VIDYAPEETH

BATCH CODE: 19-PJ301EA 2025

SUBJECT NAME: CHEMISTRY

CHAPTER NAME:

Organic chemistry IUPAC Nomenclature

Lecture No. 02

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Today's Goal

Subtopic

I.U.P.A.C. Nomenclature

→ Saturated Hydrocarbons

→ Unsaturated Hydrocarbons

I.U.P.A.C. System

Prefix + Root word + Suffix-I + Suffix-II

#1

⇒ **R.W.** :⇒ Longest possible chain ⇒ no. of carbons present ⇒ R.W.

C_1 = meth	C_4 = But	C_7 = Hept	C_{10} = Dec
C_2 = Eth	C_5 = Pent	C_8 = Oct	C_{11} = UnDec
C_3 = Prop	C_6 = Hex	C_9 = Non	C_{12} = dodec

Suffix-I :⇒ Bonds in longest possible chain, between Carbon

− ane = ene ≡ yne

Suffix-II :⇒ functional group present

→ monofunctional
→ polyfunctional

→ monofunctional ⇒ S-II

→ polyfunctional ⇒ S-II ⇒ Most senior group #2

& rest all functional groups serves as Prefix

→ functional group
- Suffix-II
- Prefix.

$-COOH$ $-SO_3H$ $-COOR$ $-COX$ $-CONH_2$ $-CN$. $-CHO$

$-\overset{\overset{O}{\|}}{C}-$, $-OH$ | $-OR$ $-X$ $-NO_2$ $-NO$

Prefix ⇒

Longest possible chain

Substituent → Hydrocarbon ✓
→ functional group ✓

Hydrocarbons ⇒

CH_4 Metane

CH_3-CH_3 Ethane

$CH_3-CH_2-CH_3$ Propane
1^0 2^0 1^0

$-CH_3$

$-CH_2-CH_3$

$-CH_2-CH_2-CH_3$

$CH_3-\underset{|}{CH}-CH_3$

Alk ane → yl
ene → enyl
yne

$>CH_2$

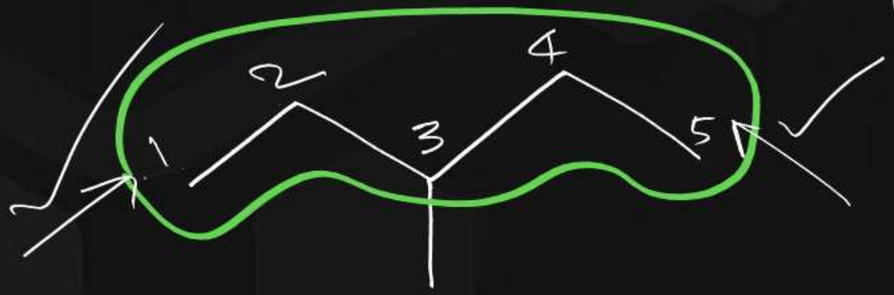
normal n-

n-propyl

s-propyl

Rules to writing I.U.P.A.C name

RW = Pent , S-I = ane , P = methyl

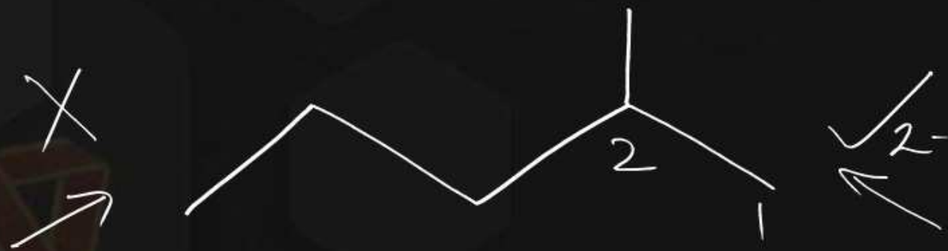


3-methylPentane

Always mention position of substituent

assign lowest position.

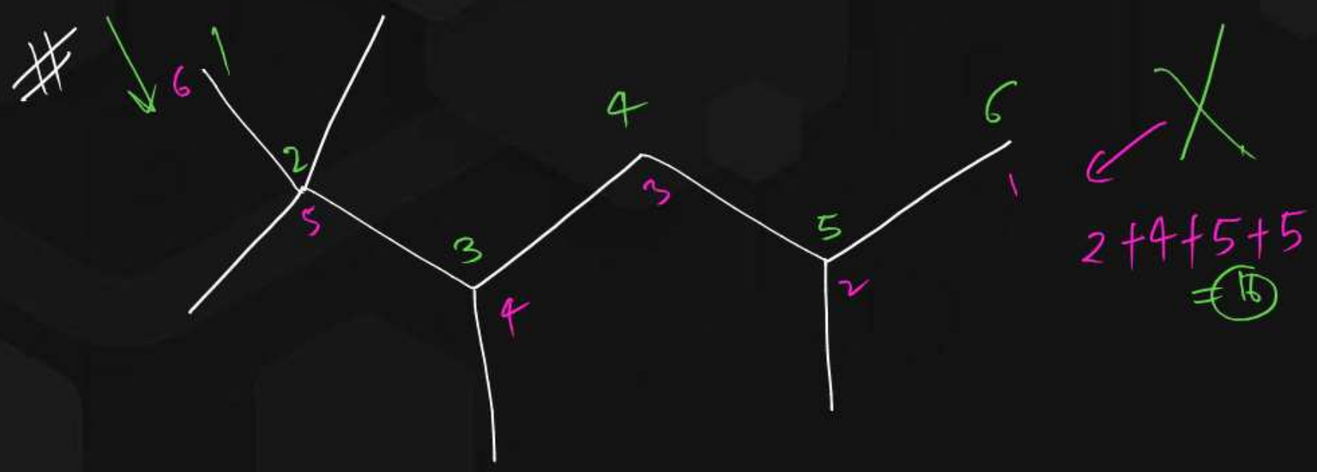
(F. P. D.)



2-methylPentane

assign lowest numbering started from the end where F.P.D. gives lowest

RW- Hex , S-I = ane



Prefix⇒

lowest Sum of locant Rule

if different Substituent write in alphabetical order

→ 2+2+3+5

⇒ 12

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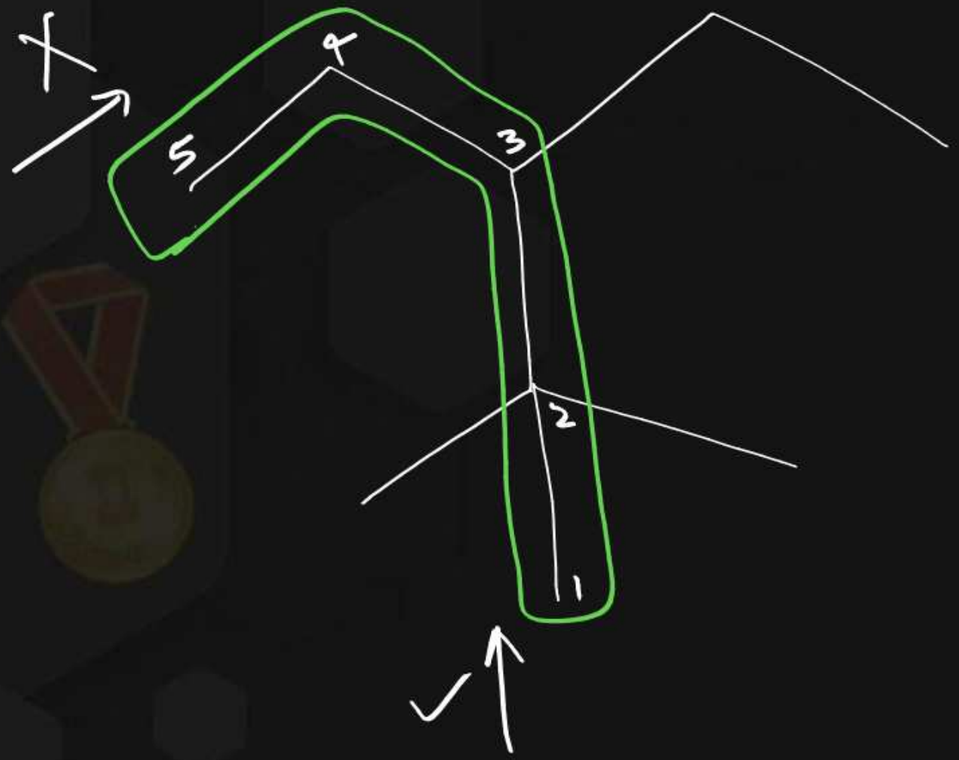
2,2,3,5-tetramethylHexane

#
di
tri
tetra
penta
hexa

more than One possible chain

→ Select longest chain Containing max. number of substituents.

RW = Pent , S-I = ane.



Prefix → 2 , 2 , 3

3-ethyl-2,2-dimethylPentane.

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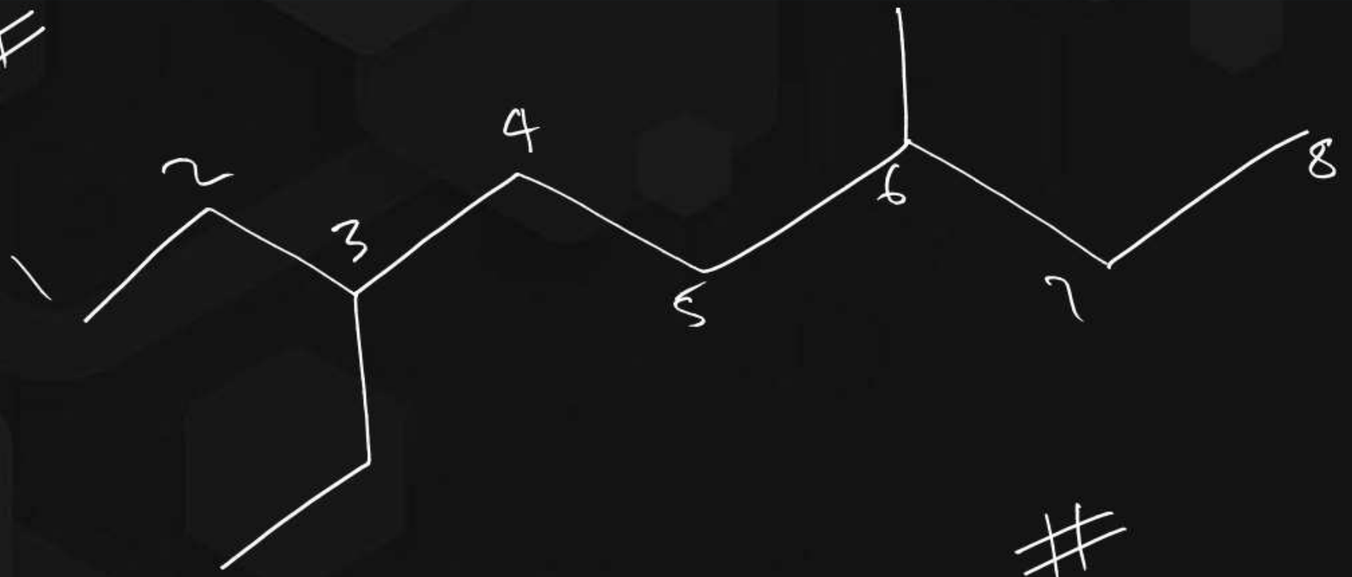
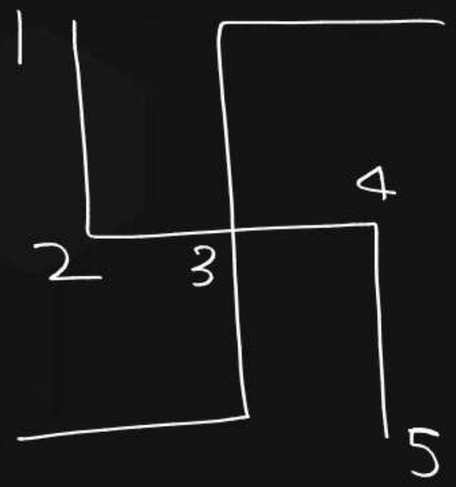


F.P.D. Same from either side then preference by using alphabatical

#



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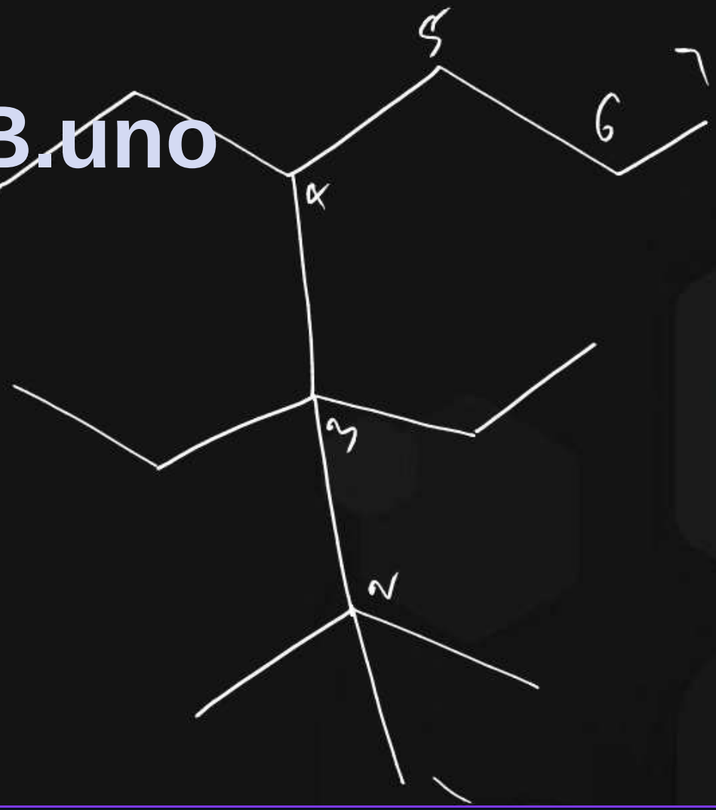
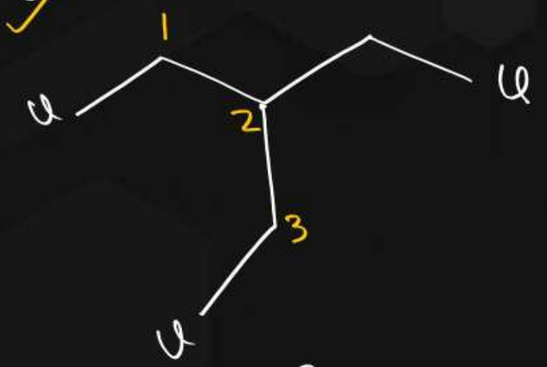


Halo → Prefix.

(1)



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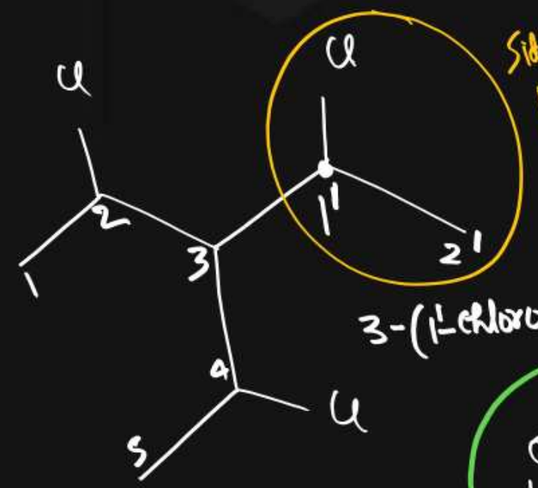
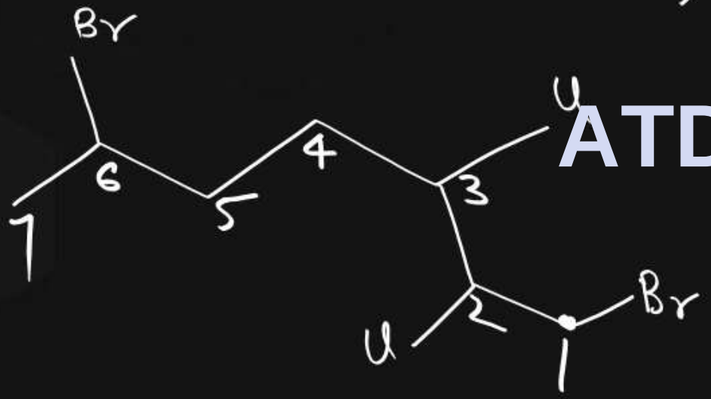


Side chain present within side chain

3-(1'-chloroethyl)-2,4-dichloro Pentane

(3)



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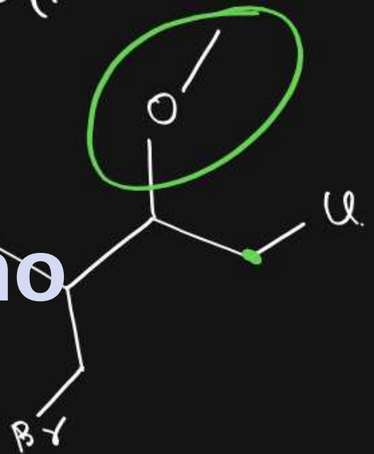
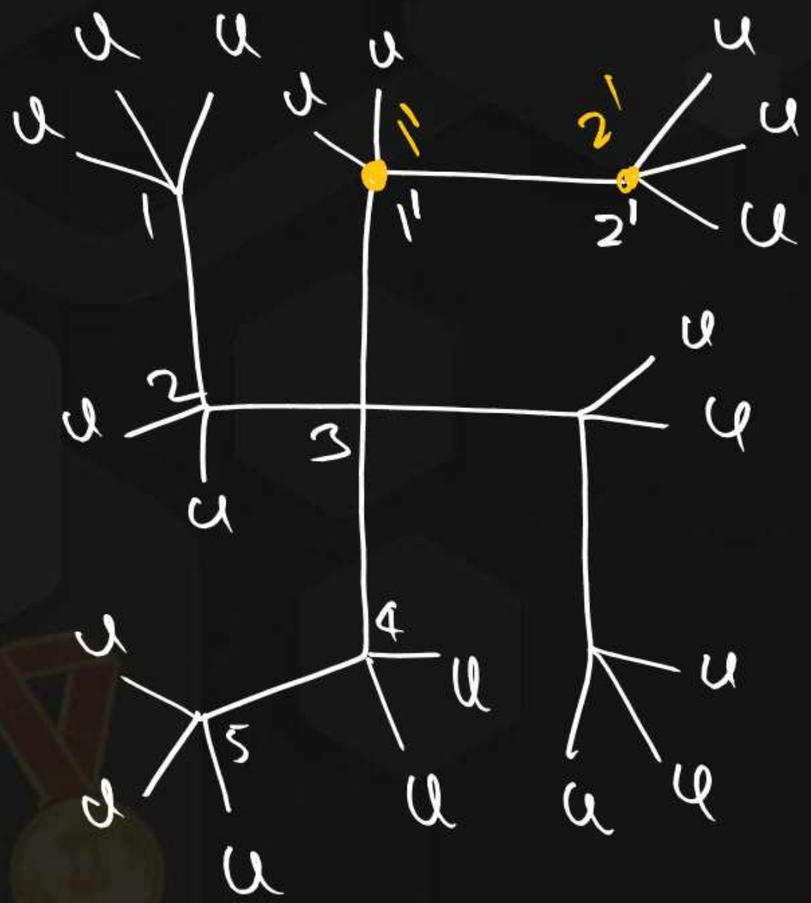


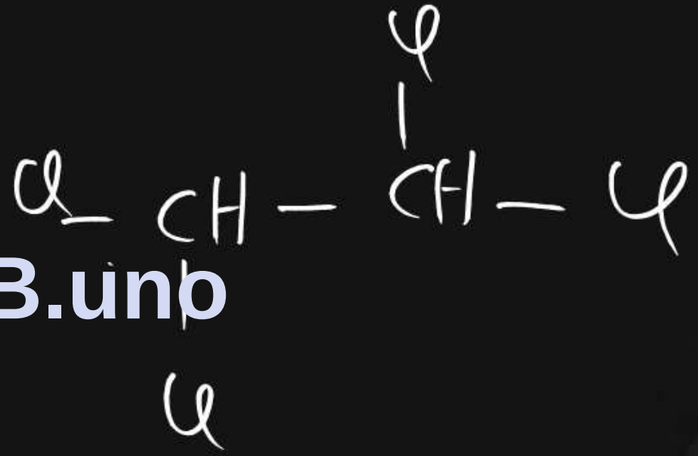
Alkoxy

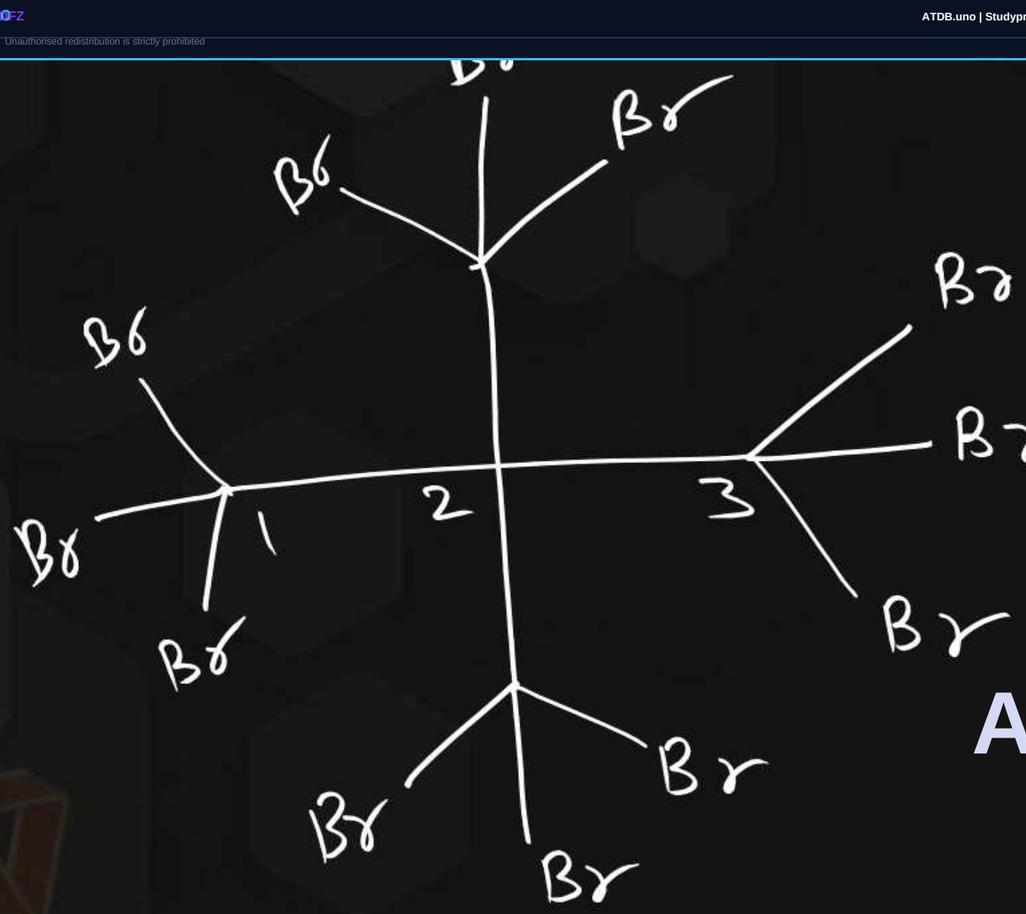
-O-R

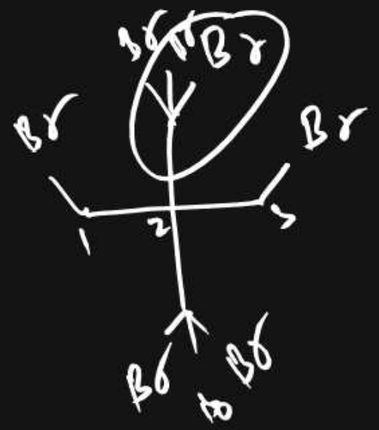
methoxy



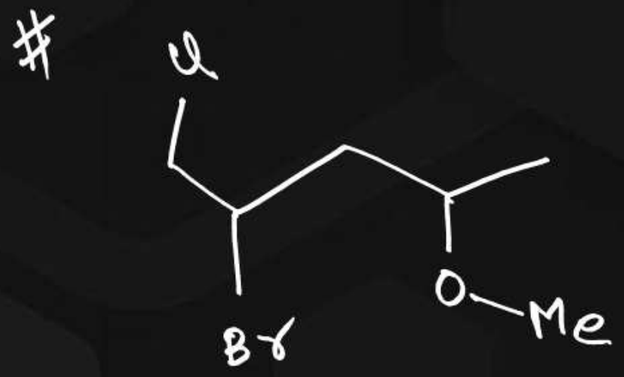
3,3-bis(1,1',2',2',2'-pentachloro ethyl)-1,1,1,2,2,4,4,5,5,5 decachloro Pentane

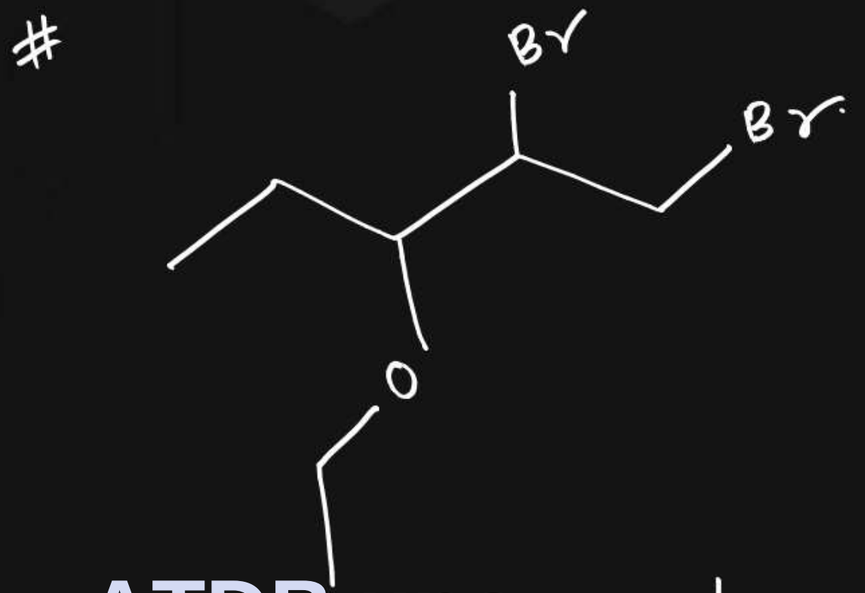


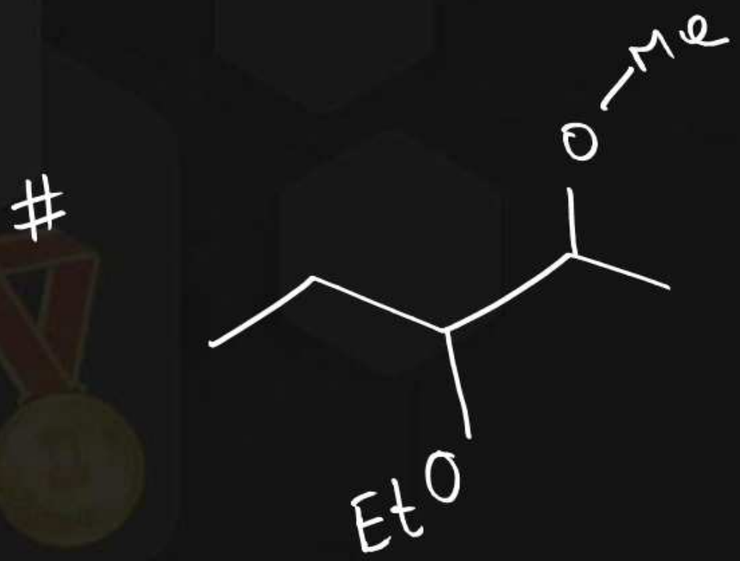


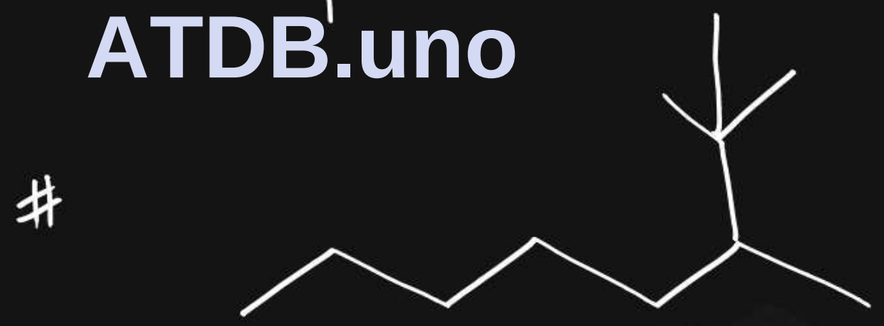


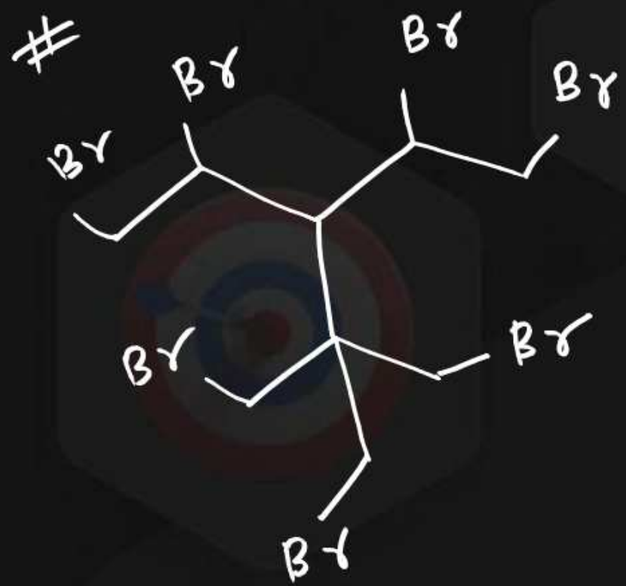
⇒ 1,1,1,3,3,3-hexabromo-2,2-tribromomethyl Propane

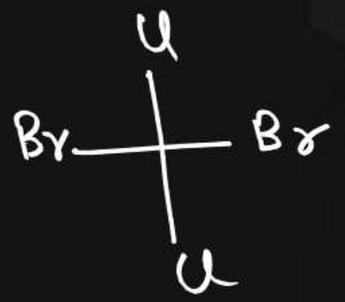










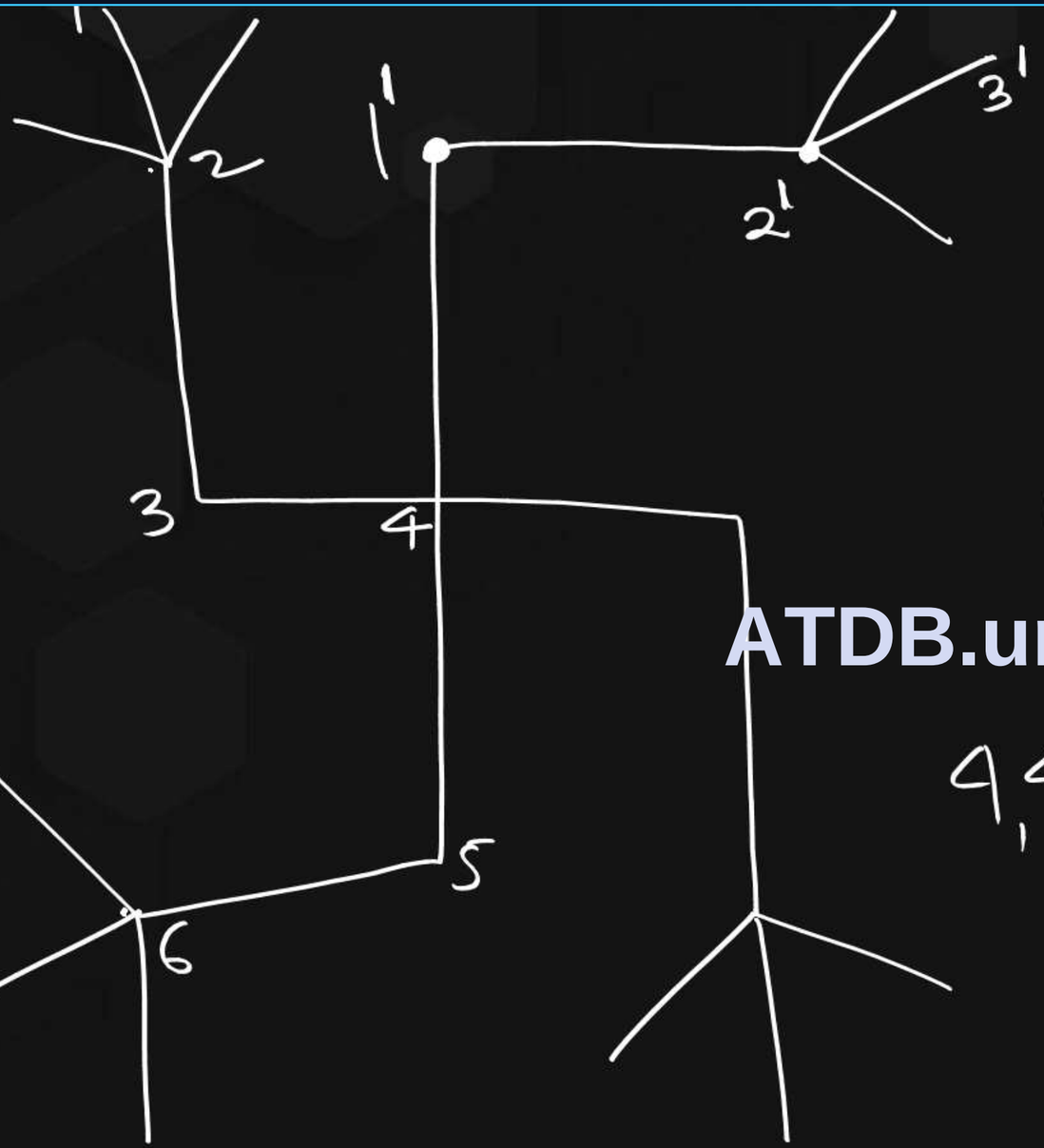


Side Chain within Side Chain

(1',1'-dimethyl ethyl)

(1'-methylpropyl)

5-( )-6-( )Decane



for complex chain

2 → bis

3 → tris

4 → tetrakis

(2',2'-dimethylpropyl.)

4,4-bis( )-2,2,6,6-tetramethyl

Heptane

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