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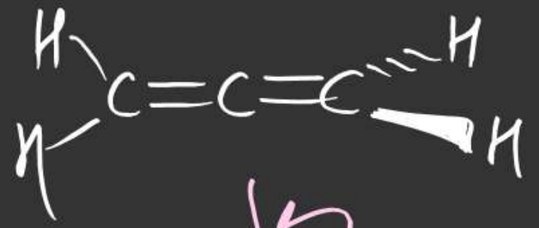
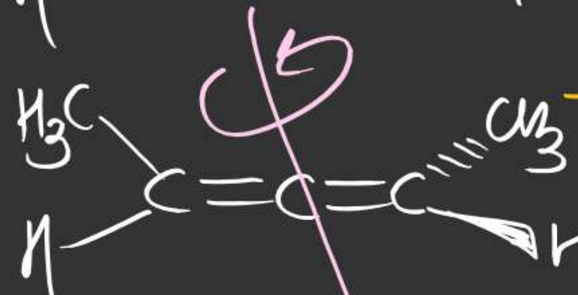
(55) 

POS	COS	AOS
2	NO	$3C_2$

(56) 

0	NO	$1C_2$

(57) 

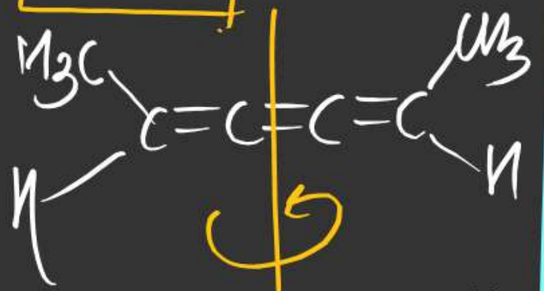
1	NO	NO

(58) 

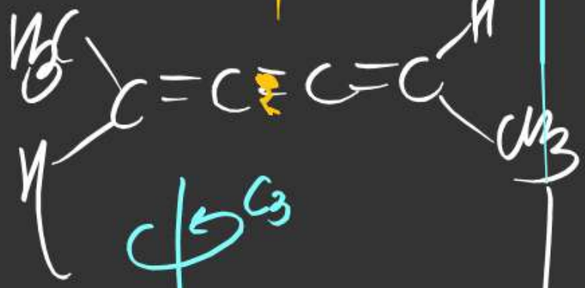
0	NO	$1C_2$

(59) 

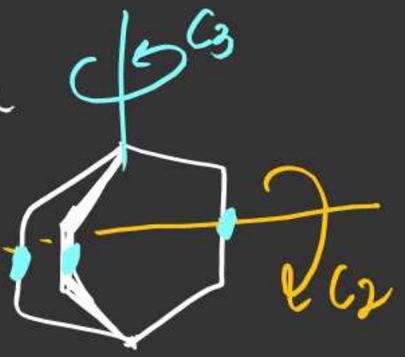
0	NO	$1C_2$

(60) 

2	No	$1C_2$

(61) 

1	yes	$1C_2$

(62) 

4	No	$1C_3 + 3C_2$

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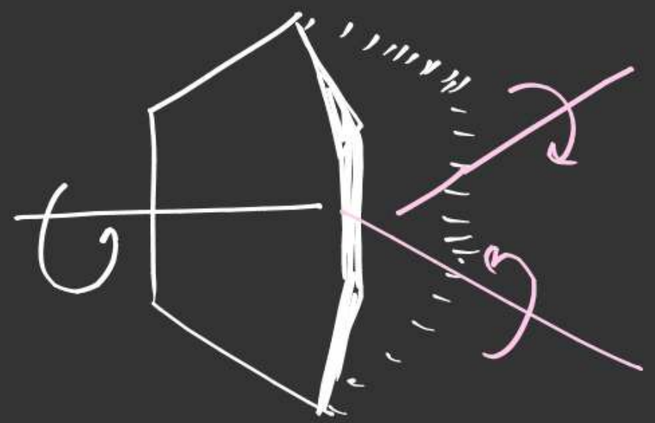


(iii) (1 page Blank)

(*) Optically Active Compound
- (*) $\alpha_{obs} \neq 0$
- (*) Chiral Compound
- (*) Resolvable Compound
- (*) Asymmetric Compound — "Cn" absent
- (*) Dissymetric Compound — "Cn" present

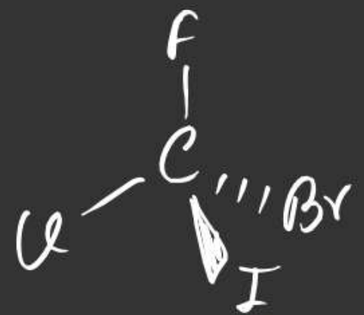
"Sn" absent (POS ✗, COS ✗)

(*) Optically Inactive Compound
- (✓) $\alpha_{obs} = 0$
- (*) Achiral Compound
- (✗) Non Resolvable Compound
- (✗) Symmetric Compound

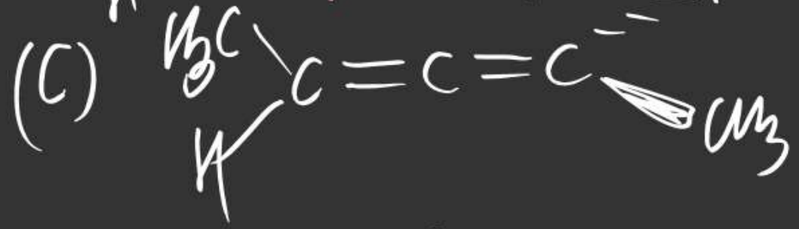
At least any one Sn must be present (POS or COS)

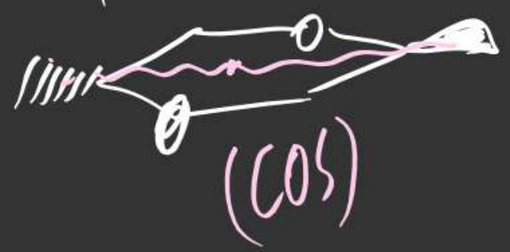
Note: Presence or absence of "Cn" is not a Criteria for optical Activity.

Ex-1 Match the following:

(A) 

(B) 

(C) 

(D) 

(P) Achiral Compound

(Q) Chiral Compound

(R) Dissymetric Compound

(S) Resolvable Compound

(T) Optically Active Compound

Ans:-

(A) Q, R, S, T

(B) P

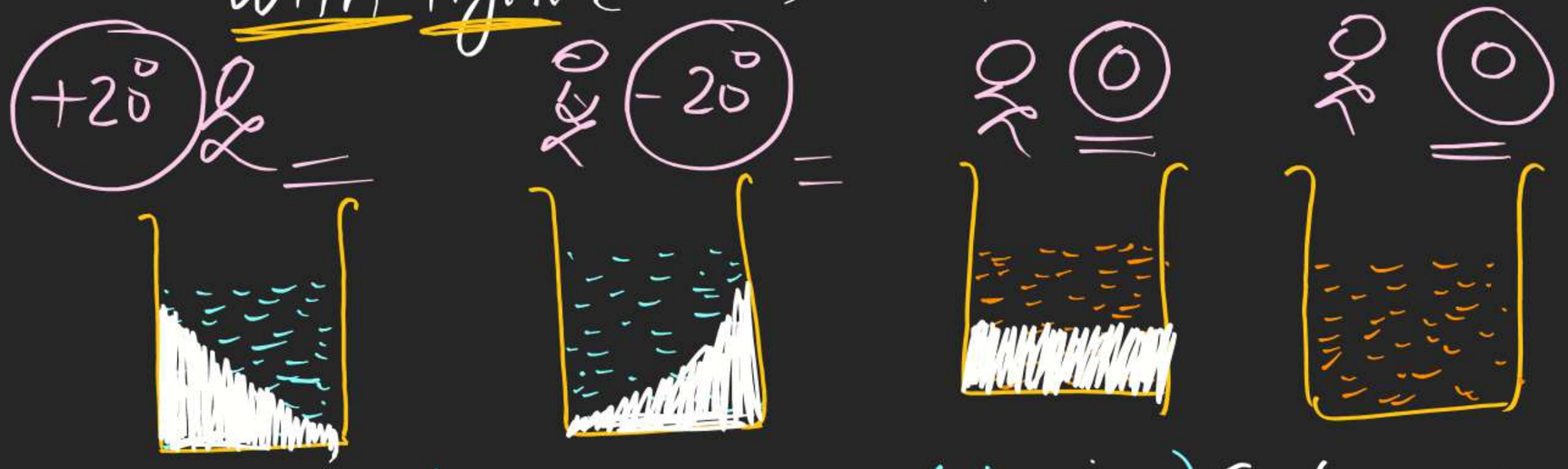
(C) Q, R, S, T

(D) P

Optical Isomerism

Compounds having same molecular formula & same structural formula But different behaviour with light ( ) are known as optical isomers

Ex-1:-



($\alpha_{obs} = +\theta$) ($\alpha_{obs} = -\alpha$) ($\alpha_{obs} = 0$)

Not showing optical isomerism

$\alpha_{obs} = 0$

$\alpha_{obs} = (+\alpha) + (-\alpha)$

Showing optical isomerism

Showing Optical isomerism

showing optical isomerism

Optically Active

Optically Inactive

Ex-2: Compound X & Y Both are having same molecular & same structural formula. On passing (PP) Light from Containers Containg X & Y respectively following observations has been made. Comment on X & Y.

$(\alpha_{obs})_X = +12^\circ$

$(\alpha_{obs})_Y = +15^\circ$

Observation-1:

$\Rightarrow$ Both X & Y are showing optical isomerism

$\Rightarrow$ ——— optically Active

$\Rightarrow$ ——— different Compound.

$\Rightarrow$ ——— optical isomers of each other

$\Rightarrow$ ——— Rotating PPL in clockwise direction.

Observation-II: $(\alpha_{obs})_X = +10^\circ$ $(\alpha_{obs})_Y = -10^\circ$

$\Rightarrow$ X is Rotating clockwise & Y is Rotating Anticlock wise.

$\Rightarrow$ X & Y Both are mirror images of each other.

Observation-III: $(\alpha_{obs})_X = +15^\circ$ $(\alpha_{obs})_Y = 0^\circ = (+\alpha) + (-\alpha)$

$\Rightarrow$ Both X & Y are showing optical isomerism.

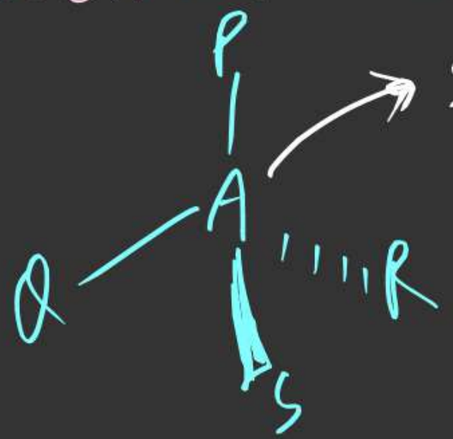
Observation - IV

$(\alpha_{obs})_x = 0°$

$(\alpha_{obs})_y = 0°$

(#) Chiral Centre (Asymmetric centre):

⟹ A sp^3 hybridised centre having all four different valencies are known as chiral centre



$P \neq Q \neq R \neq S$

⟹ Any one from P, Q, R & S may be lone pair

A is a chiral centre!

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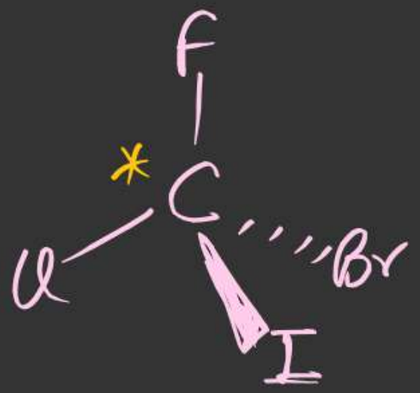
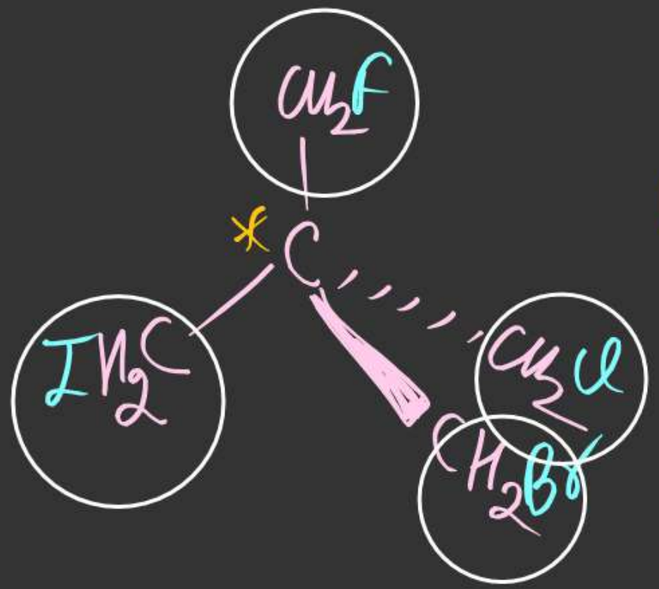
(1)



(CC=1)

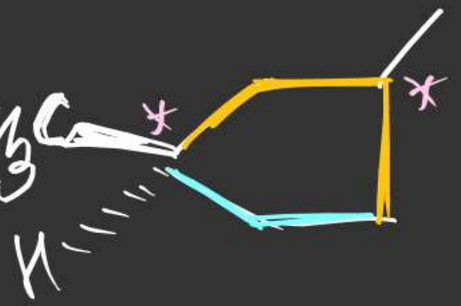
(2)



(CC=1)

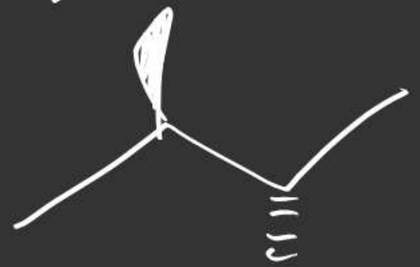
(3)

(4)



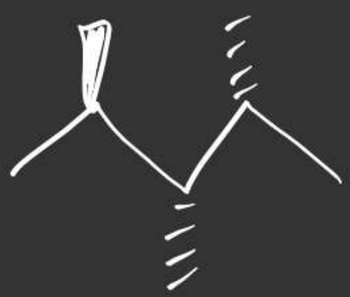
(5)

(6)



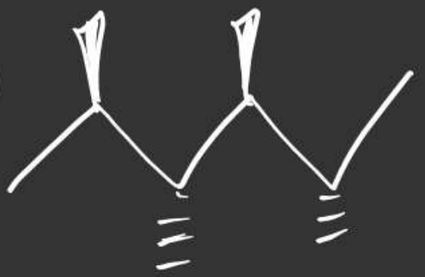
CC=O

(7)

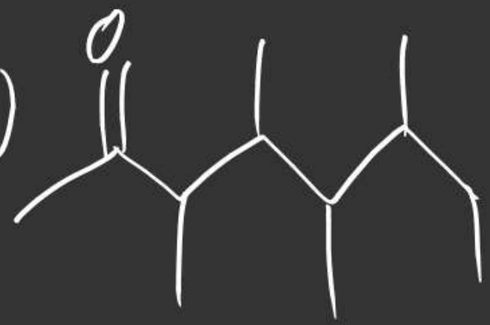


(CC=2)

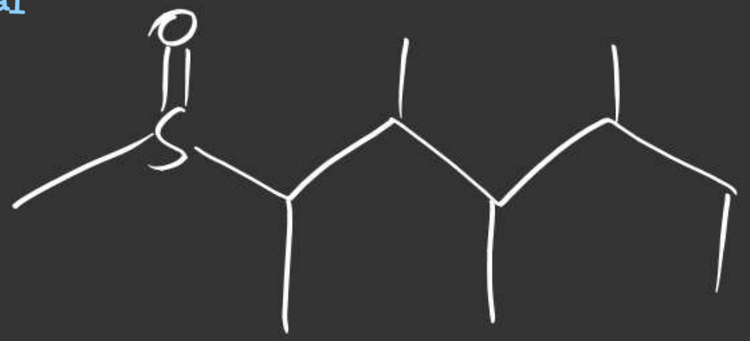
(8)



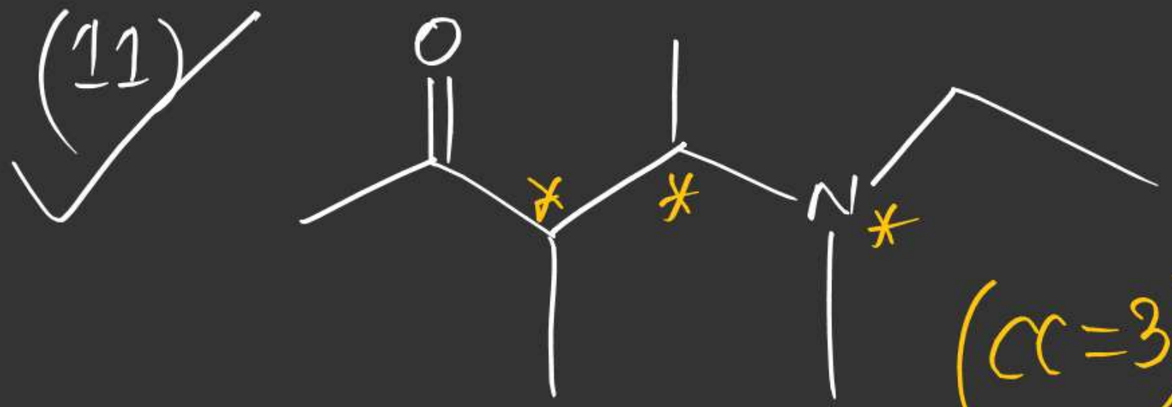
(9)



(10)

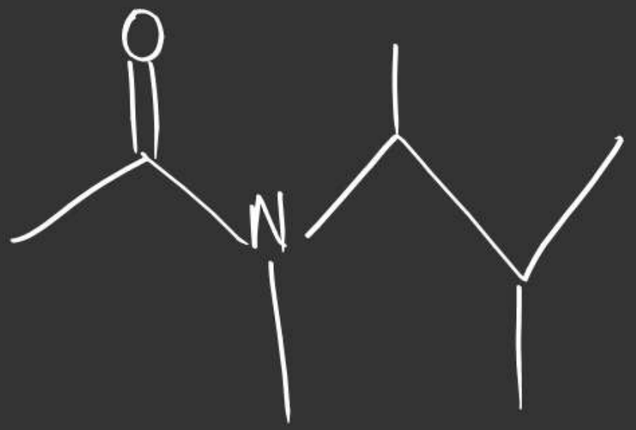


(11)

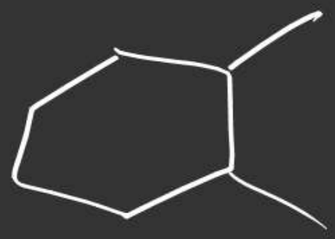


$(\alpha = 3)$

(12)



(13)



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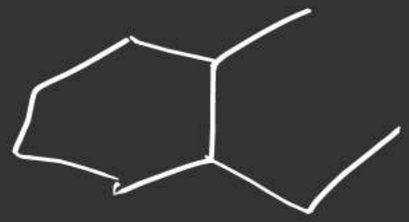
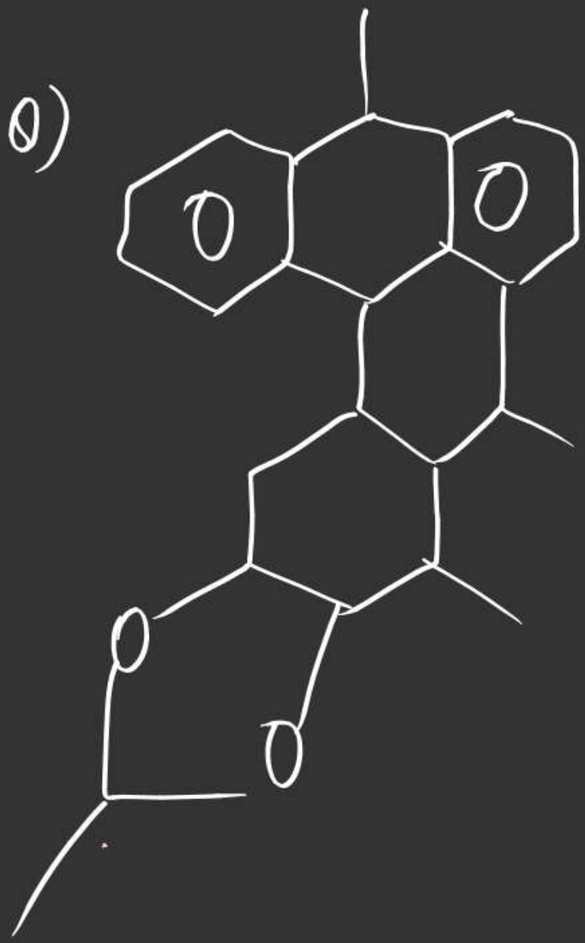


(15)

(16)

(17)

(18)



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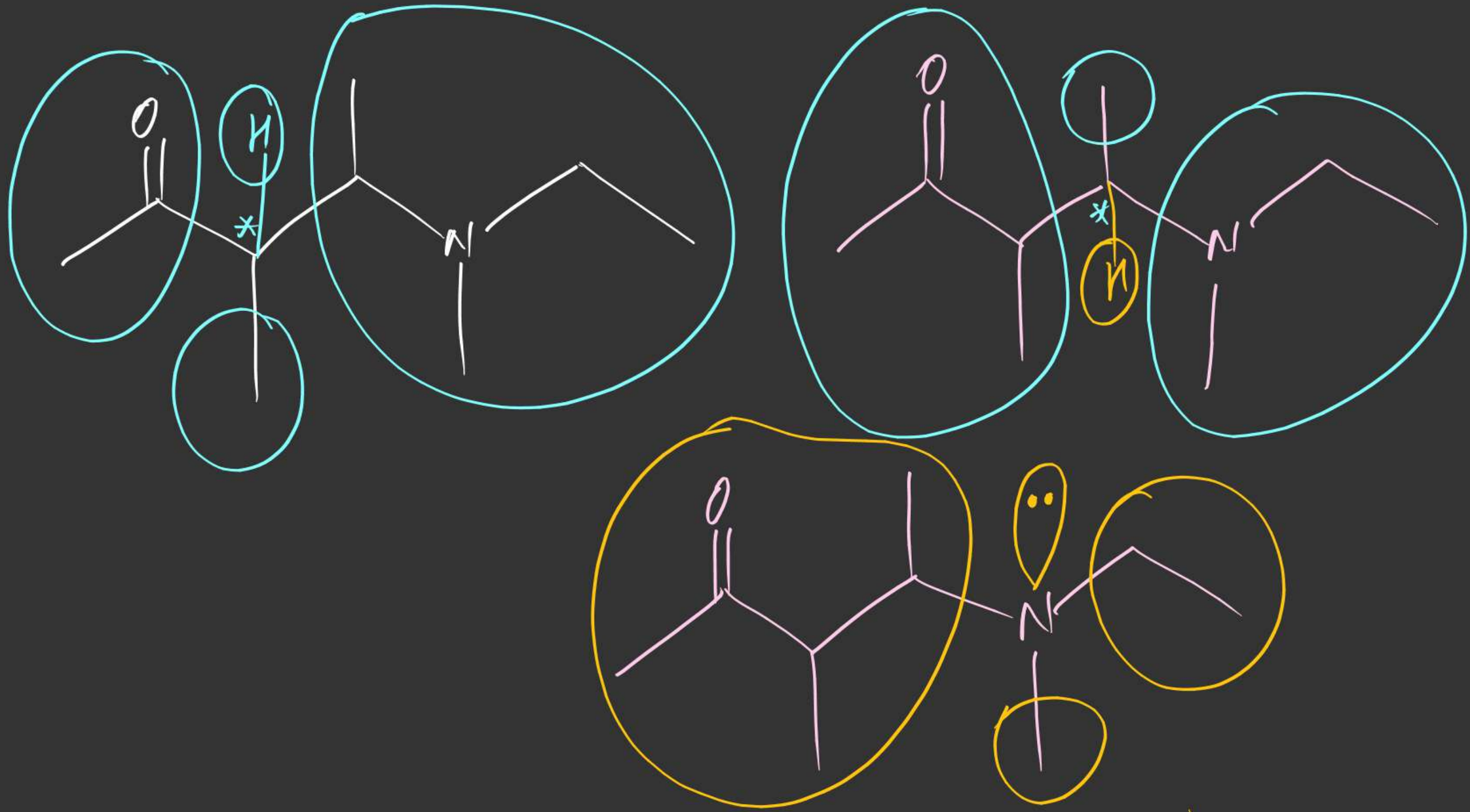

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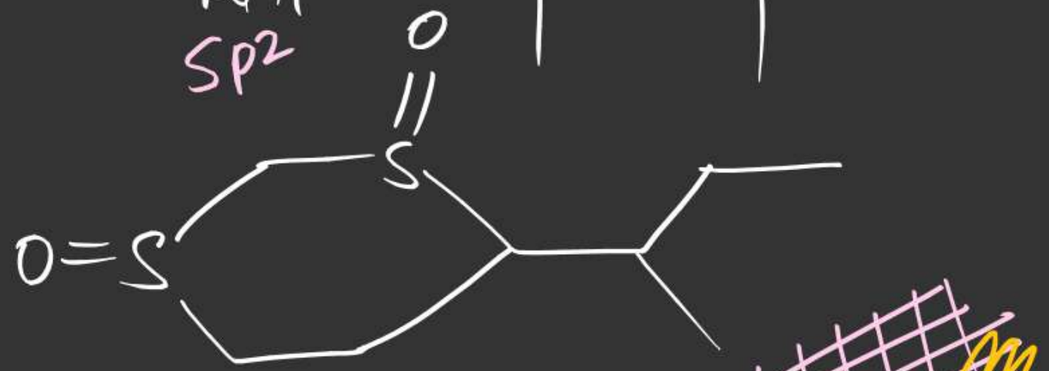
(19)

(CC=3)

(20)



(21)