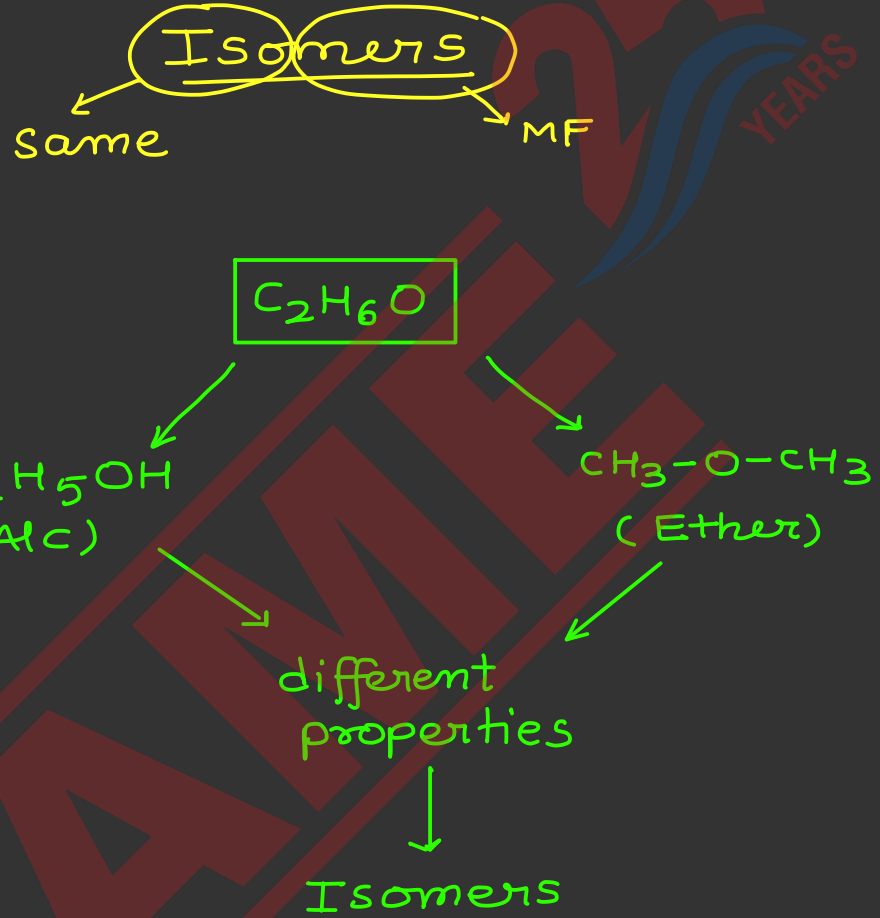
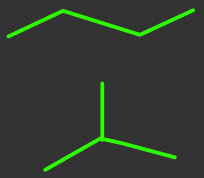
ISOMERISM

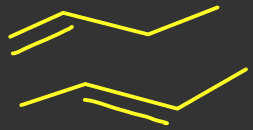

Isomers
Same
MF
C_2H_6O
C_2H_5OH
(Alc)
CH_3-O-CH_3
(Ether)
different
properties
Isomers

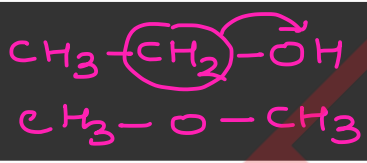
Change in Bonding Pattern

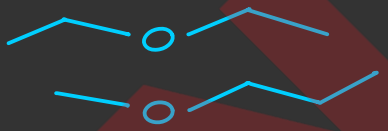
Isomers

- Structural iso. (constitutional)
  - 1) chain
  - 2) Position
  - 3) Functional
  - 4) Metamers
- Stereo iso









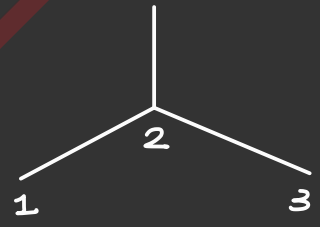
chain isomers : (Nuclear isomers)

→ " Different length of Carbon chain.

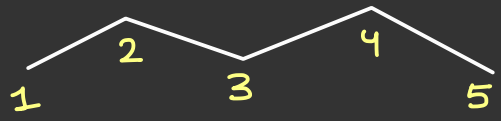
(i.e. parent or side chain)

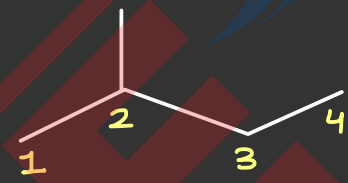
Hint: Never do branching on terminal-C

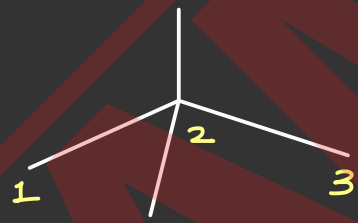
Ex: C_4H_{10} :



Ex: C_5H_{10} :

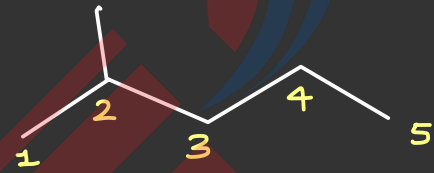


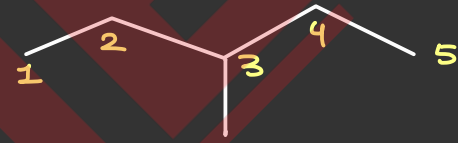


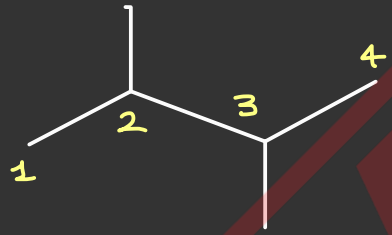


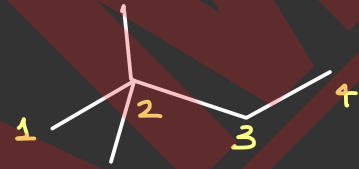
NAME
YEARS

Ex: C_6H_{14} :







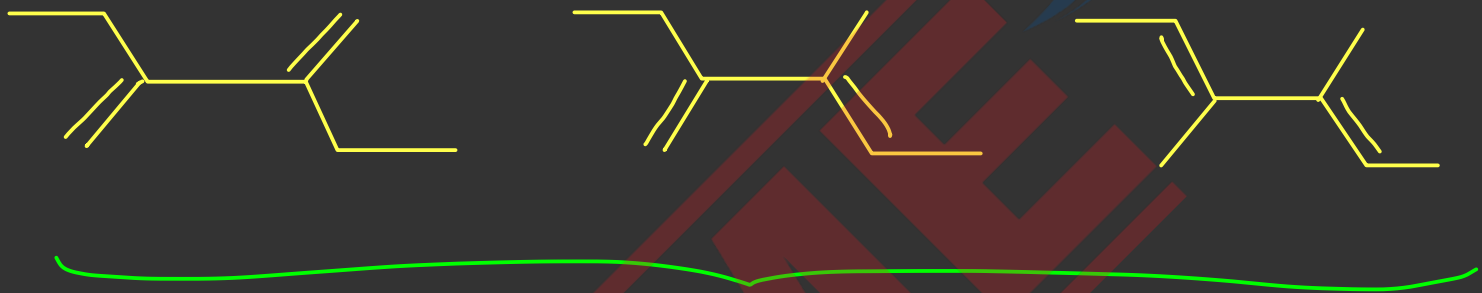


NAME
YEARS

Q: Identify the chain isomers?

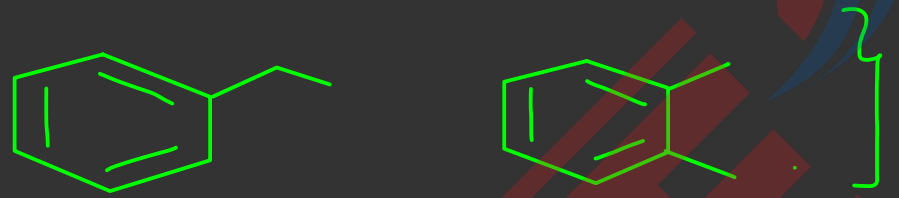
(D) & (E) are "NOT" chain isomers. as there is NO difference in the length of C-chain.

Q: Identify the isomers ?



chain isomers

Q: Identify the isomers ?



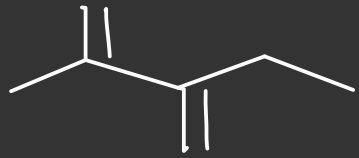
chain isomers.

Q: Identify the isomers ?

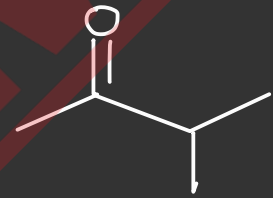
chain isomers

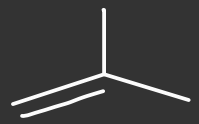
Q: Identify the isomers?

A)

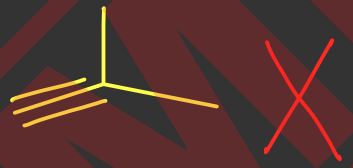


B)



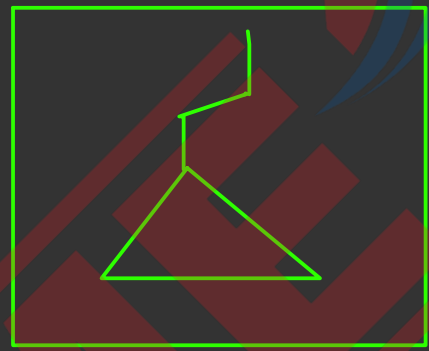
D) 

For Alkene, min 4C are required to show chain isom. but in Alkyne min. 5C.

E)  C-valency is 5 Here

that's why – min 5C – required

Q. Draw the chain isomers of given structure —



Position isomers :

→ Different position of substituent or multiple bond or Functional group in a given length of C-chain.

Ex:

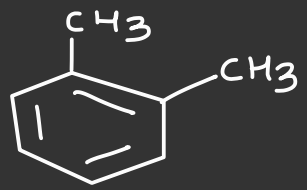
But-1-ene

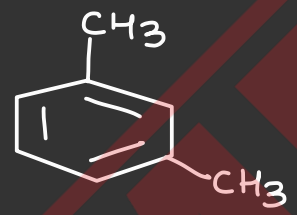
But-2-ene

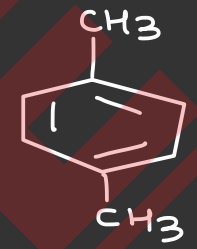
Ex: $CH_3-CH_2-C\equiv CH$ $CH_3-C\equiv C-CH_3$

Ex:

Ex:

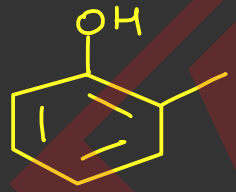


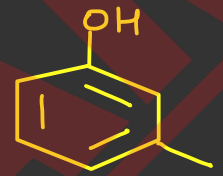


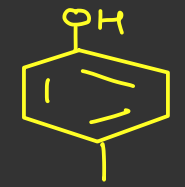


o, m, p
xylene

Ex:

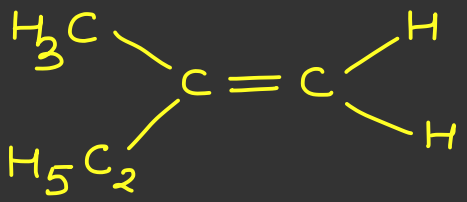


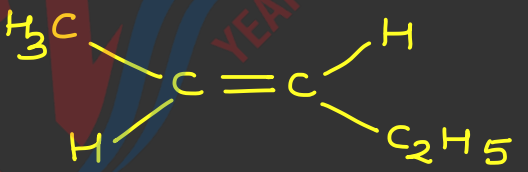




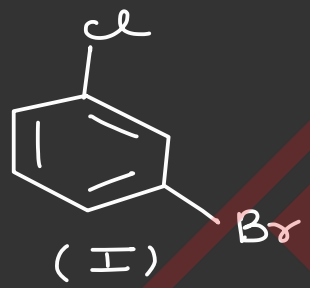
o, m, p
cresol

Ex :

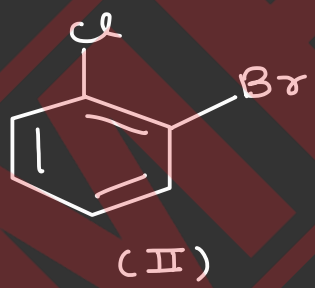




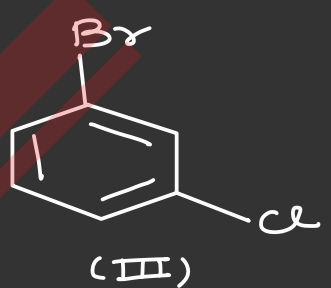
Ex :



(I)

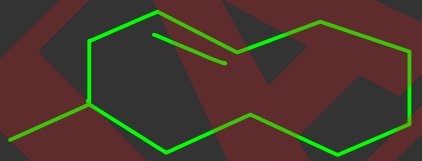


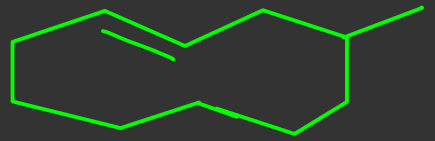
(II)



(III)

Ex :





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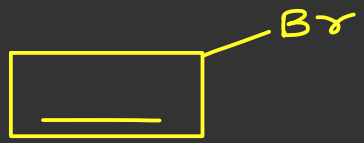
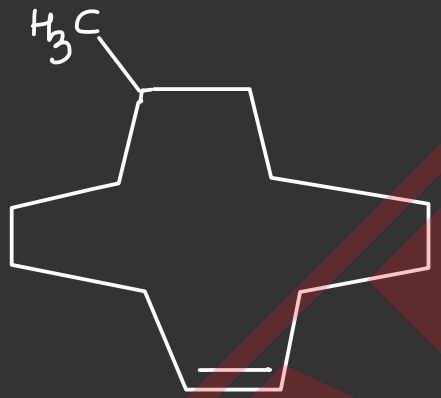


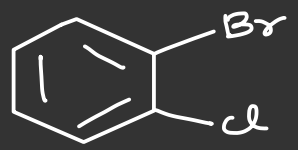
Ex:

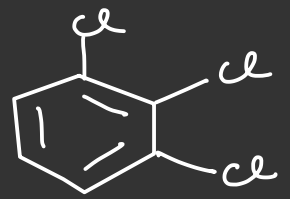


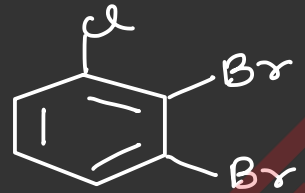
(K)

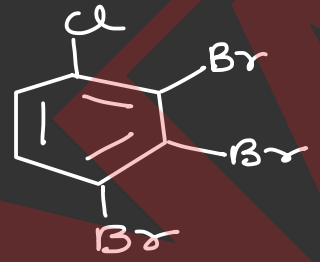
(L)

Q: Draw the position isomer of following -

1) 

2) 

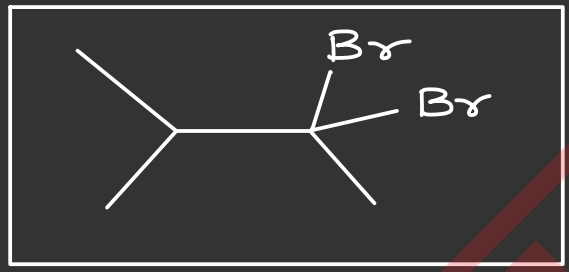
3) 

4) 

Q: Find the position isomers of

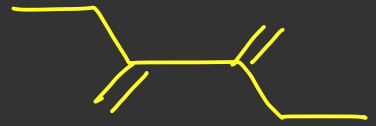
(Excluding given structure)

Q: Draw the position isomers of given structure



Hint:

A) If two structures are given



I) Ist check M.F (they are isomers or NOT)
II) IInd check parent chain
III) IIIrd numbering.

B) If condensed M.F. is given i.e.
(C_4H_6, C_4H_8, C_3H_6O)

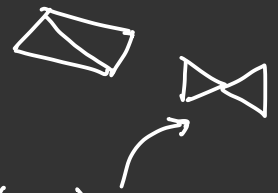
I) Ist check DBE.

Functional isomers :

↳ These isomers have diff. functional groups.

1. C_nH_{2n} = Alkene, cycloalkane

2. C_nH_{2n-2} = Alkyne / diene / cycloalkene / Bicyclo / spiro



3. C_nH_{2n-2} = Alcohol / Ether

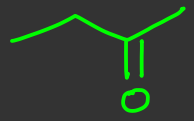
4. $C_nH_{2n}O$ = Aldehyde / Ketone / unsat. alc / unsat. ether / cyclic alc. / cyclic ether

5. $C_nH_{2n}O_2$ = Carboxylic acid / Esters

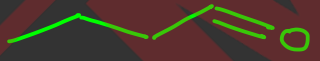
6. $C_nH_{2n+3}N$ = 1°/2°/3° amines

Q: Identify the given isomers ?

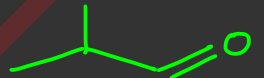
A)



(P)



(Q)



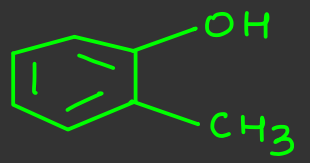
(R)

(P, Q) =

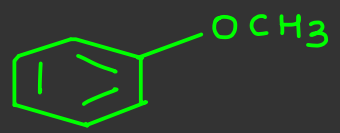
(Q R) =

(P R) =

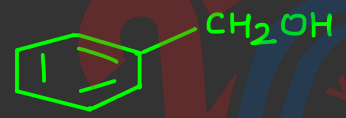
B)



(K)

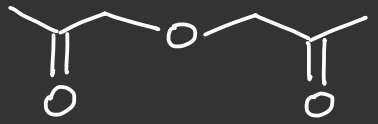


(L)

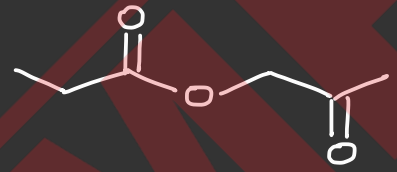


(M)

C)



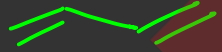
(R)



(S)

(T)

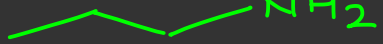
D)



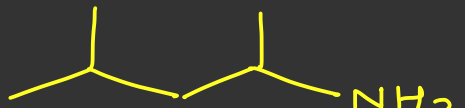
(P)

(Q)

E)



F)

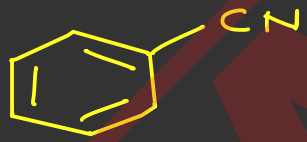


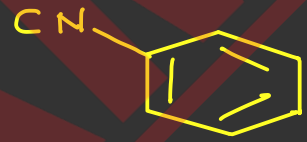
(P)

(Q)

(R)

G)





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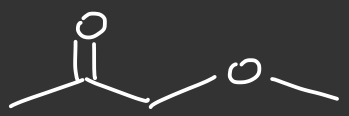
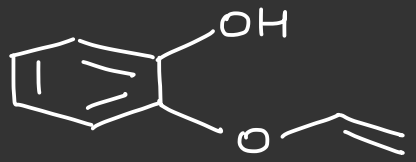


I)



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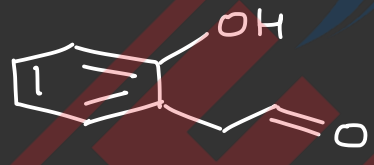

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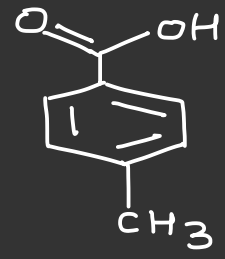

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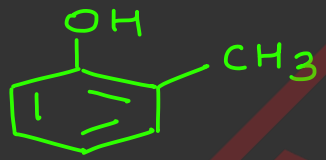
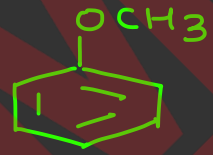
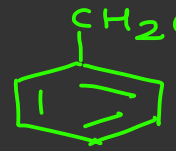






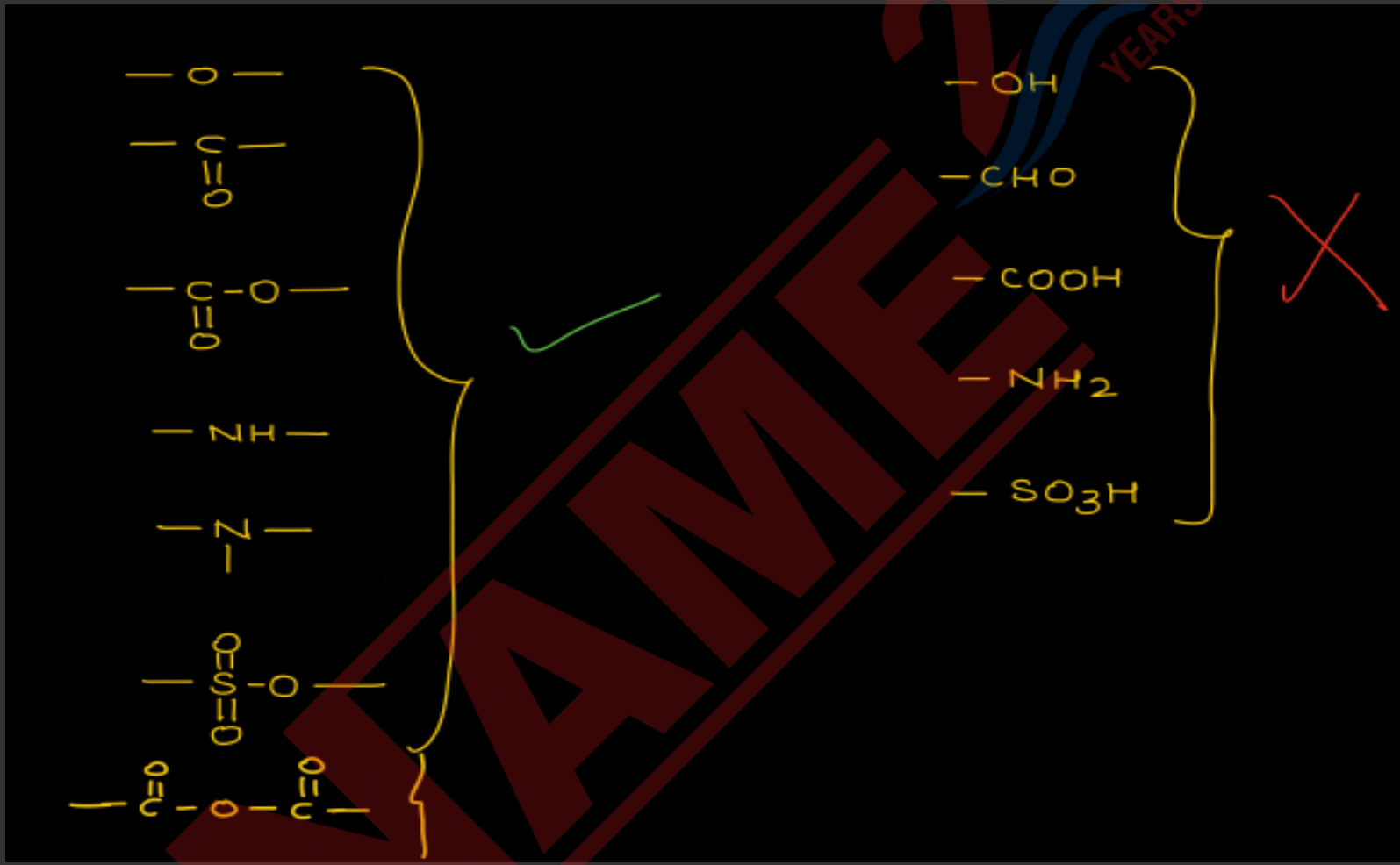
C_7H_8O

Metamers :

→ Isomers which have

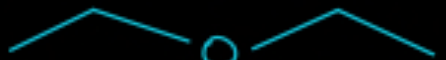
same bivalent / Polyvalent functional group

but diff. ALKYL group either side of F.G.



—O—
—C—
O
—C—O—
O
—NH—
—N—
—S—O—
O
O
—C—O—C—
O
O
—OH
—CHO
—COOH
—NH2
—SO3H

$C_4H_{10}O$:



Meta & Position

Q.: will this show Metamerism?

$CH_3-CH_2-O-CH_3$ ether

↓

$CH_3-CH_2-CH_2-\underbrace{O-H}_{alc}$

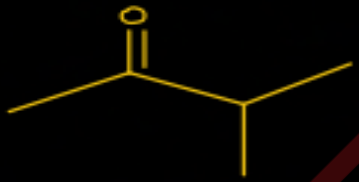
Funct. gp changed

~~NO~~ metamerism.

$C_5H_{10}O$:

A)

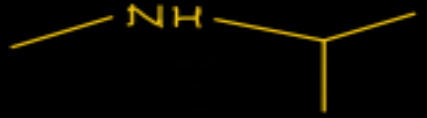
B)

C) 

$C_4H_{10}NH$:

A)

B)

C) 

(A-B) = Meta / position
(B-C) = Meta / chain
(C—A) = Meta / chain

Q: Identify the Metamers ?

Thio ether

A)

B)

C)

D)

NAME 2 YEARS