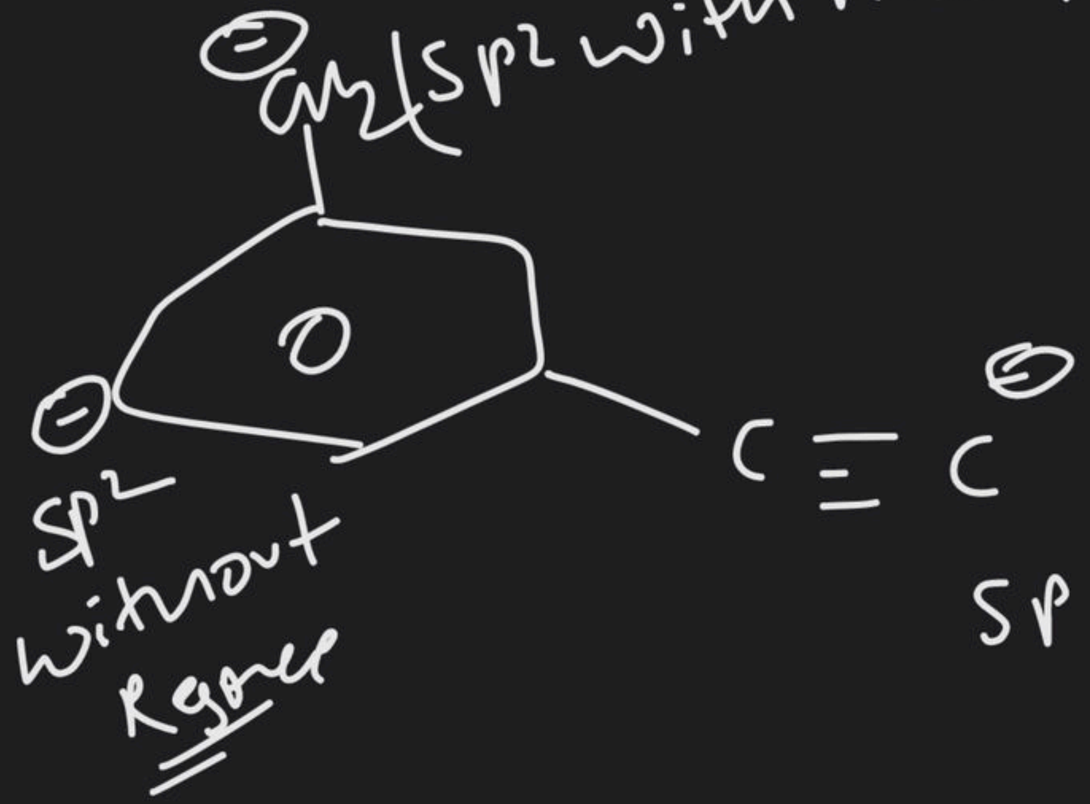


5 > 4 > 3 > 2 > 1


−1/2
H
O
O
N
+
O
−1/2

(42)

I > II > III



Isomerism

⇒ Compounds having same molecular Formula But different

⇒ Isomerism Represents relation between atleast two different Compounds.

Isomerism

Same MF diff. Str.

Same MF Same Str

Structural Isomerism or Constitutional Isomerism

- Chain Iso.
- Ring chain Iso
- Position iso
- Functional isomerism
- Metamerism
- Tautomerism.

Stereoisomerism

- Configurational Isomerism
  - Geometrical iso
  - Optical Isomerism
- Conformational Isomerism

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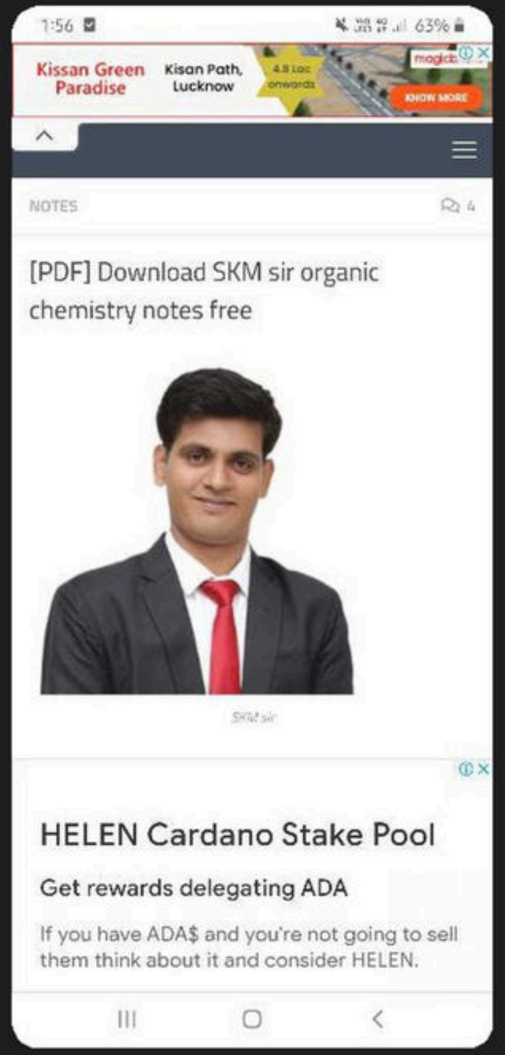
▲ 6 • Asked by Sahil

Sir aapke notes circulate ho rhe hain.



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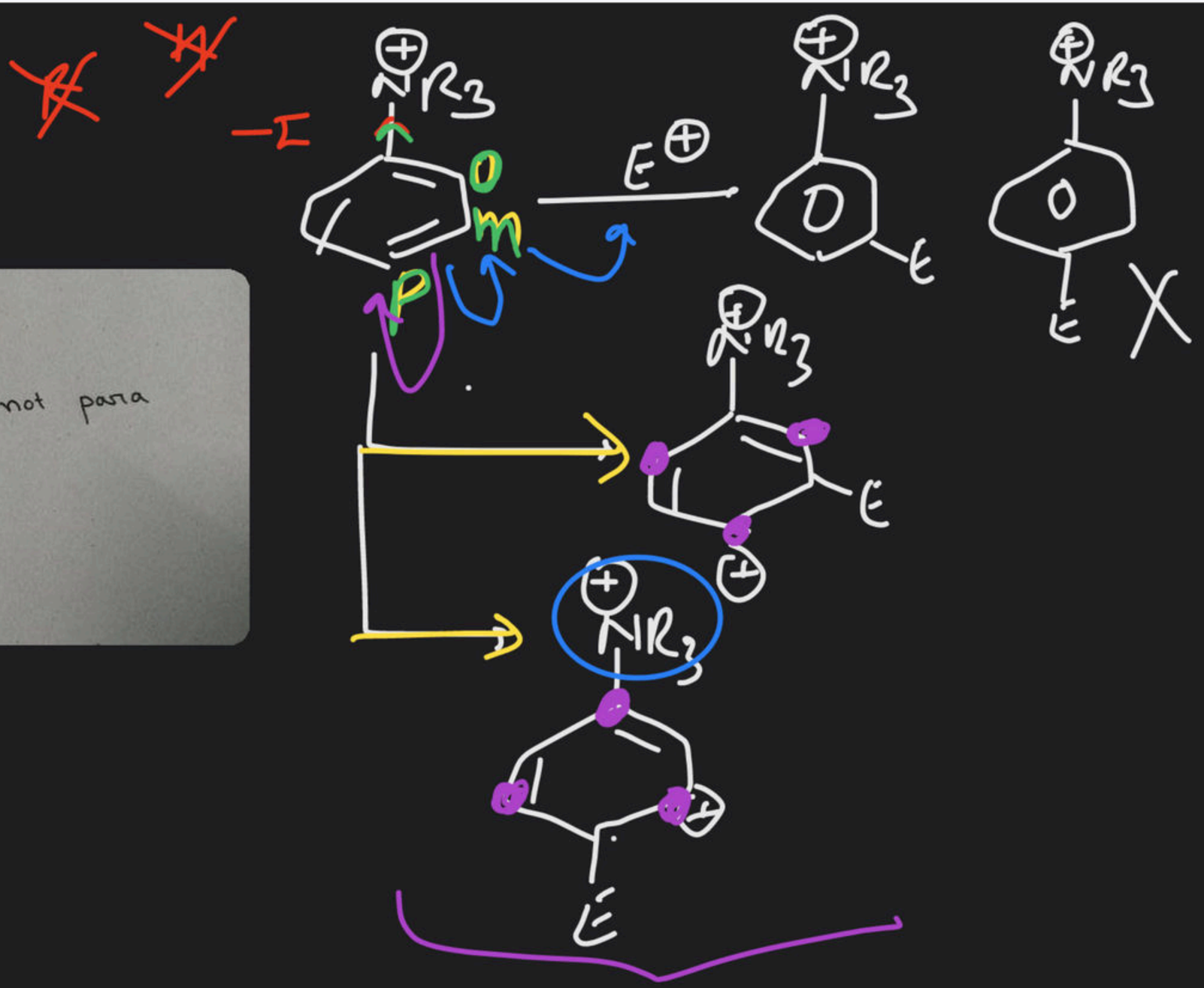
▲ 5 • Asked by Dipayan

Please help me with this doubt

Why is NR_3^+ / $NF_3^{\oplus}$ not para directors?



Structural Isomerism

Compounds having same molecular formula But different structural formula are known as structural isomers & phenomen is known as structural isomerism.

(1) Chain Isomerism

Compounds having same molecular formula But different Carbon chain length are known as chain isomers

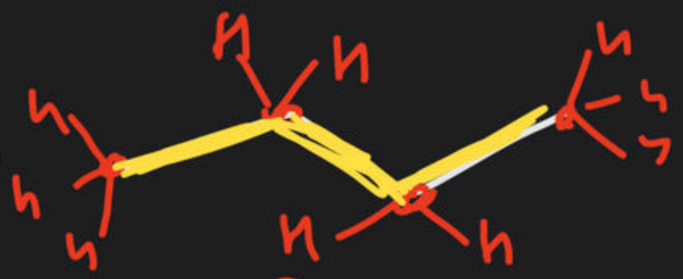
(1)

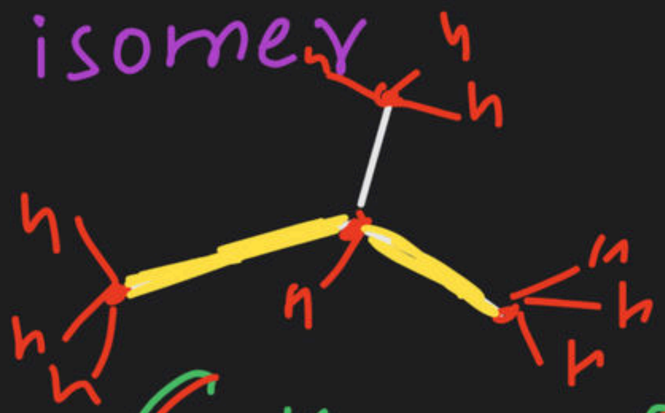
C-chain — 5C-chain — 4C-chain — diff.

MF — C_5H_{12} — C_4H_{10} — diff.

Not isomer

(2)



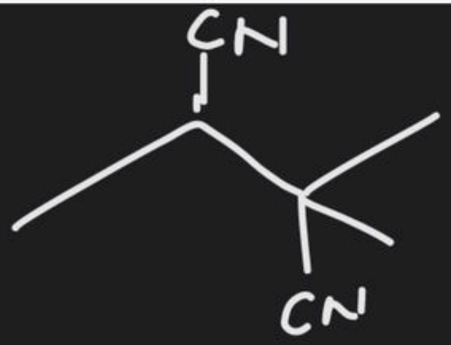


MF — C_4H_{10} — C_4H_{10} — Same

C-chain — 4C-chain — 3C-chain

(3)

(4)



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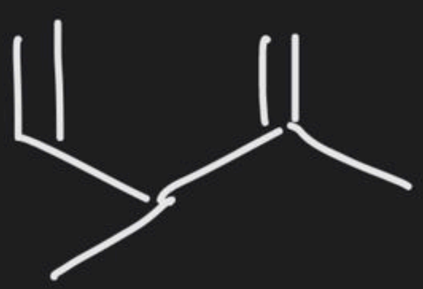
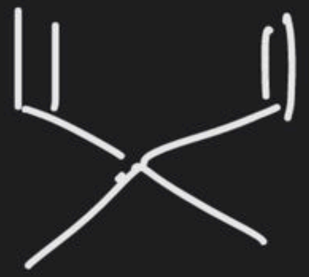




(6) $CH_3-\underset{\underset{COOH}{|}}{CH}-CH_3$ — Imp

mf $C_4H_8O_2$ — 3C chain

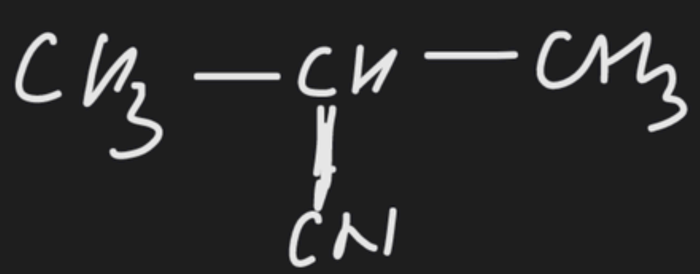
(7) $CH_3-\underset{\underset{CHO}{|}}{CH}-CH_3$ — mf = C-chain

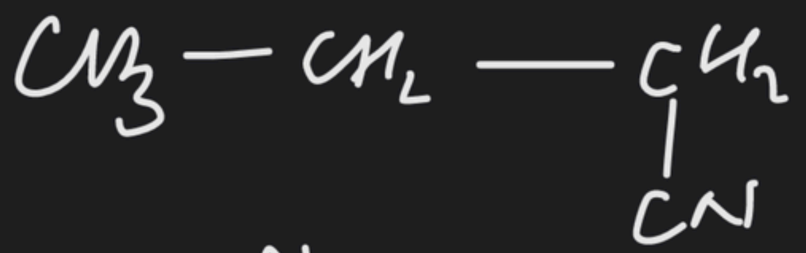
$CH_3-CH_2-\underset{\underset{COOH}{|}}{CH_2}$ (4, 3, 2, 1) — $C_4H_8O_2$, 4C-chain — same

$CH_3-CH_2-\underset{\underset{CHO}{|}}{CH_2}$ — diff.

(Chain Isomers)

(8)





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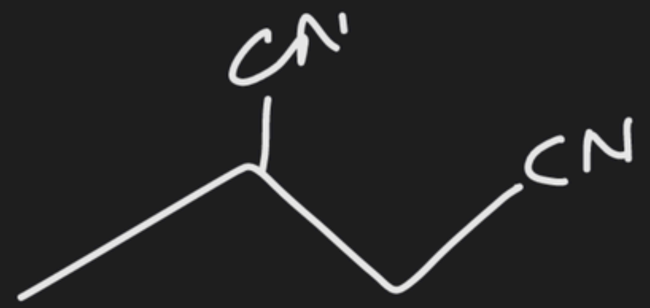

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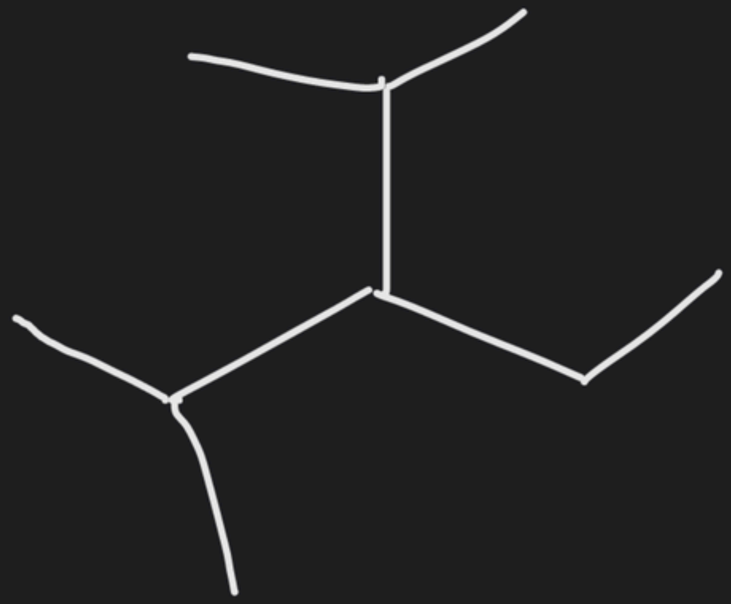
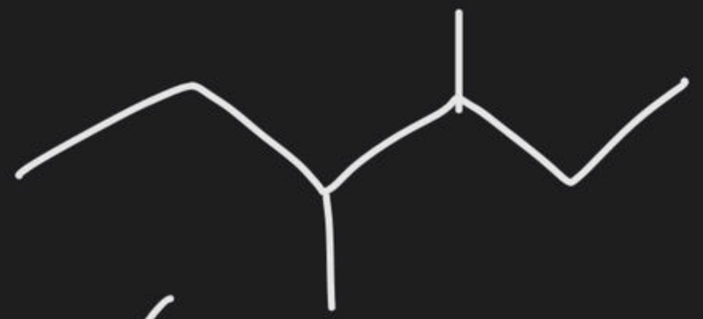


(11)

(A)

(B)



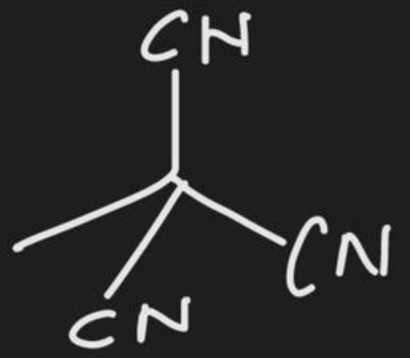
(C)

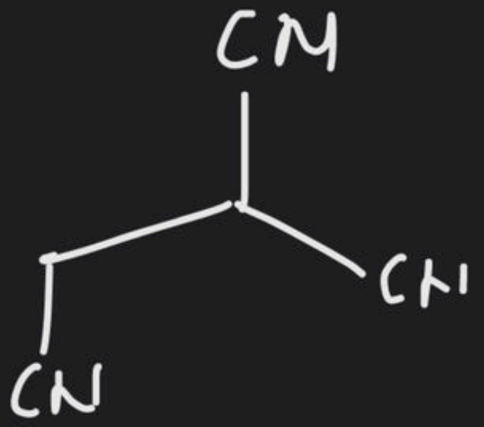
AB ⇒

AC ⇒

BC ⇒

(12)





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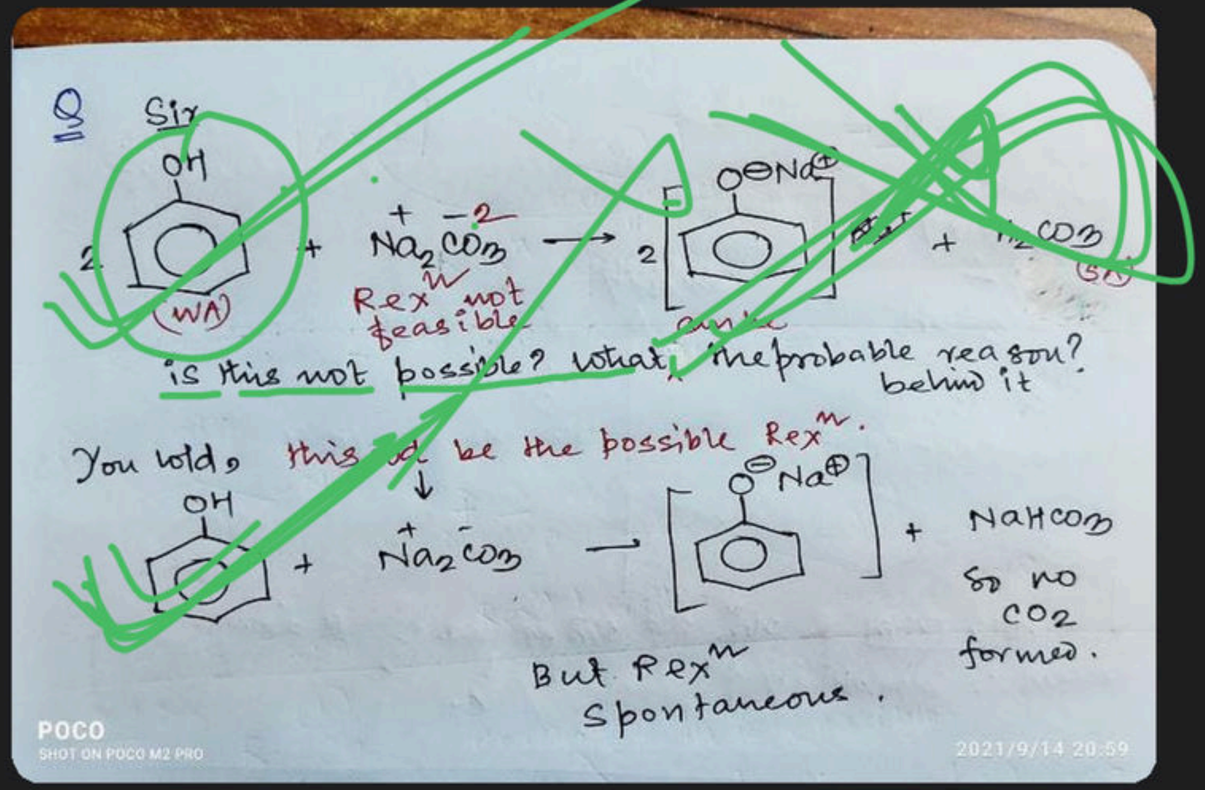
▲ 8 • Asked by Aritra Amb...

DBT



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▲ 4 • Asked by Abhijit

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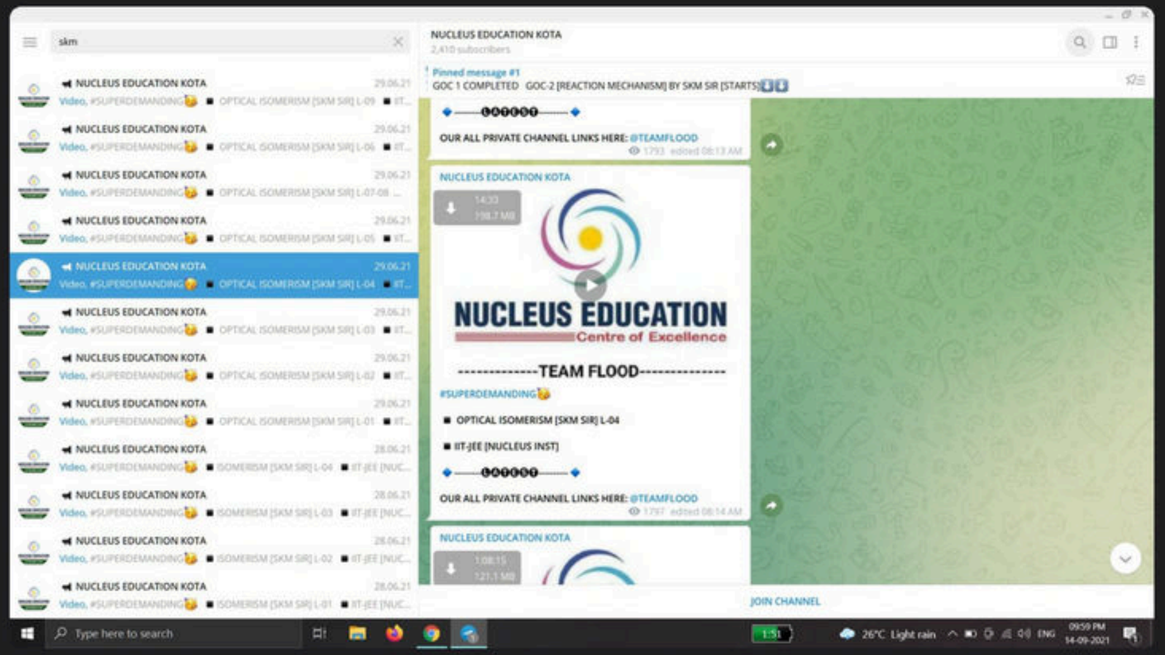

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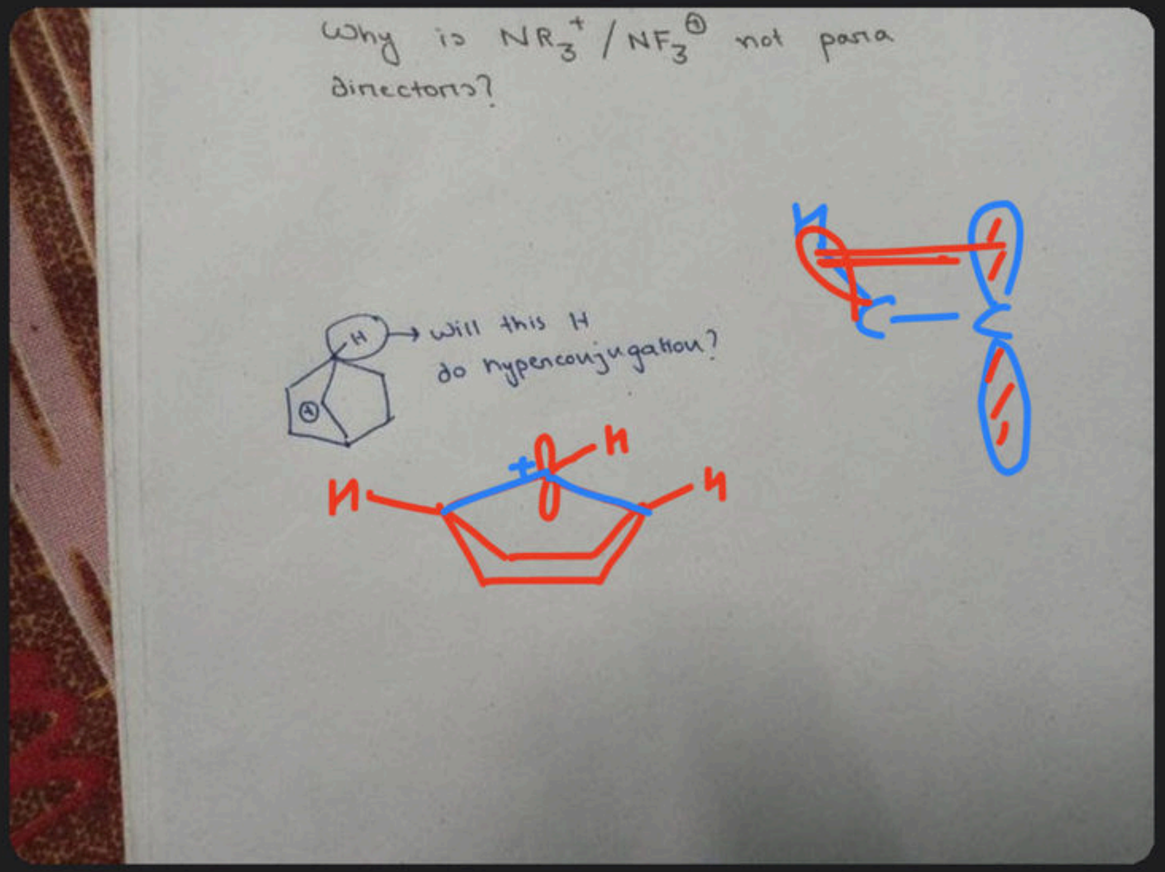
▲ 3 • Asked by Dipayan

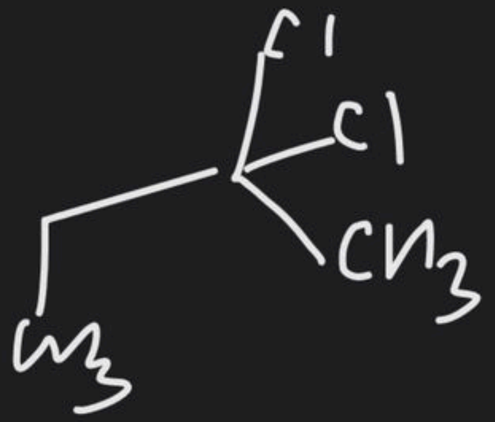
Please help me with this doubt

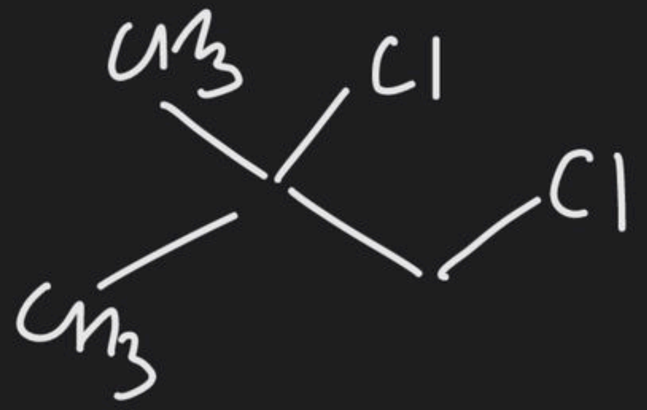


(13) $CH_3-CH_2-CH_2-CH(CONH_2)_2$

$H_2NCO-CH_2-CH_2-CH_2-CONH_2$

(14)





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