

ULTIMATE KCET



CRASH COURSE 2026

Chemistry

Lecture – 01

Alcohols, phenols and ethers

By – Sreeja Ma'am

Physics Wallah



Recap *of previous lecture*



1 Haloalkanes and Haloarenes – Physical properties

2 Haloalkanes and Haloarenes – Chemical properties

MCA-P/Q

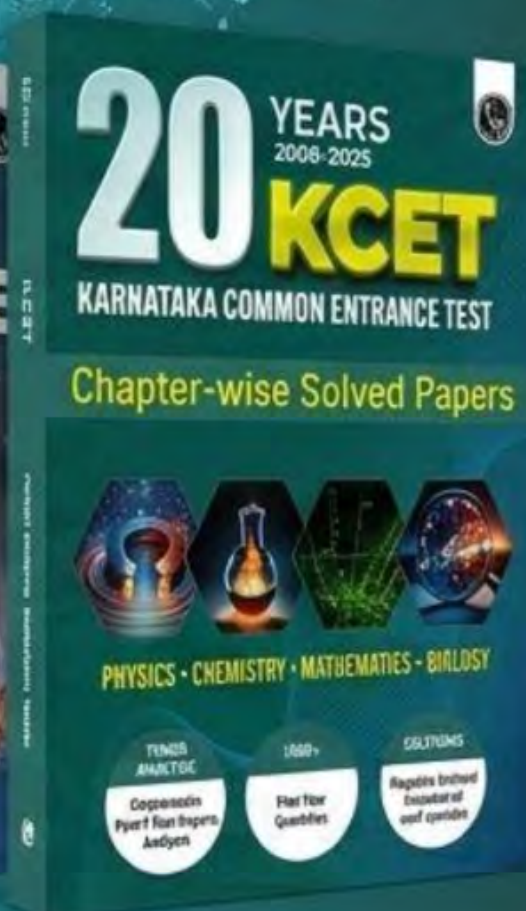
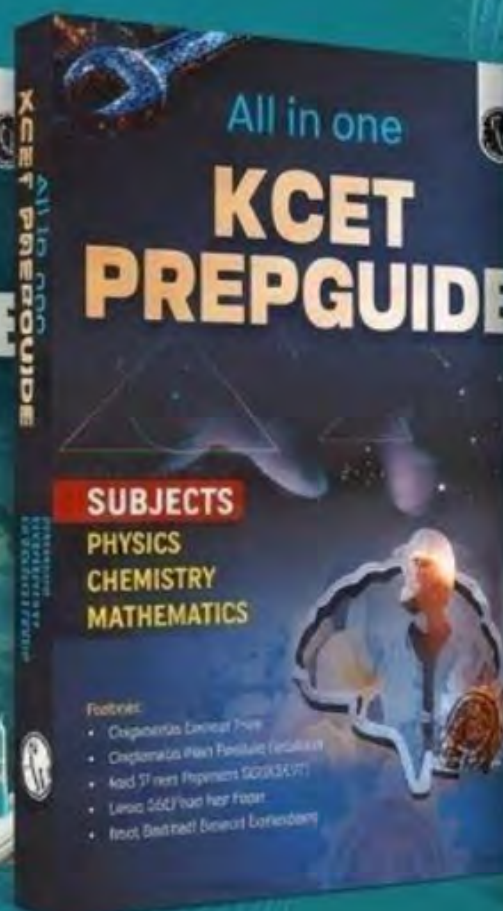
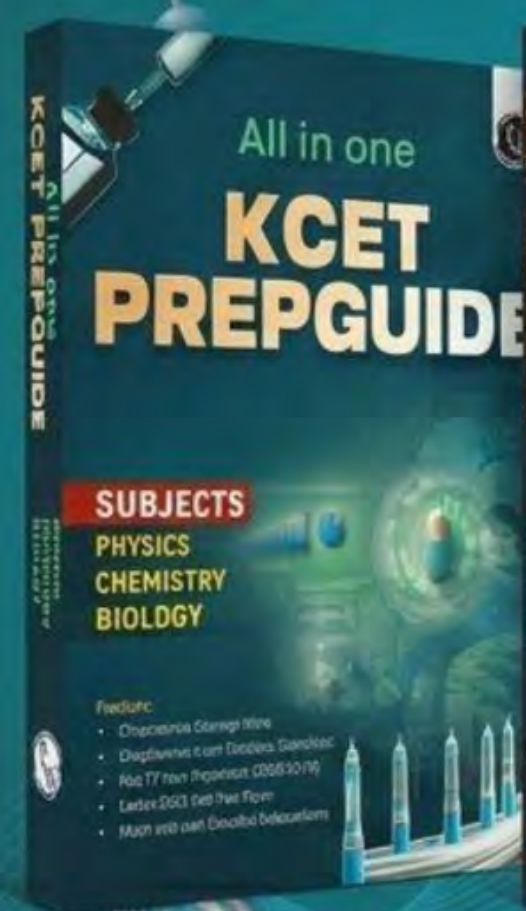
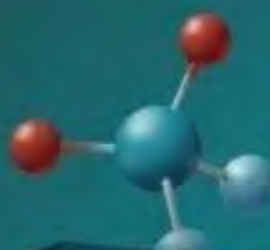


Topics *to be covered*

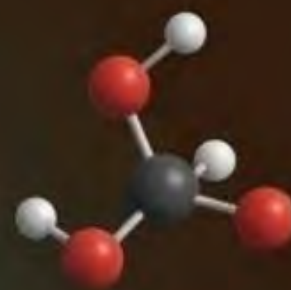


- 1 Optical activity – Haloalkanes and Haloarenes – Continuation
- 2 Alcohols, phenols and ethers – Synopsis
- 3 MCQ's ✓

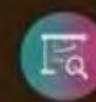




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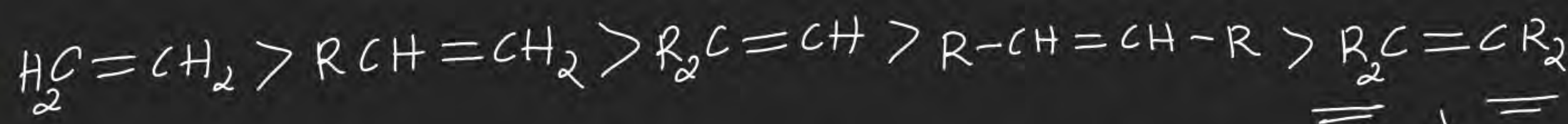
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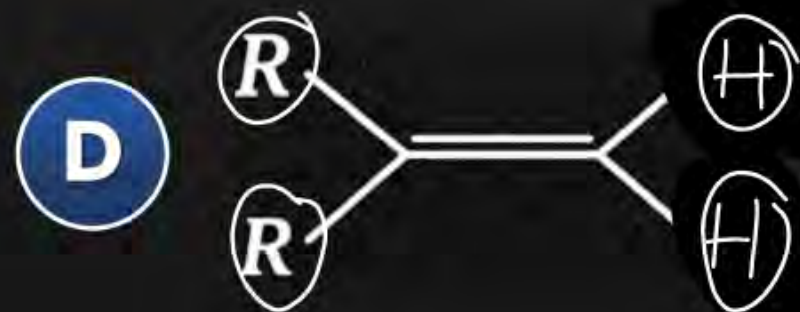
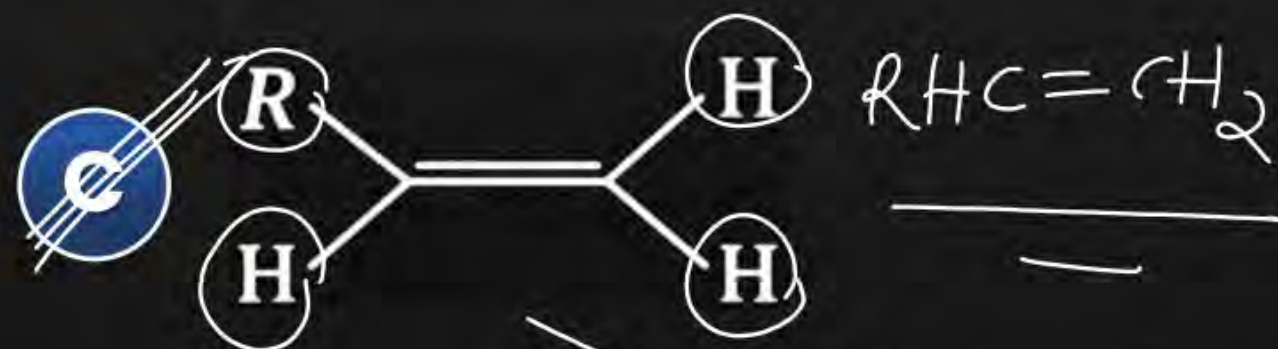
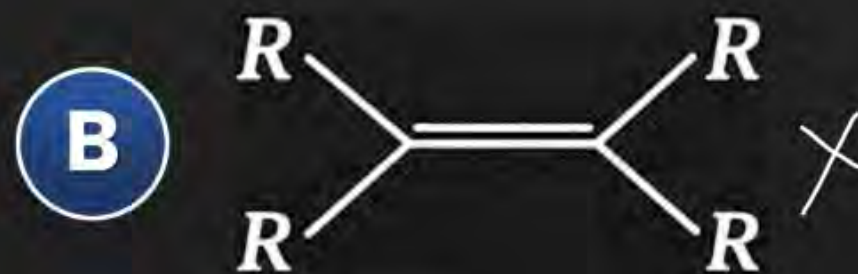
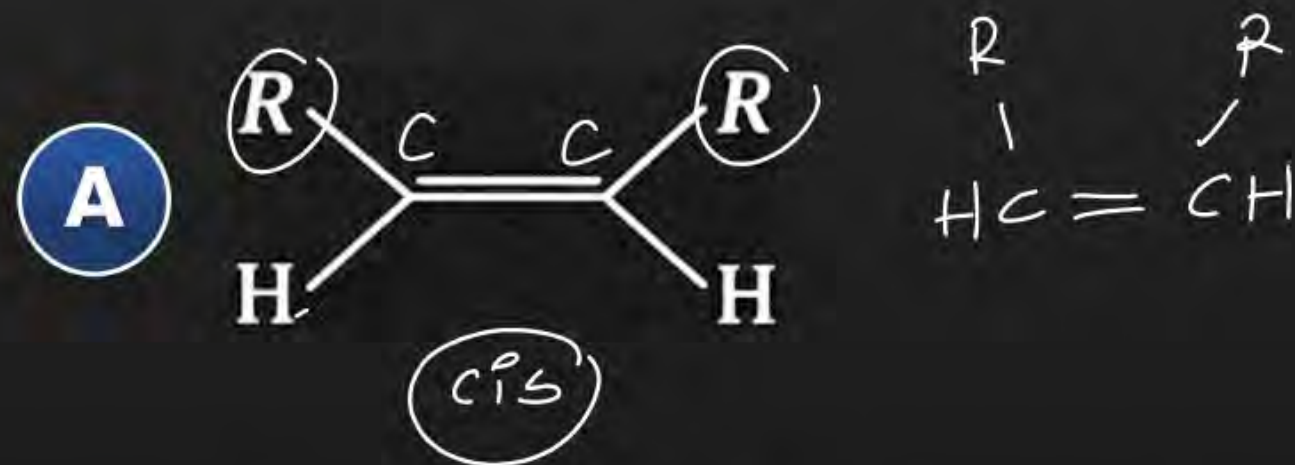
Store

Question



Which one of the following alkenes will react fastest with H_2 under catalytic hydrogenation condition?

more stable
↓
less reactive

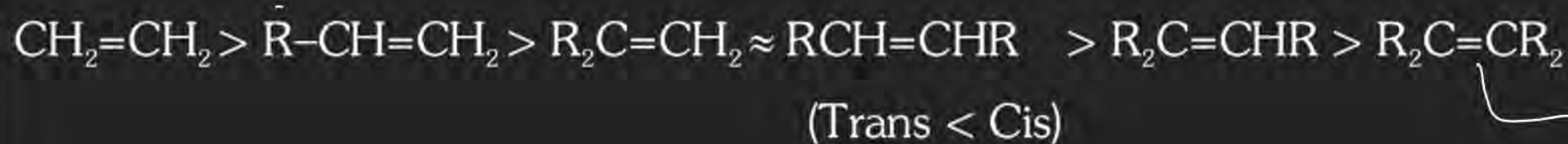


fast react
less stable

VIMP → 99.1

The reactivity order for alkenes –

VIMP



Stable

The reactivity order of alkenes has been delt in terms of heat of hydrogenation of alkene, more is the heat of hydrogenation ($\Delta H = -ve$), more is the reactivity.

$$\text{Stability} \propto \frac{1}{\text{Reactivity}}$$

Aromaticity (Huckel's rule) : Cyclic, planar and completely conjugated system with $(4n+2)\pi$ electrons (where $n = 0, 1, 2, 3, \dots$) is known as aromatic compounds, these compound gains extra stability which is known as aromaticity.

Note : $[4n + 2] \pi$ electrons. (Odd number of π electron pairs) means

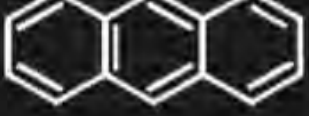
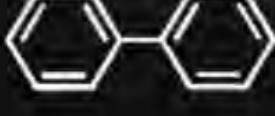
If $n = 0$ 2π electrons or 1 pair

$n = 1$ 6π electrons or 3 pairs

$n = 2$ 10π electrons or 5 pairs

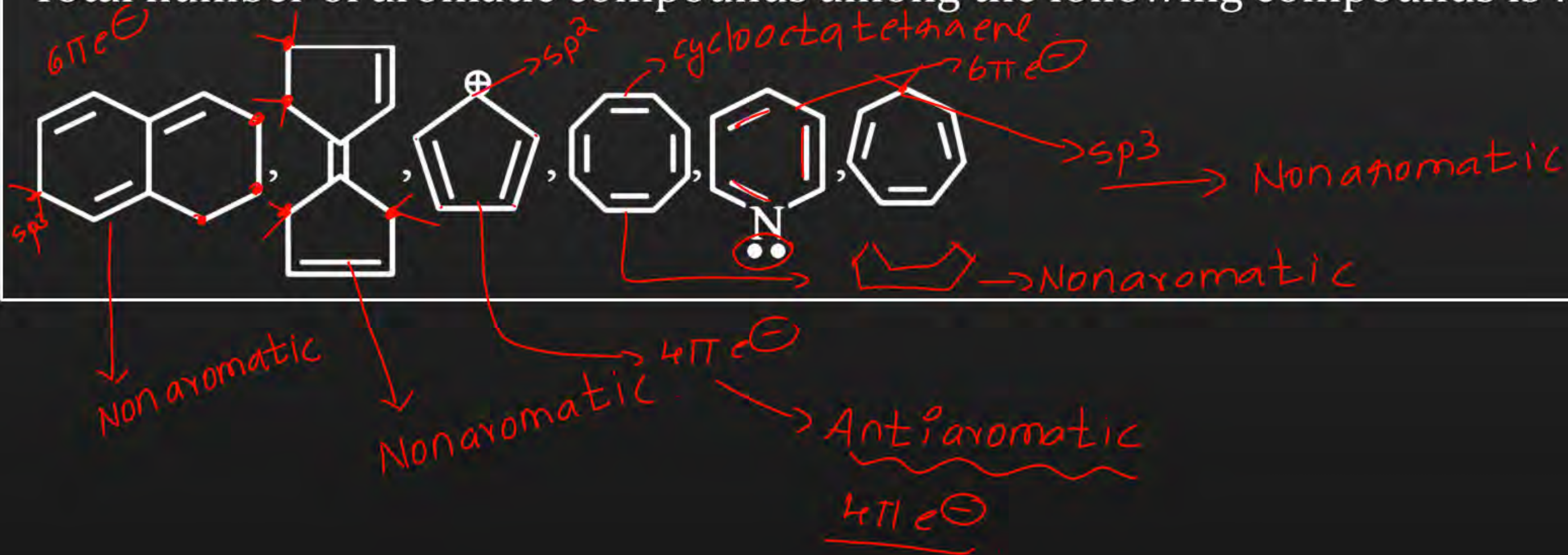
$n = 3$ 14π electrons or 7 pairs

S.No	Compound	Cyclic	Plannar	Cyclic Resonance <i>Conjugati</i>	Huckel Rule $(4n+2) \pi e^-$	Aromatic Yes/No
1.		✓	✓	✓	$2\pi e^-$	Yes
2.		✓	✓	✓	$4\pi e^-$	No
3.		✓	✓	✓	$4\pi e^-$	No
4.		✓	✓	✓	$6\pi e^-$	Yes
5.		✓	✓	✓	$6\pi e^-$	Yes
6.		✓	✗	✗	$4\pi e^-$	No
7.		✓	✓	✓	$6\pi e^-$	Yes
8.		✓	✓	✓	$6\pi e^-$	Yes

9.		✓	✓	✓	$6\pi e^-$	Yes
10.		✓	✓	✓	$6\pi e^-$	Yes
11.		✓	✓	✓	$6\pi e^-$	Yes
12.		✓	✓	✓	$10\pi e^-$	Yes
13.		✓	✓	✓	$14\pi e^-$	Yes
14.		✓	✓	✓	$6\pi e^-$	Yes
15.		✓	✗	✗	$6\pi e^-$	No
16.		✓	✓	✓	$6\pi e^- + 6\pi e^-$	Yes

Question

Total number of aromatic compounds among the following compounds is ³.....



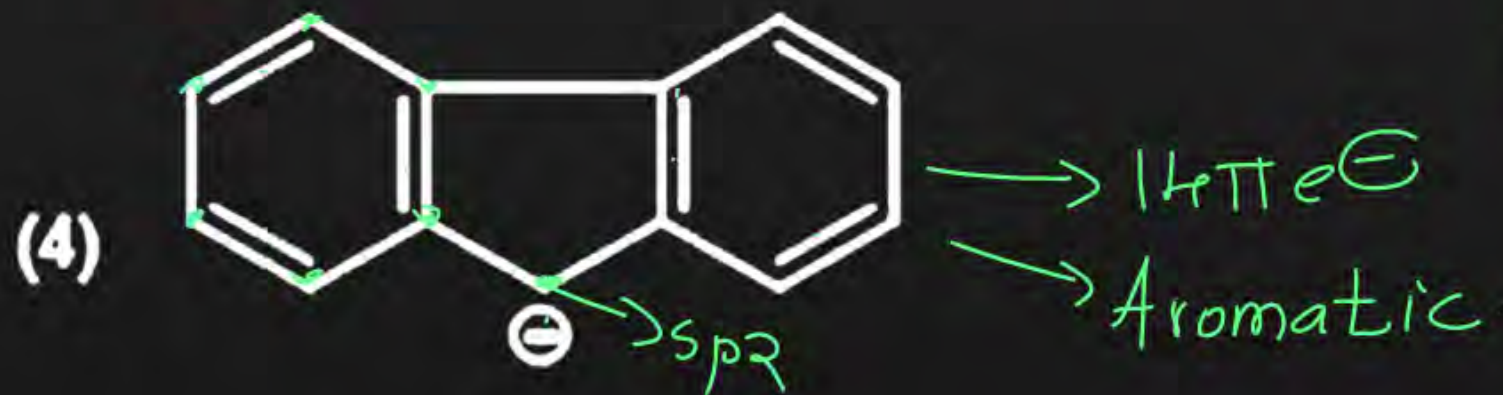
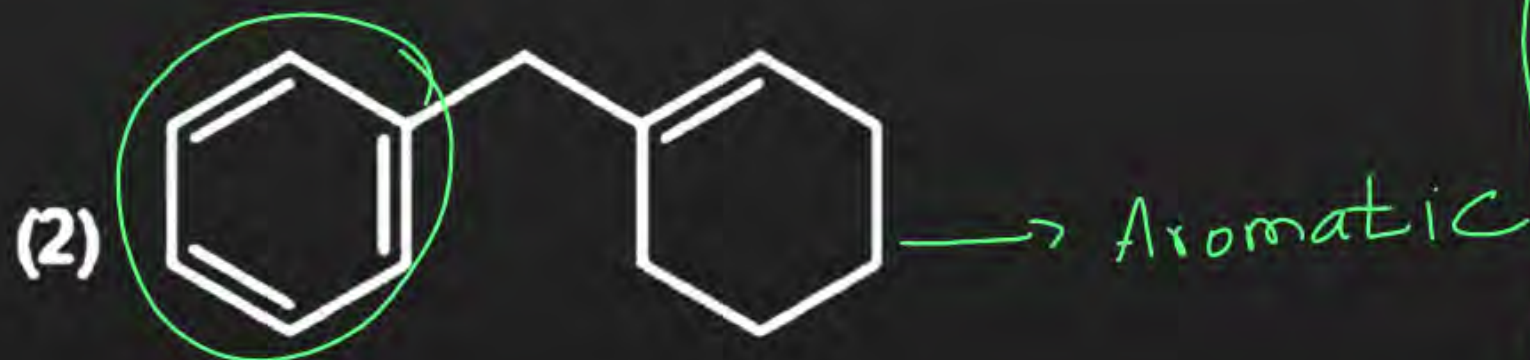
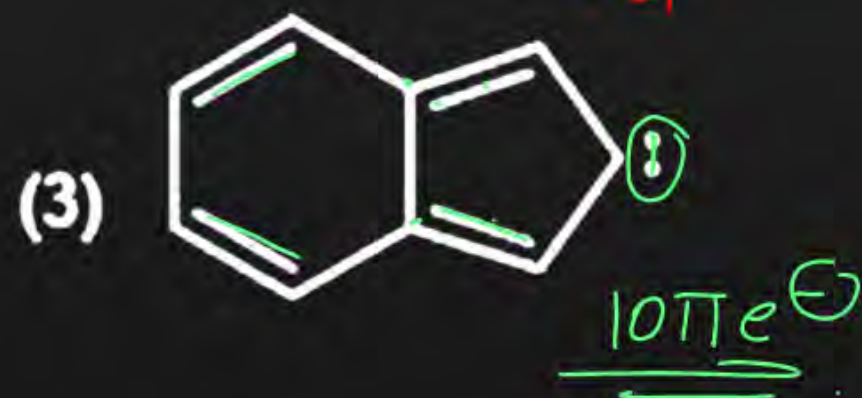
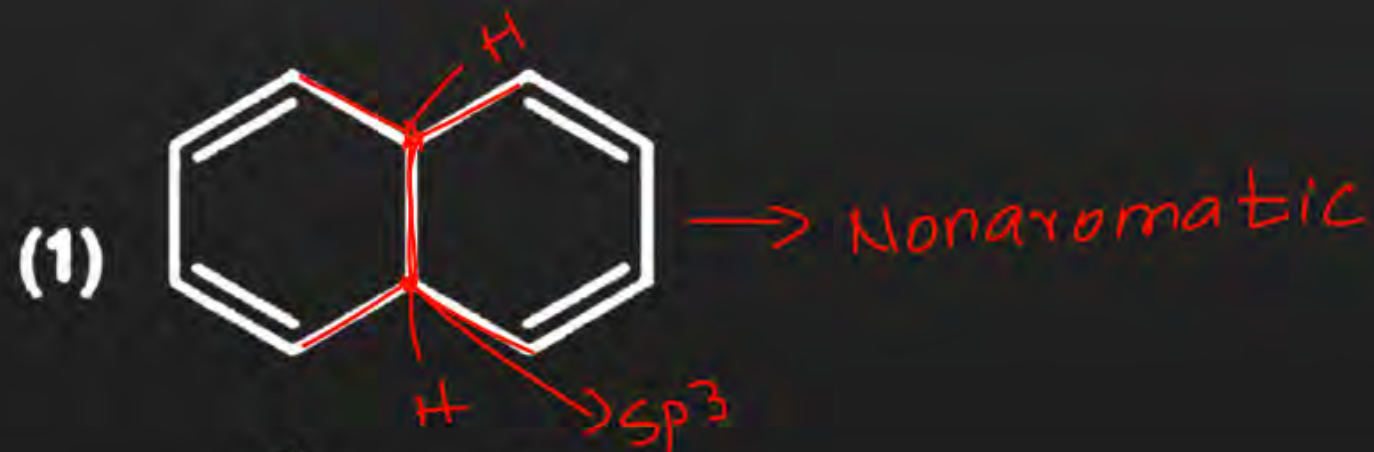
Question



$$(4n+2)\pi e^-$$

Among the given organic compounds, the total number of aromatic compounds is

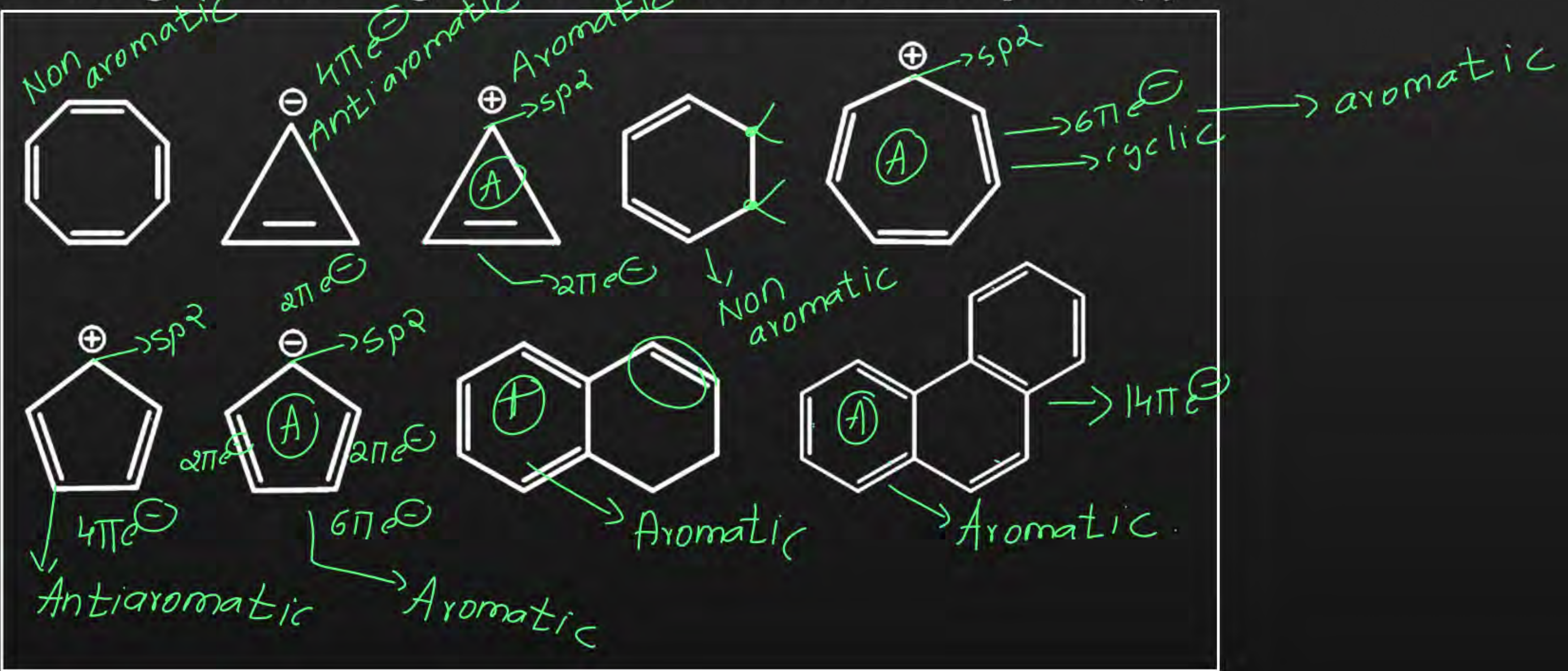
.....



2 π
6 π
10 π
14 π
18 πe^-

Question

Among the following, the number of aromatic compound(s) is



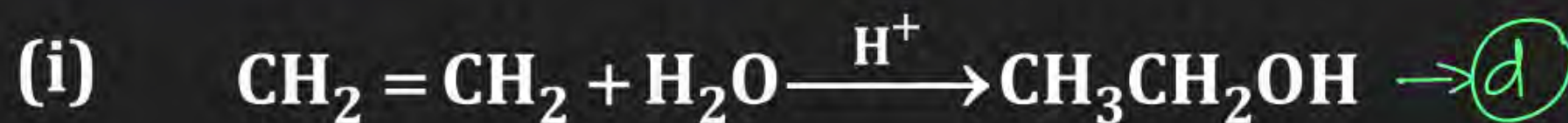
Question – Homework



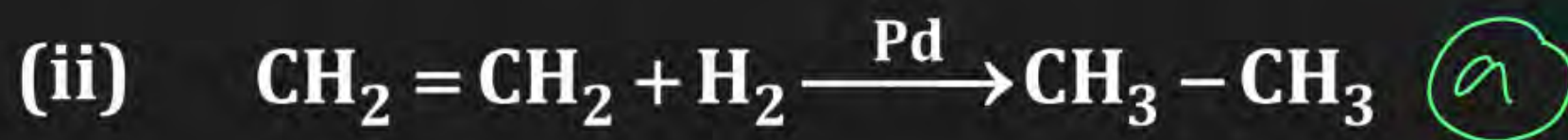
Match the reactions given in Column I with the reaction types in Column II:

Column-I

Column-II



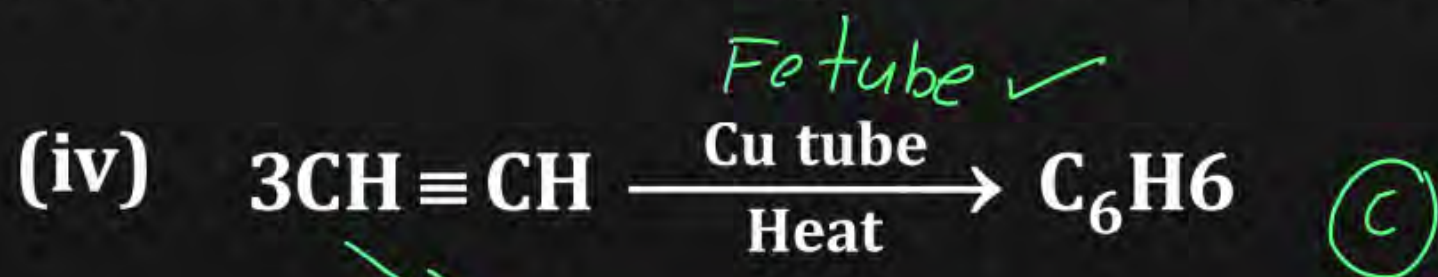
(a) Hydrogenation



(b) Halogenation



(c) Polymerisation



(d) Hydration

(e) Condensation

$\rightarrow$ Cyclic polymerisation

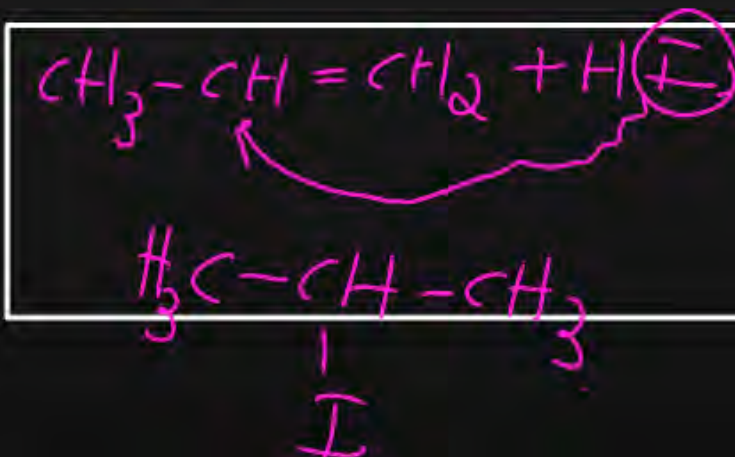
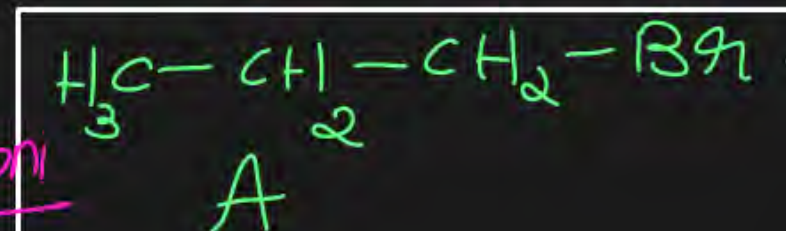
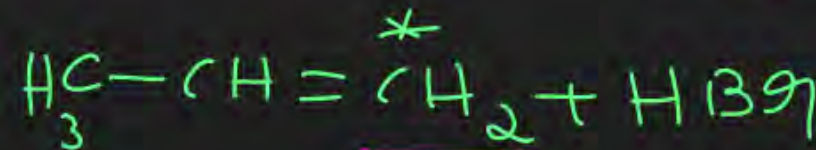
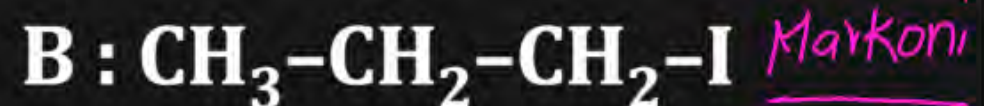
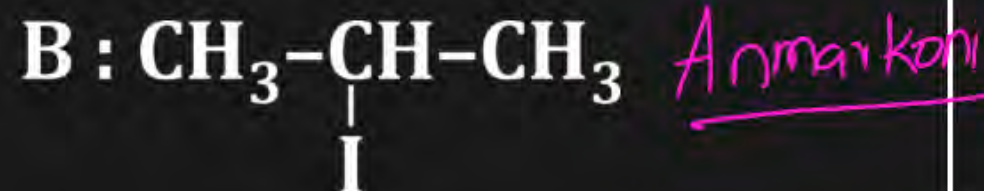
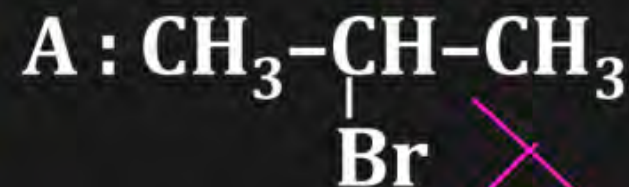
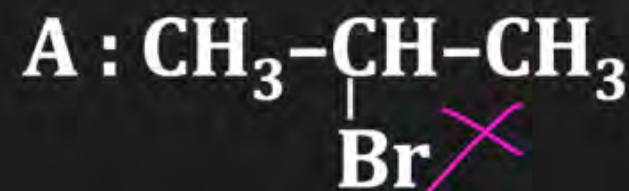
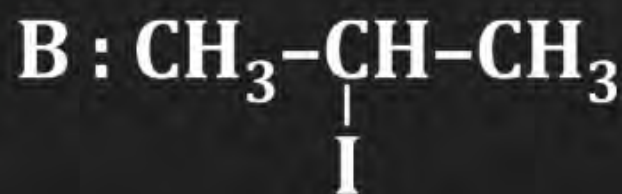
Question

Identify, A and B in the following reaction

(2022)

HBr (Benzoyl peroxide)

Propene $\xrightarrow{\text{HI}}$ A (Major product)
B (Major product)



Question

Match the following

Column I

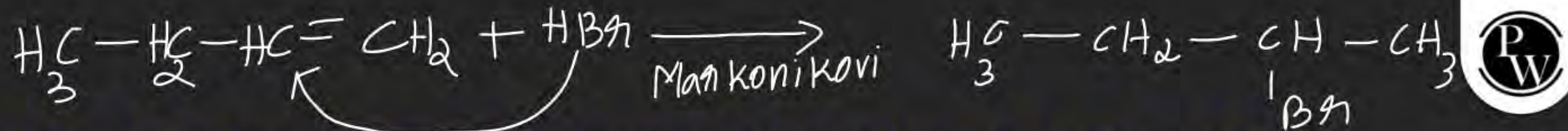
Column II

- | | |
|---------------------|-----------------------|
| (i) Chloramphenicol | (a) Malaria |
| (ii) Thyroxine | (b) Anaesthetic |
| (iii) Chloroquine | (c) Typhoid fever |
| (iv) Chloroform | (d) Goiter |
| | (e) Blood substituent |

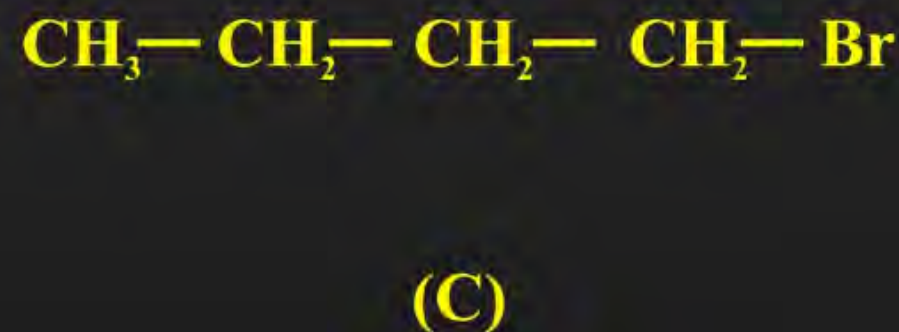
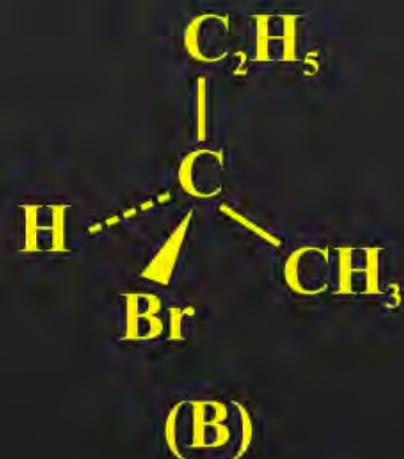
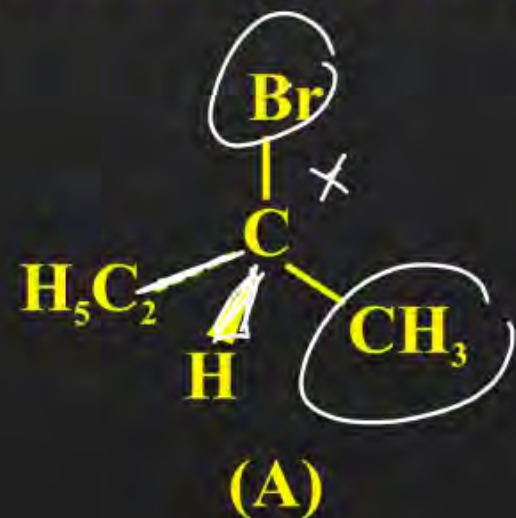
↓
fluorinated compound.

- **(i) Chloramphenicol → (c) Typhoid fever**
→ It is an antibiotic used to treat typhoid.
- **(ii) Thyroxine → (d) Goiter**
→ A hormone used to treat thyroid deficiency (goiter).
- **(iii) Chloroquine → (a) Malaria**
→ An antimalarial drug.
- **(iv) Chloroform → (b) Anaesthetic**
→ Previously used as an anaesthetic.

Question



The addition of HBr to 1-butene gives a mixture of products A, B and C



A & B.
Major product

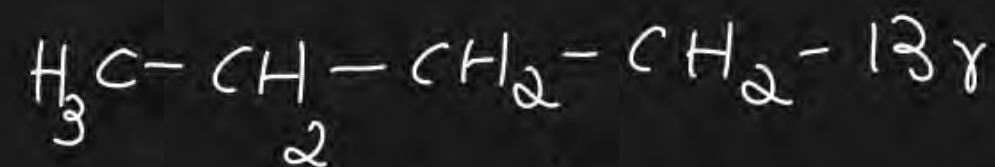
The mixture consists of

A A and B as major and C as minor products ✓

B B as major, A and C as minor products ✓

C B as minor, A and C as major products

D A and B as minor and C as major products

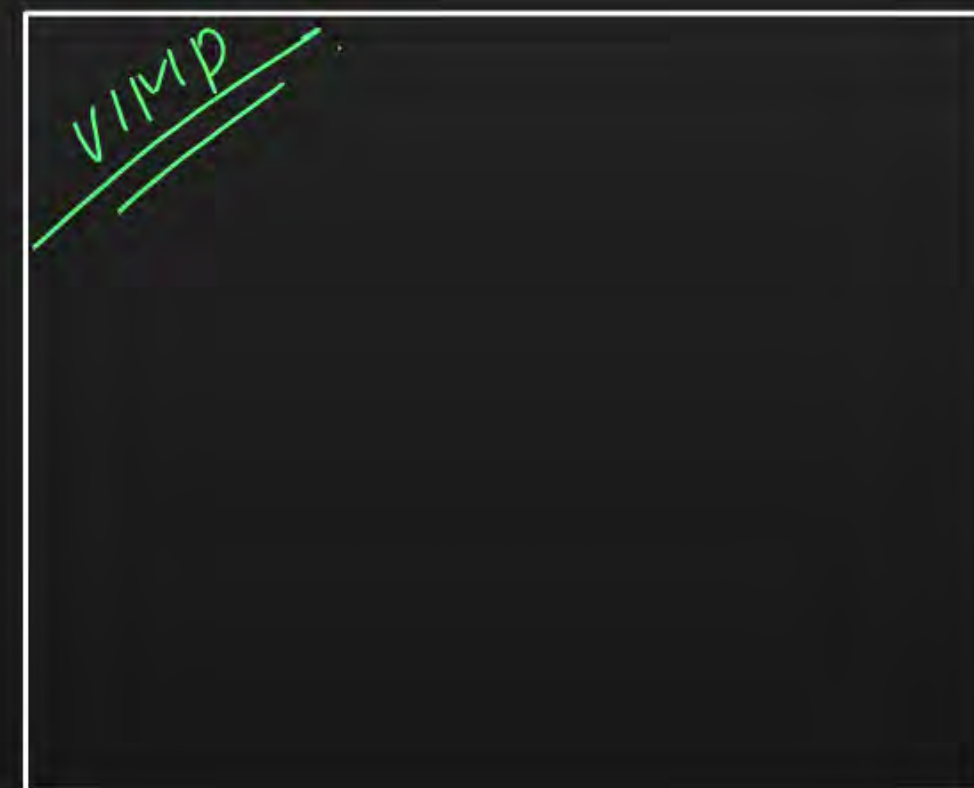
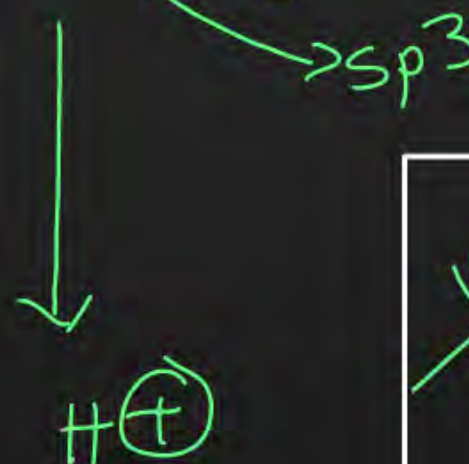
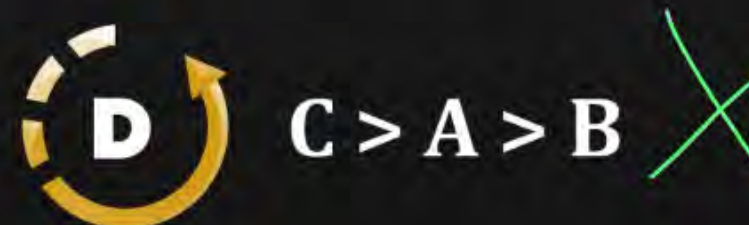
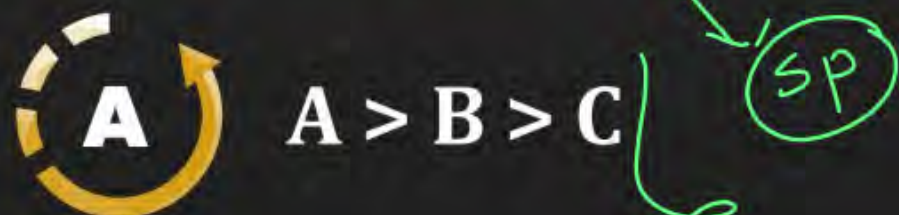
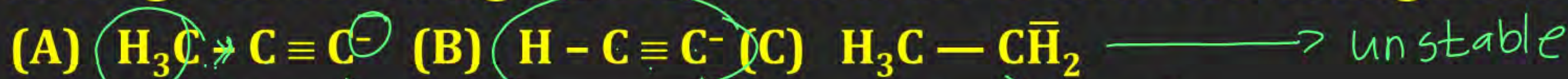


Minor

product

Question

Arrange the following carbanions in order of their decreasing stability.



Question

Arrange the following alkyl halides in decreasing order of the rate of β -elimination reaction with alcoholic KOH.

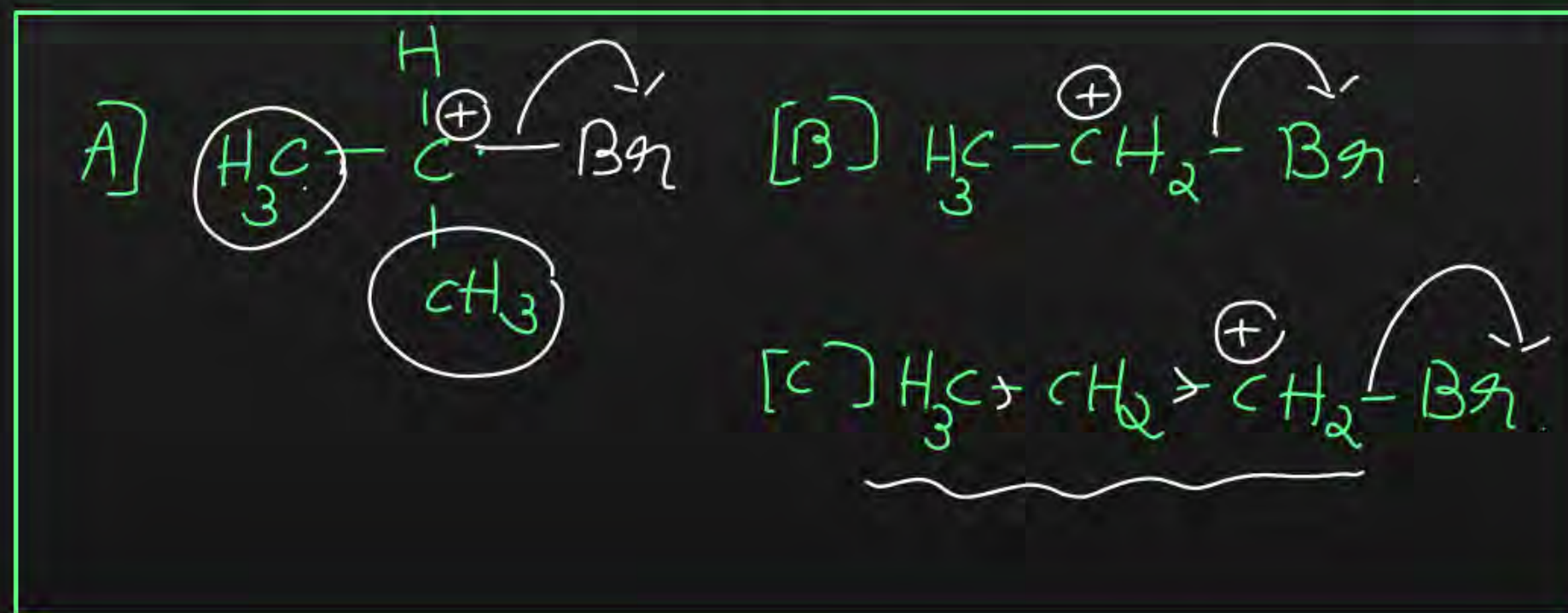
Shortcut
→ Branching should be more
→ length of the chain should be more } → Stability of Carbocation $3^\circ > 2^\circ > 1^\circ$.

A $A > B > C$

B $C > B > A$ ✗

C $B > C > A$ ✗

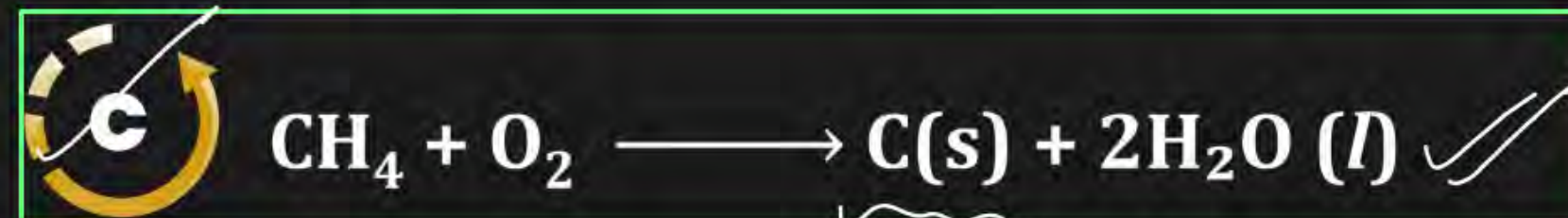
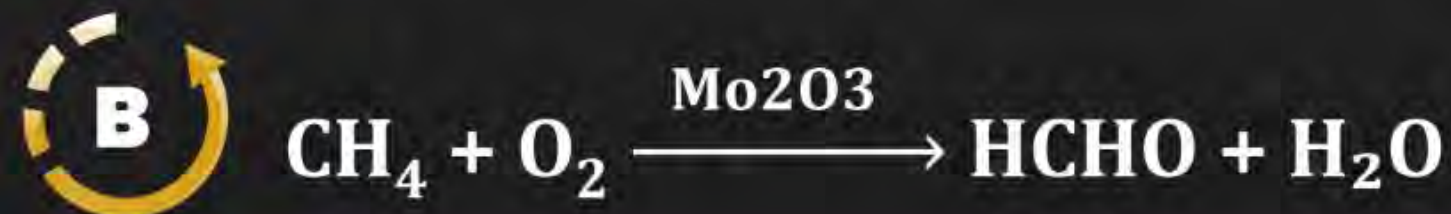
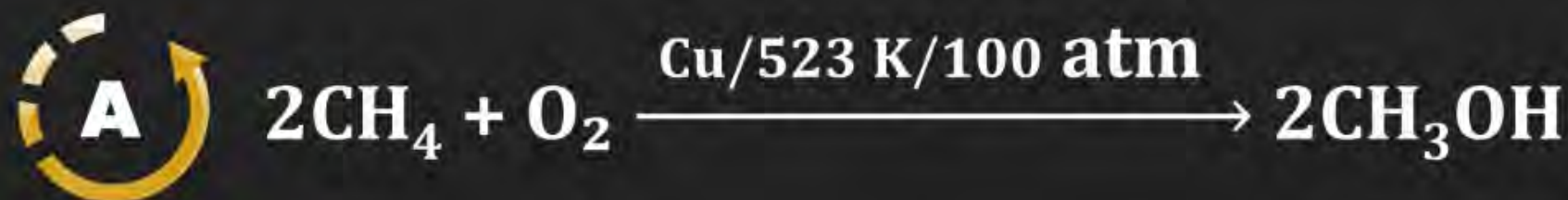
D $A > C > B$



Question



Which of the following reactions of is incomplete combustion:



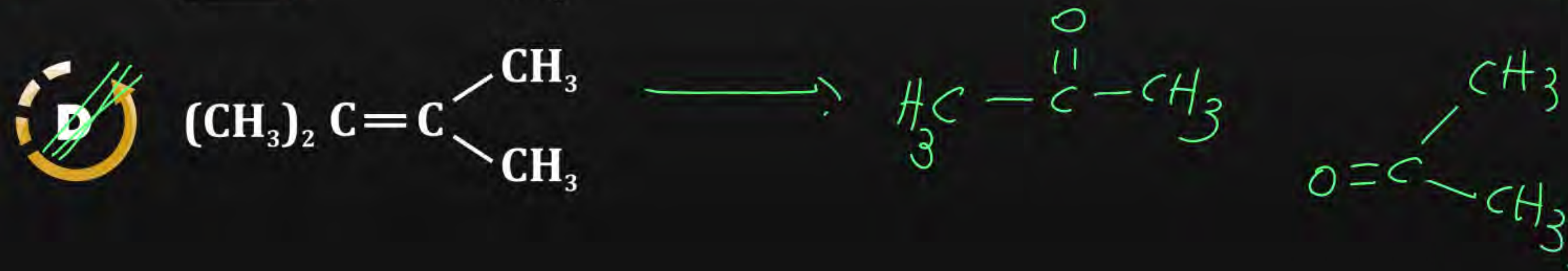
*Controlled
oxidation*

*Complete
Combustion*

VIMP
→ C/CO

Question

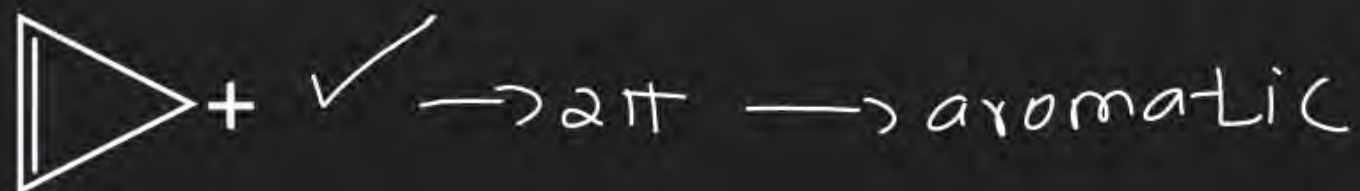
Which of the following alkenes on ozonolysis give a mixture of ketones only?



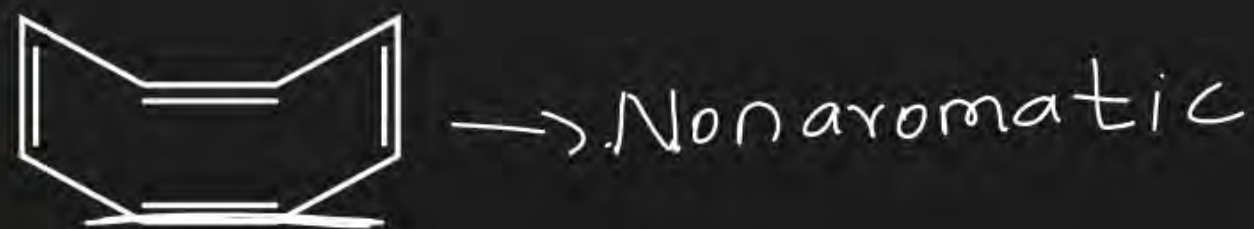
Question

Four structures are given in options (i) to (iv). Examine them and select the aromatic structures.

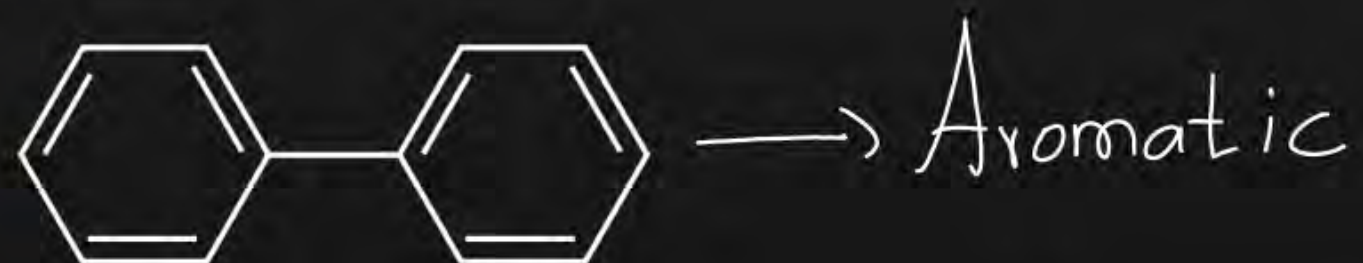
~~A~~



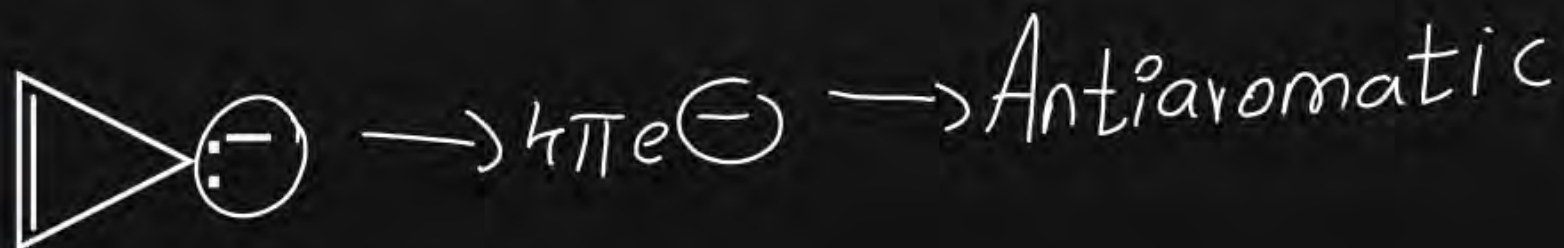
B



~~C~~



D

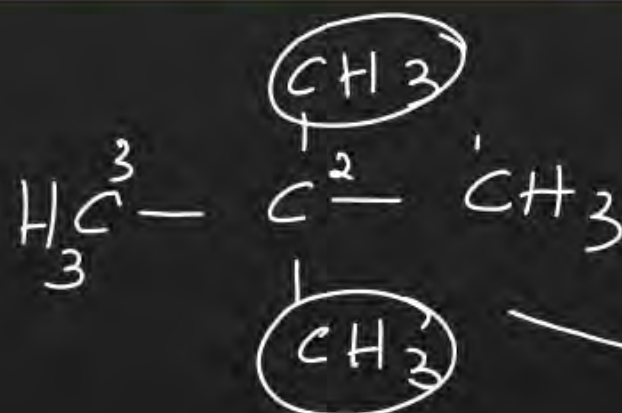


Question

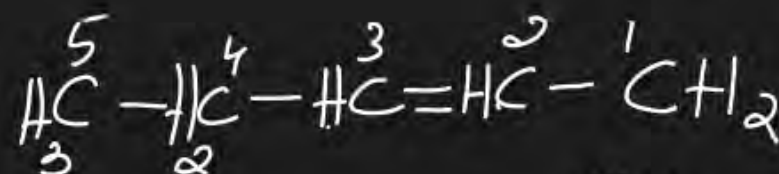
The molecules having dipole moment are_____.

Homework

A 2, 2-Dimethylpropane $\mu=0$

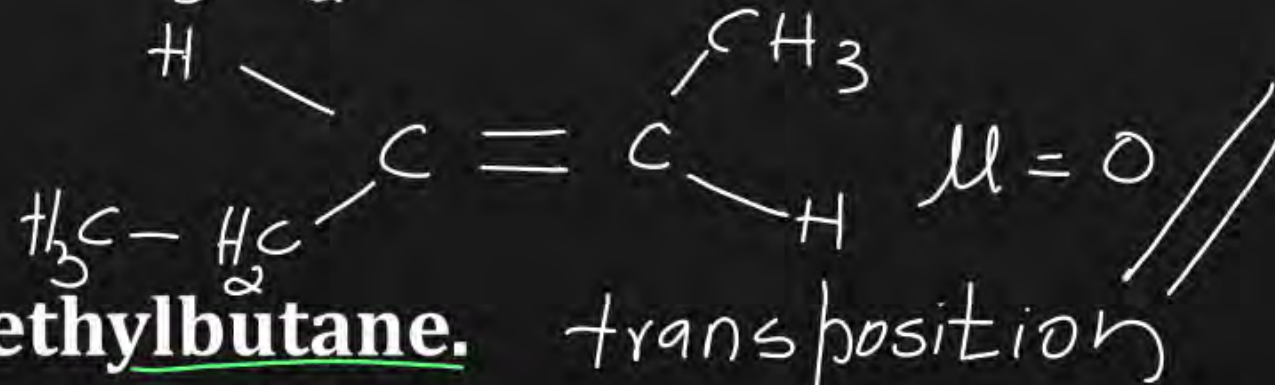


B trans-Pent-2-ene $\mu=0$

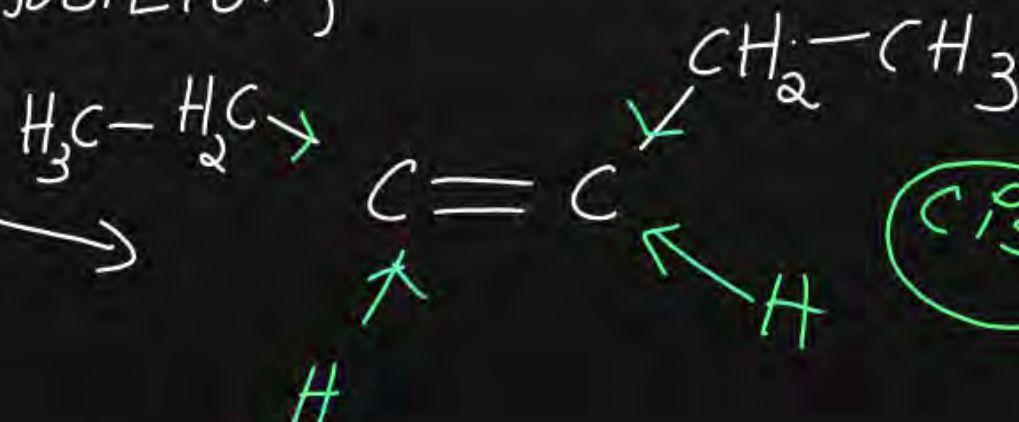
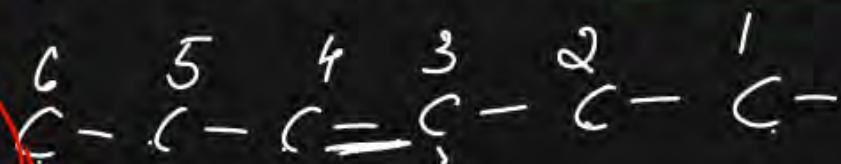


No change
Separation

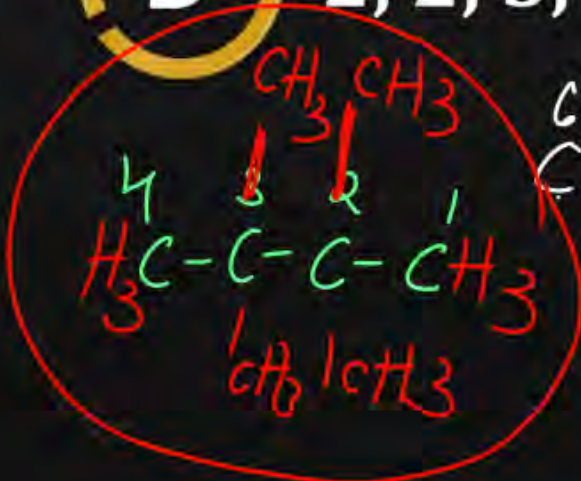
C cis-Hex-3-ene $\mu \neq 0$



D 2, 2, 3, 3-Tetramethylbutane. $\mu=0$



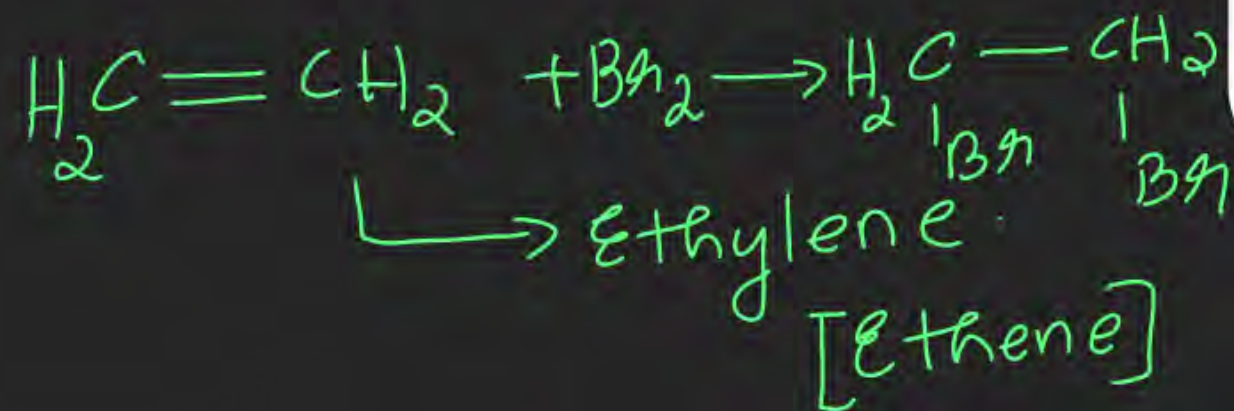
cis $\mu = \text{max}$



Question

Ethylene reacts with bromine to form

- A** $\text{Br} - \text{CH}_2 - \text{CH}_3$
- B** CH_3CBr_3
- ☒ **C** $\text{Br} - \text{CH}_2 - \text{CH}_2 - \text{Br}$
- D** CHBr_3



Question



Which is gem-dihalide?

- A** CH_3CHBr_2 ✓
- B** $\text{CH}_2\text{Br} - \text{CH}_2\text{Br}$ ✗
- C** $\text{CH}_3\text{CHBr} - \text{CH}_2\text{Br}$ ✗
- D** None of these

Question



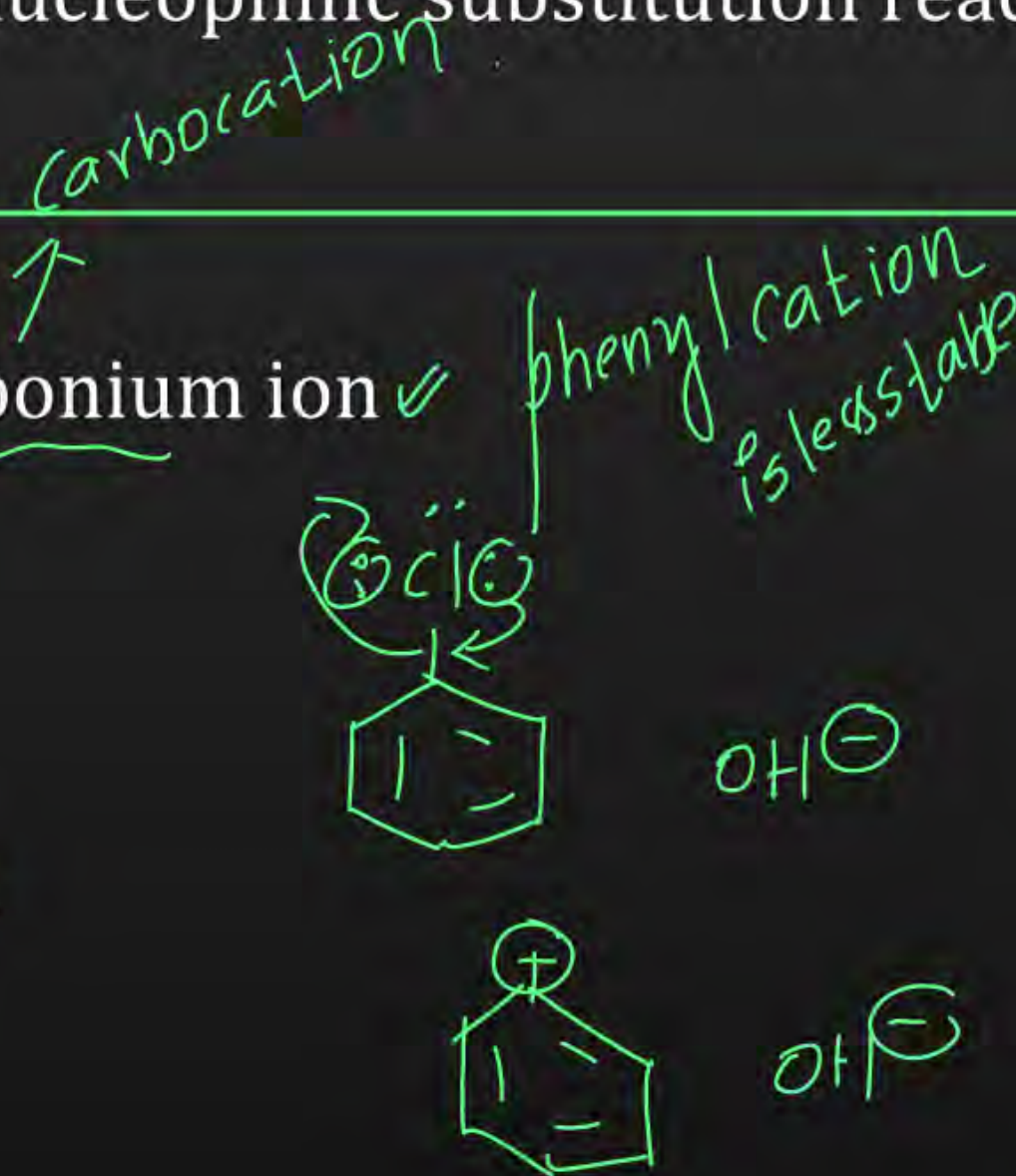
Aryl halides are less reactive towards nucleophilic substitution reaction as compared to alkyl halides due to

A The formation of less stable carbonium ion ✓

~~**B**~~ Resonance stabilization

C Longer carbon-halogen bond ✗

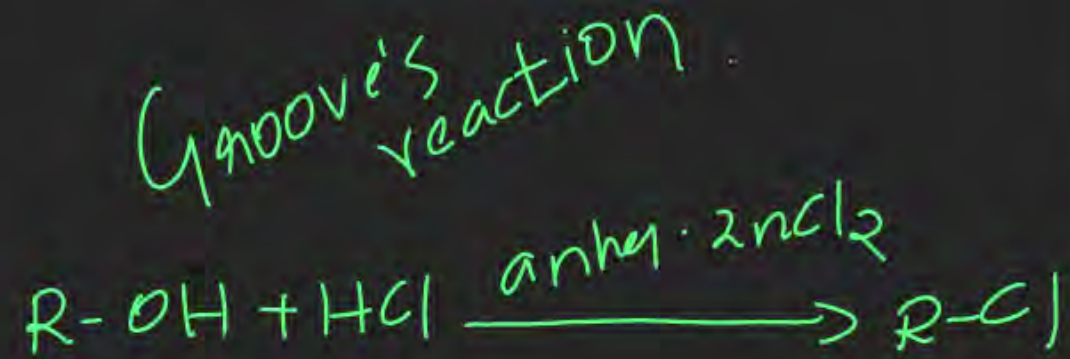
D The inductive effect. ✗

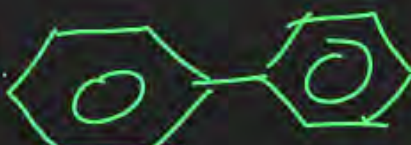


Question



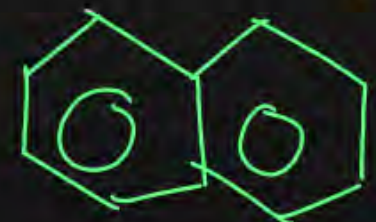
Ullmann reaction is used for the preparation of

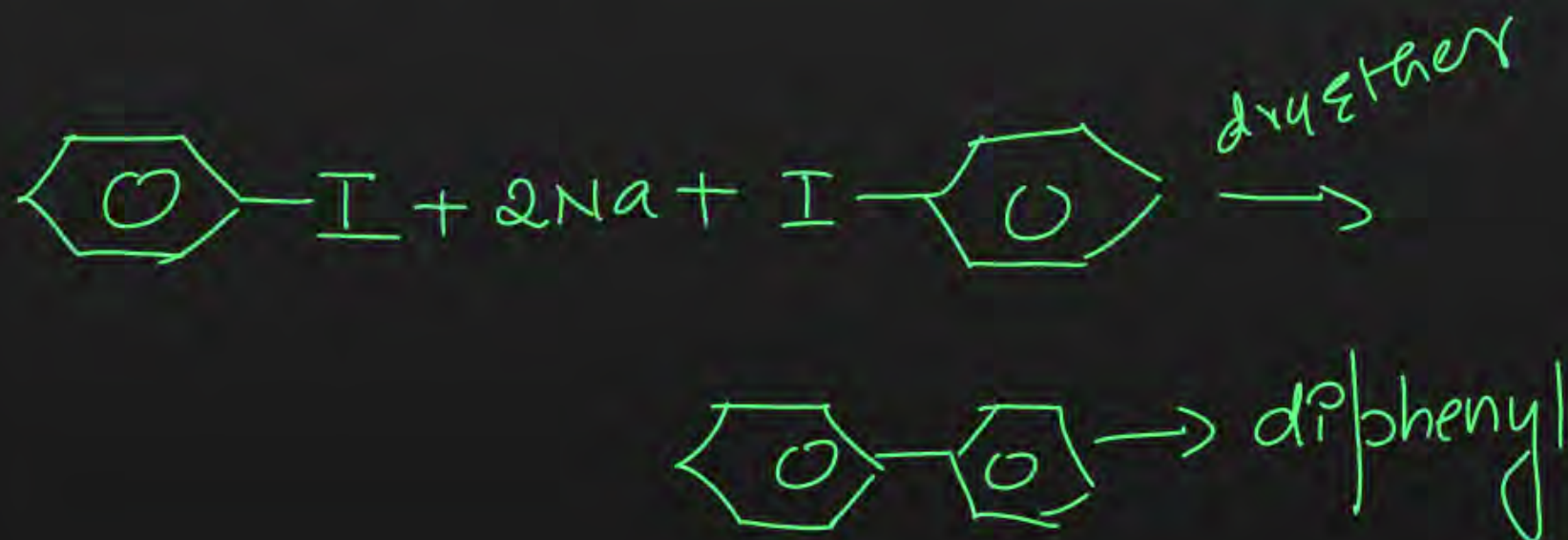


A Diphenyl 

B Iodobenzene 

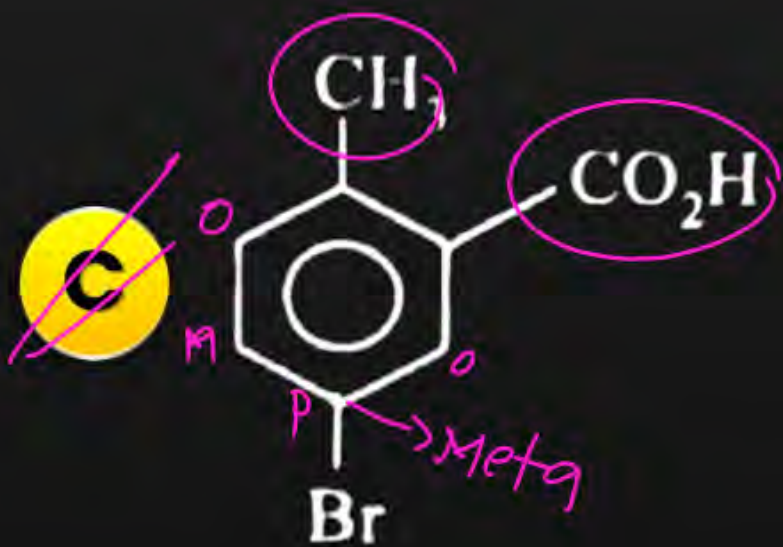
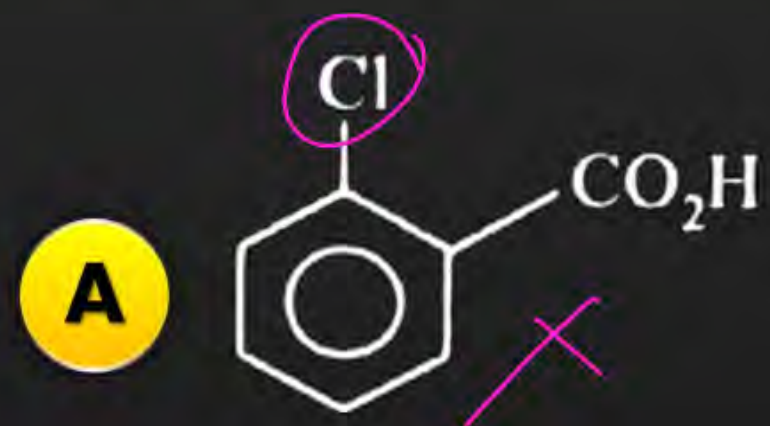
C Toluene 

D Naphthalene. 



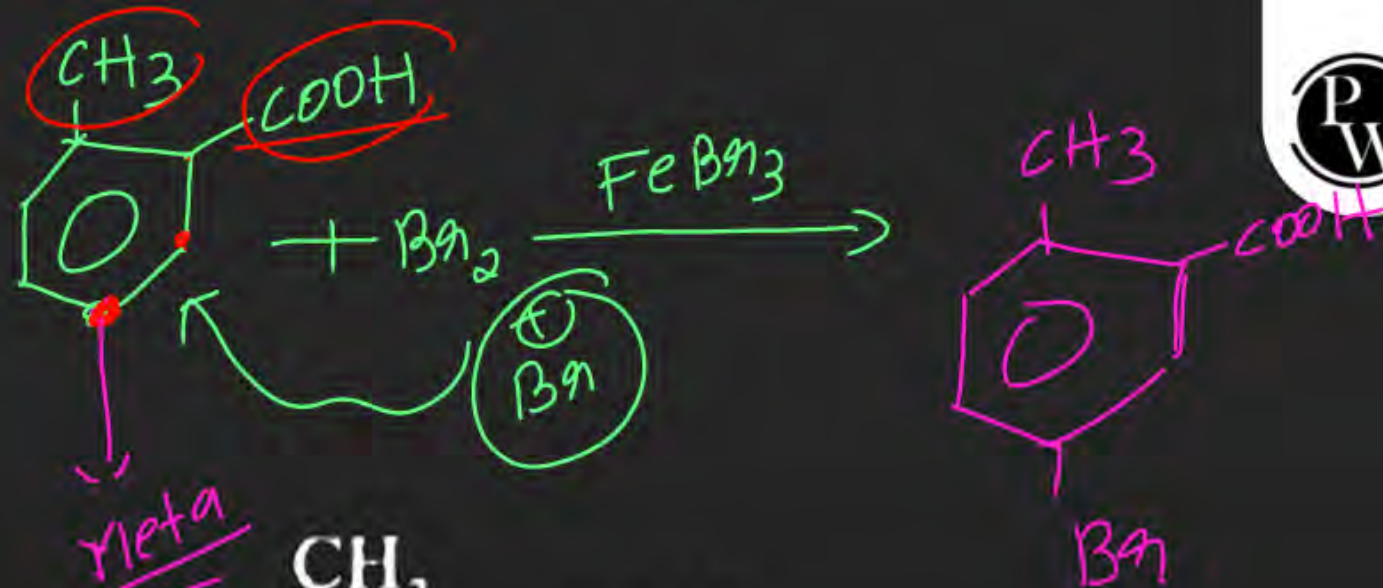
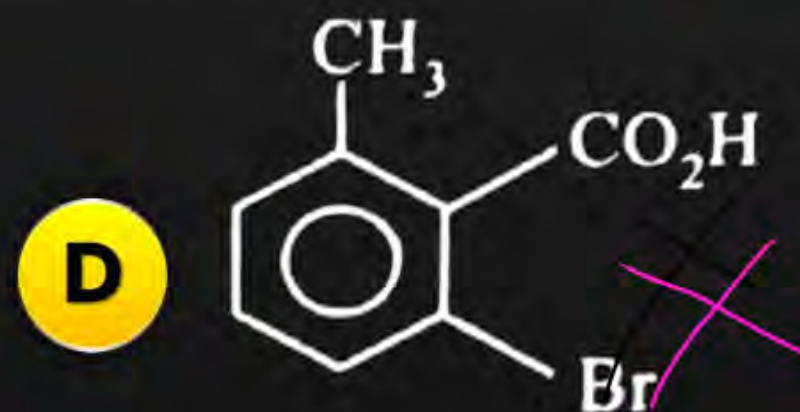
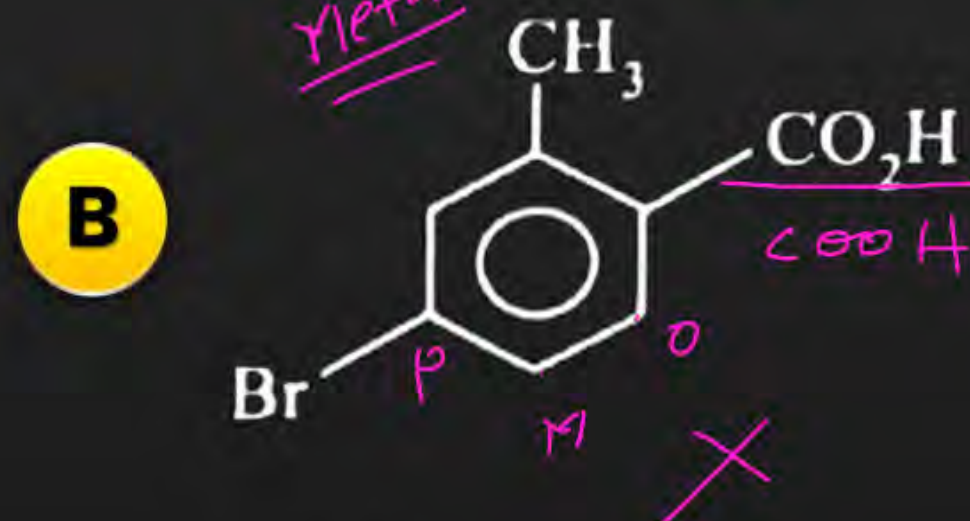
Question

o-Toluic acid on reaction with $\text{Br}_2 + \text{Fe}$ gives



$\text{COOH} \rightarrow \text{EWG}$
↓
Meta

$\text{CH}_3 \rightarrow \text{EDG}$
↓
o, / p.

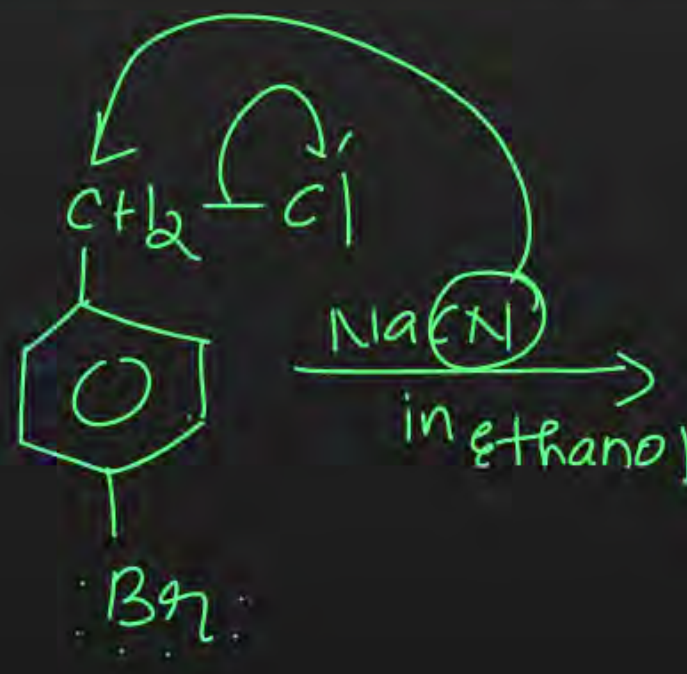


Question



The reaction of 4-bromobenzyl chloride with NaCN in ethanol leads to

- ☒ **A** 4-Bromobenzyl cyanide
- ☐ **B** 4-Cyanobenzyl chloride
- ☐ **C** 4-Cyanobenzyl cyanide
- ☐ **D** 4-Bromo-2-cyanobenzyl chloride



4-Bromobenzyl cyanide.

Question

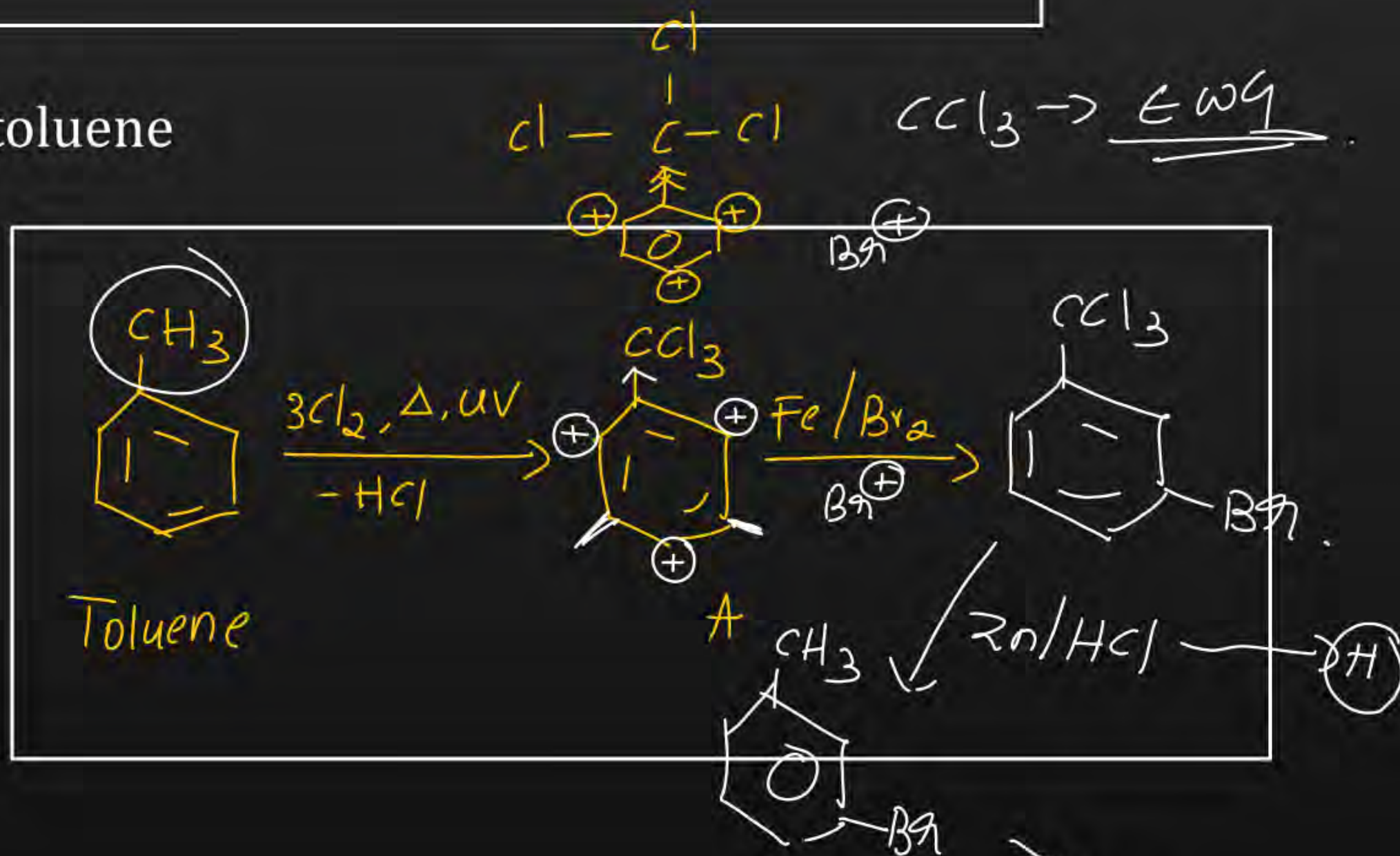
$C_7H_8 \xrightarrow{3Cl_2, \text{Heat}/h\nu} A \xrightarrow{Fe/Br_2} B \xrightarrow{Zn/HCl} C$ Here, the compound C is

A 3-Bromo-2,4,6-trichlorotoluene

B o-Bromotoluene

C p-Bromotoluene

~~**D**~~ m-Bromotoluene.



Question

B.P $\rightarrow$ o-dichlorobenzene $>$ meta $>$ para
M.P $\rightarrow$ p-dichlorobenzene $>$ ortho $>$ meta



Arrange the following compounds in order of increasing dipole moment:

- (I) Toluene
- (II) m-Dichlorobenzene
- (III) o-Dichlorobenzene
- (IV) p-Dichlorobenzene.

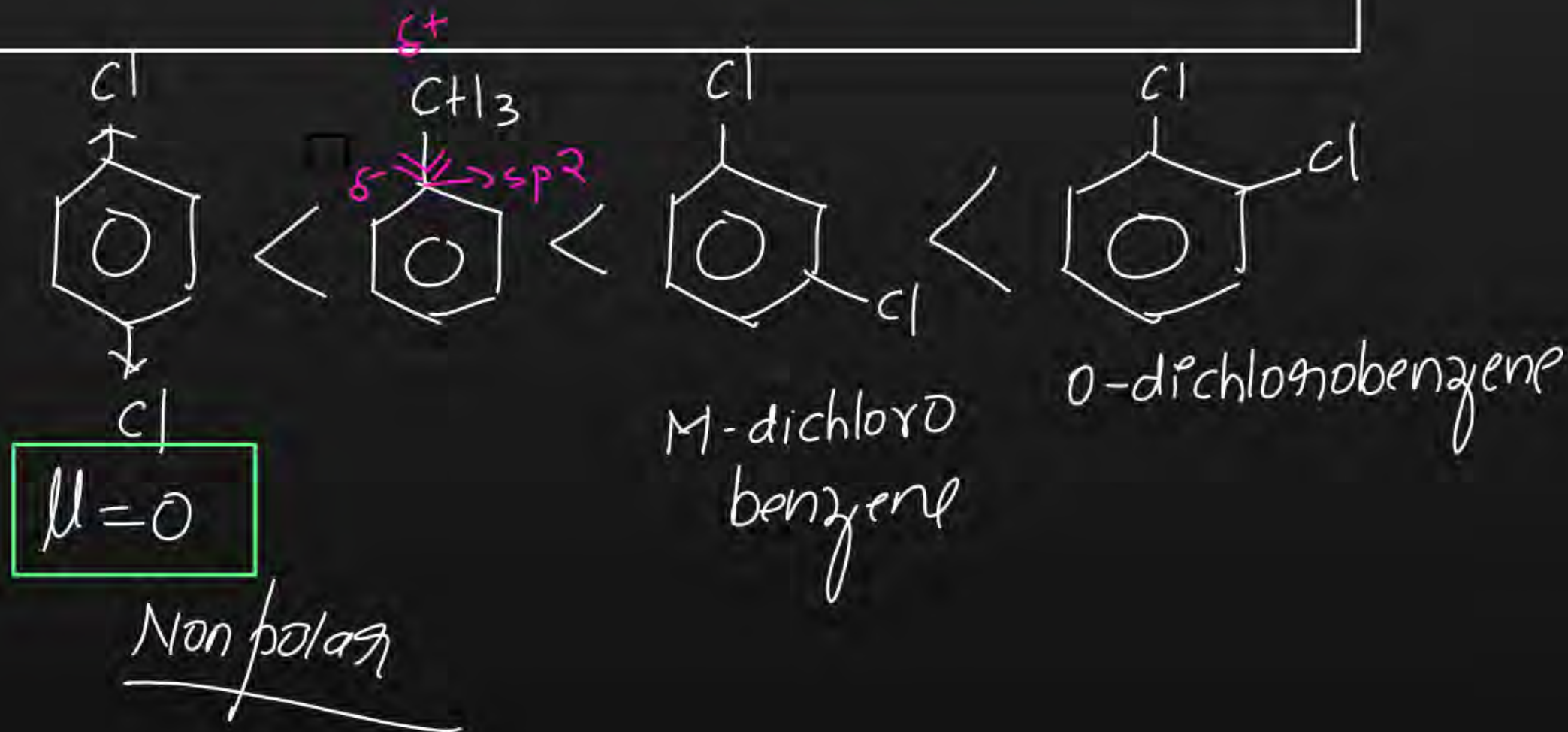
$\downarrow$
charge separation

A I < IV < II < III

~~**B** IV < I < II < III~~

C IV < I < III < II $\times$

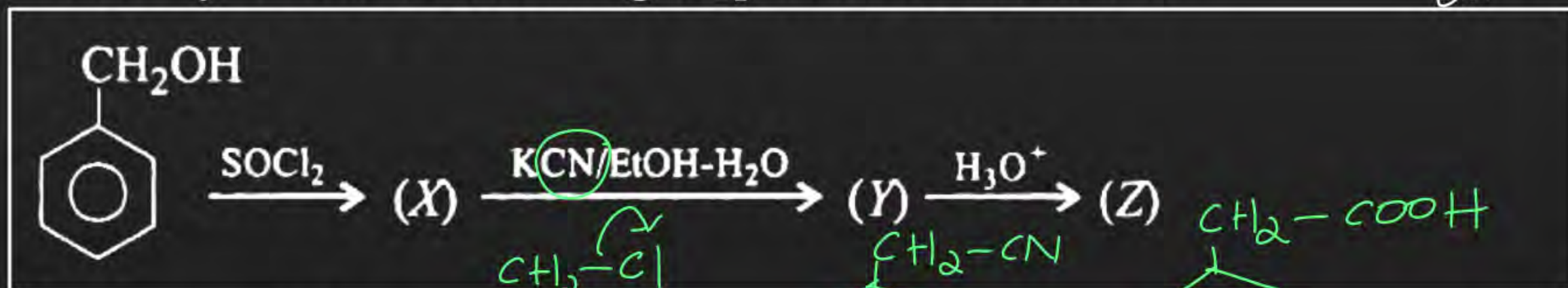
D IV < II < I < III



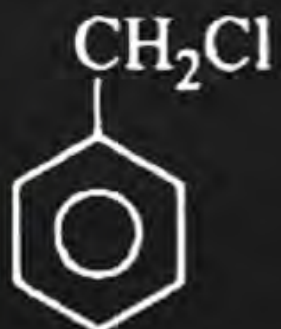
Question



Identify Z in the following sequence of reactions



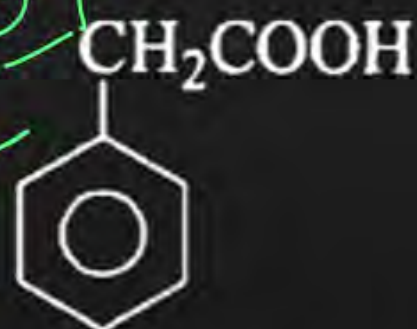
A



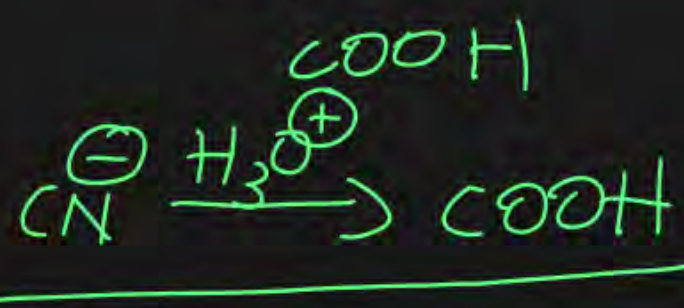
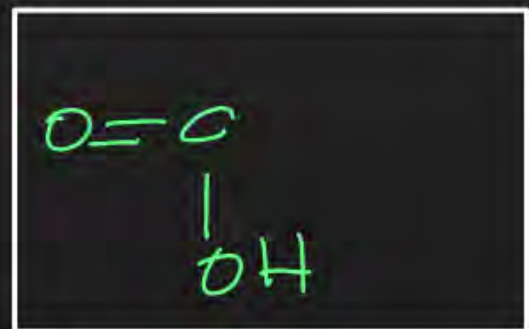
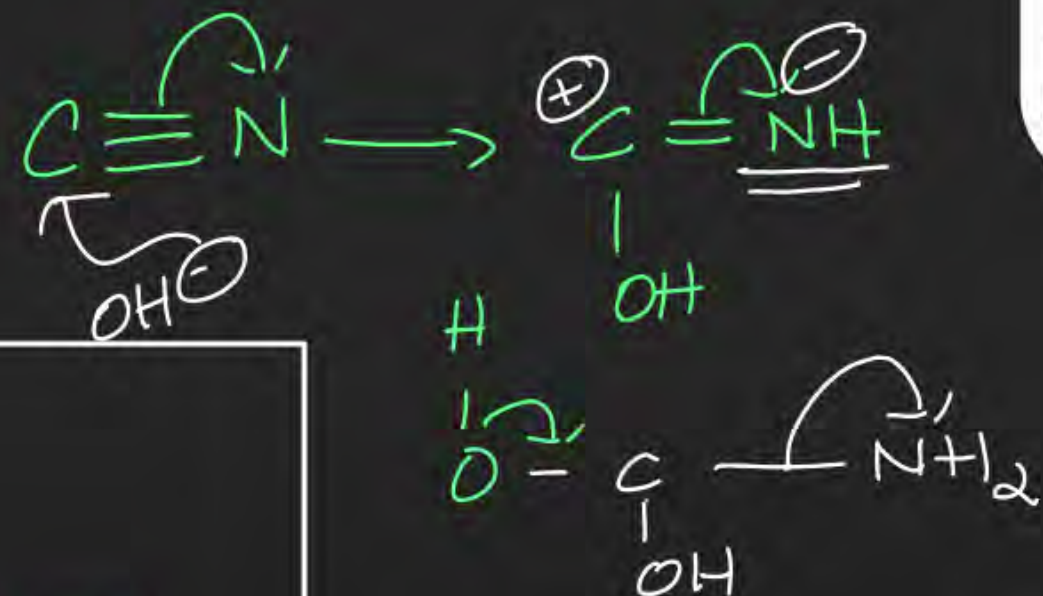
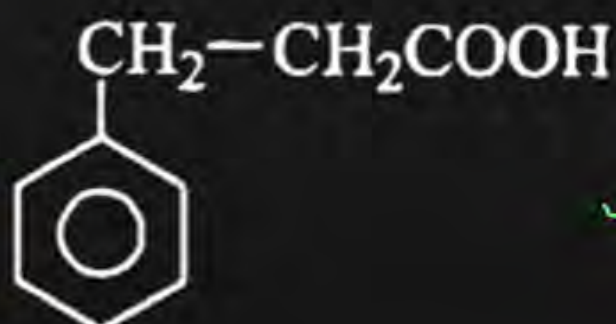
C



B

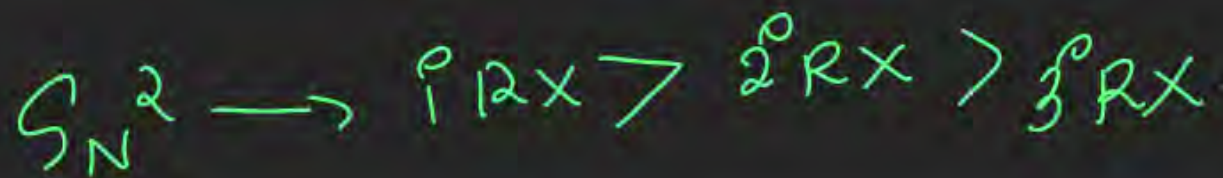


D



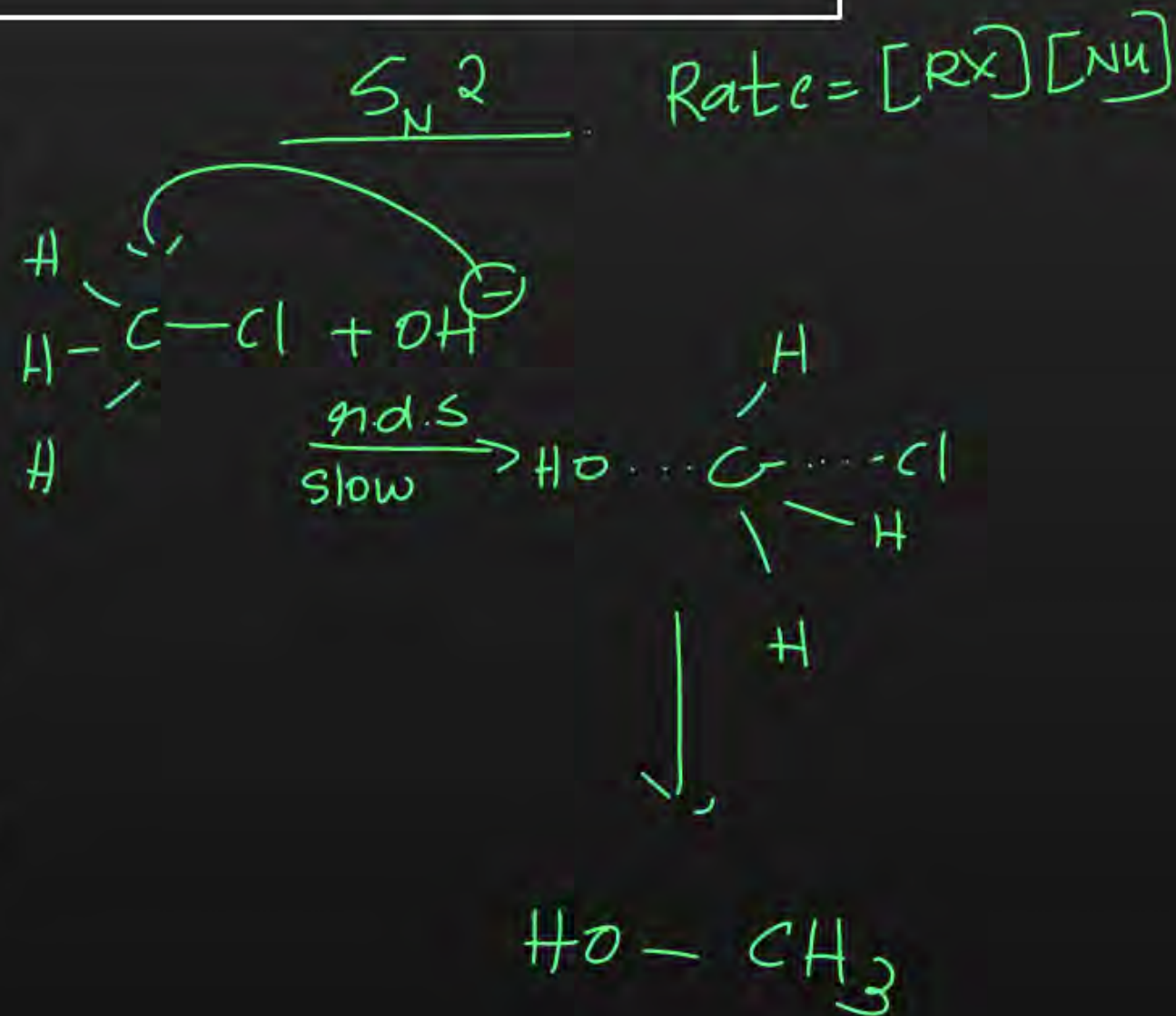
Question

bohan
Aprotic solvent
& strong nucleophile



In S_N2 reactions, the correct order of reactivity for the following compounds: CH_3Cl , CH_3CH_2Cl , $(CH_3)_2CHCl$ and $(CH_3)_3CCl$ is

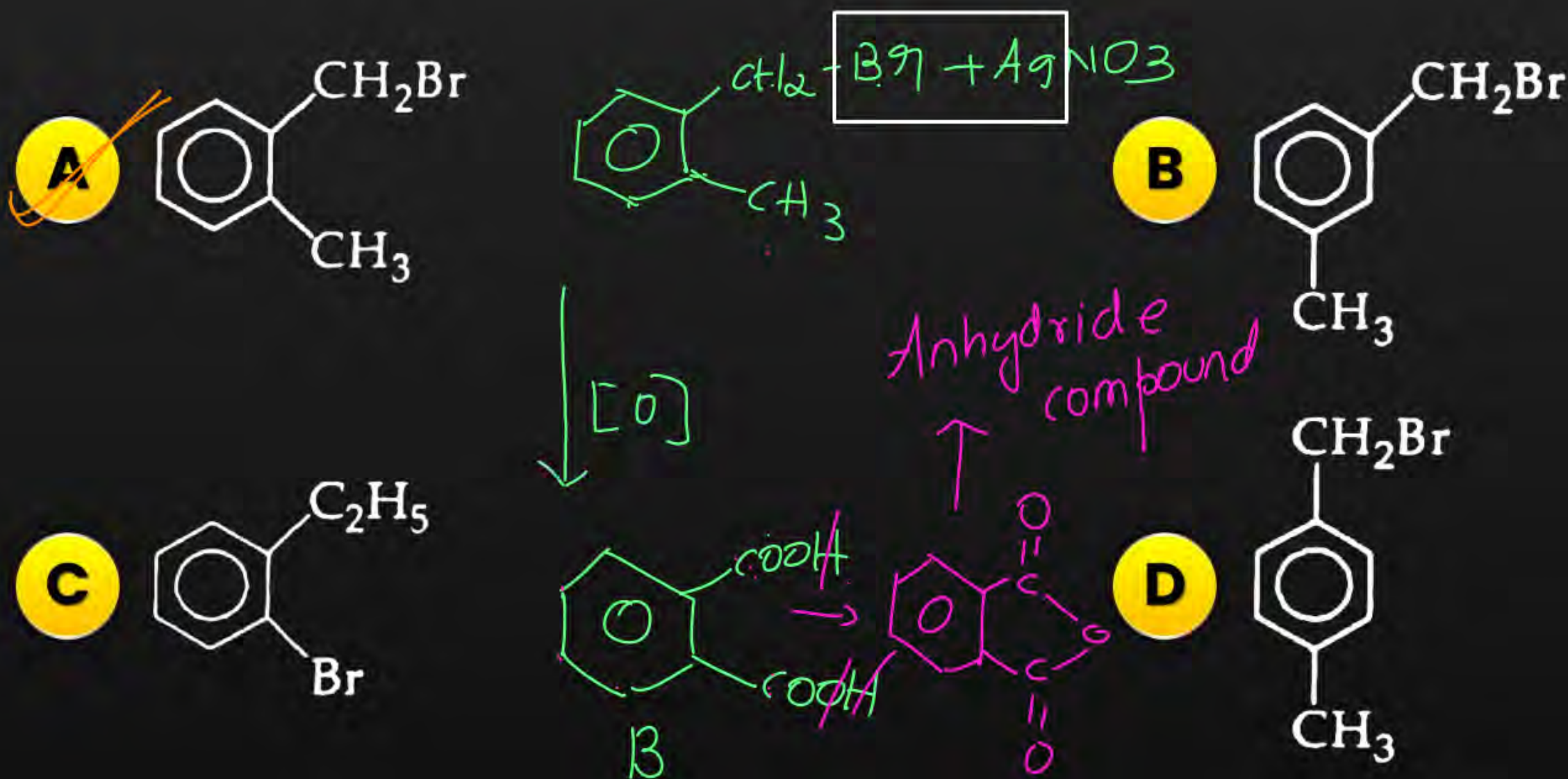
- A** $(CH_3)_2CHCl > CH_3CH_2Cl > CH_3Cl > (CH_3)_3CCl$
- B** $CH_3Cl > (CH_3)_2CHCl > CH_3CH_2Cl > (CH_3)_3CCl$
- C** $CH_3Cl > CH_3CH_2Cl > (CH_3)_2CHCl > (CH_3)_3CCl$
- D** $CH_3CH_2Cl > CH_3Cl > (CH_3)_2CHCl > (CH_3)_3CCl$

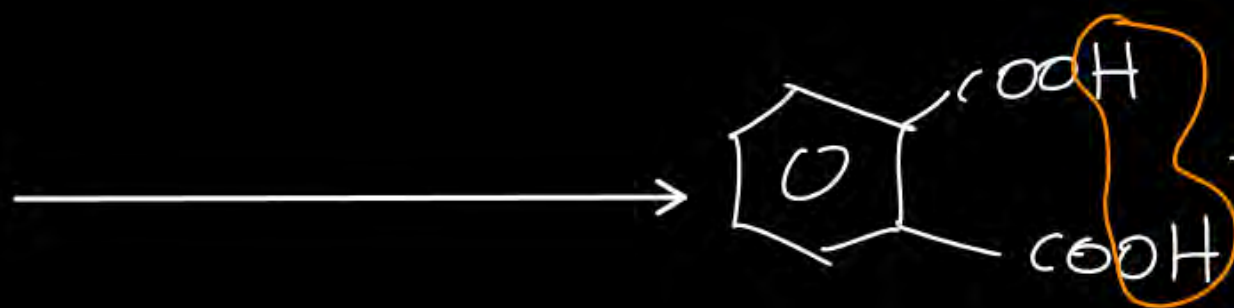
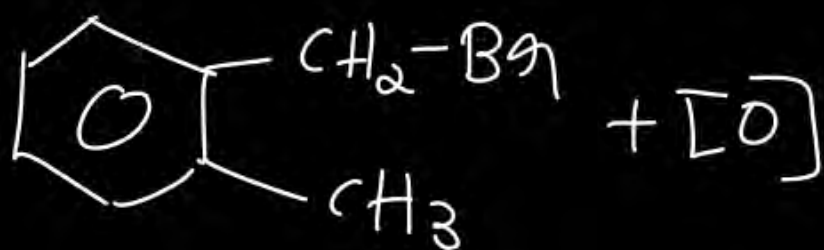
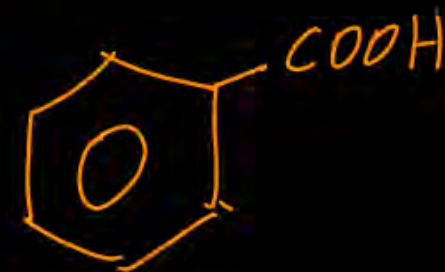
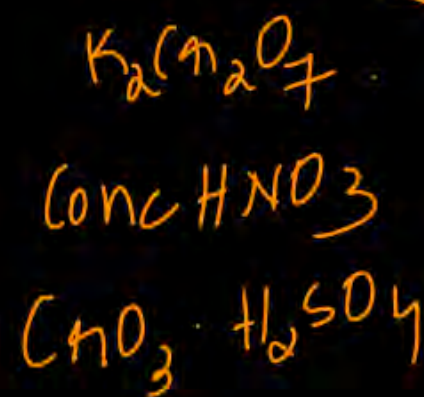
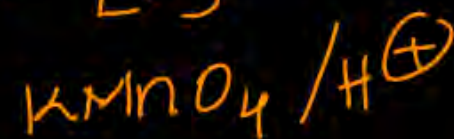
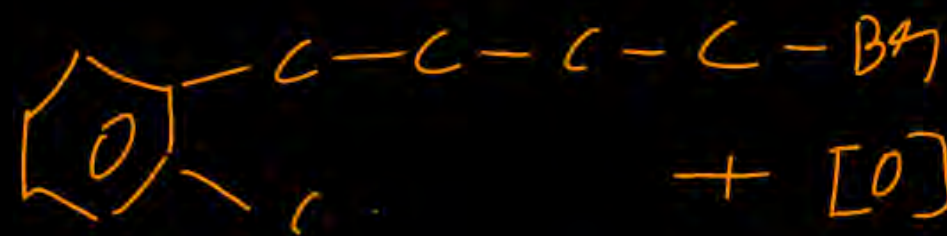
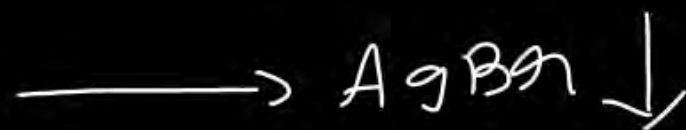
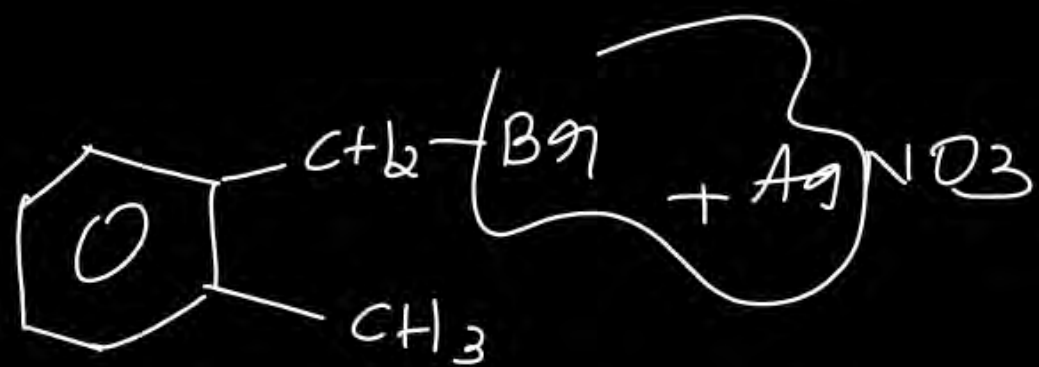


Question

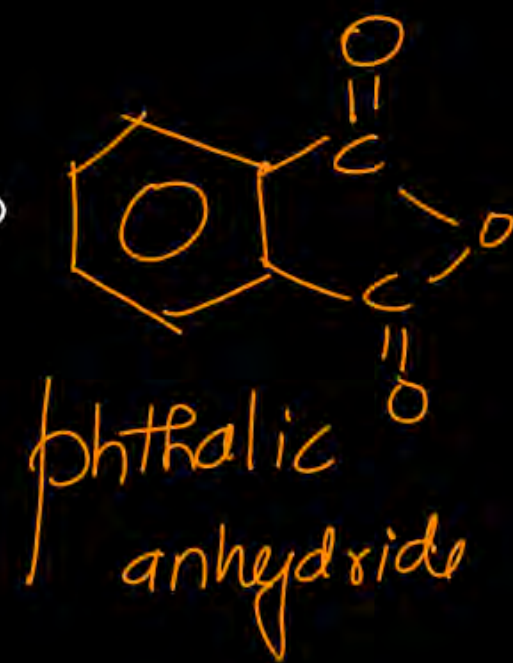
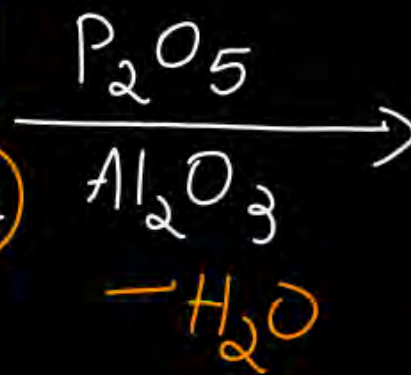


Compound (A), C_8H_9Br , gives a white precipitate when warmed with alcoholic $AgNO_3$.
Oxidation of (A) gives an acid (B), $C_8H_6O_4$. (B) easily forms anhydride on heating.
Identify the compound (A).





phthalic acid





OPTICAL ISOMERISM



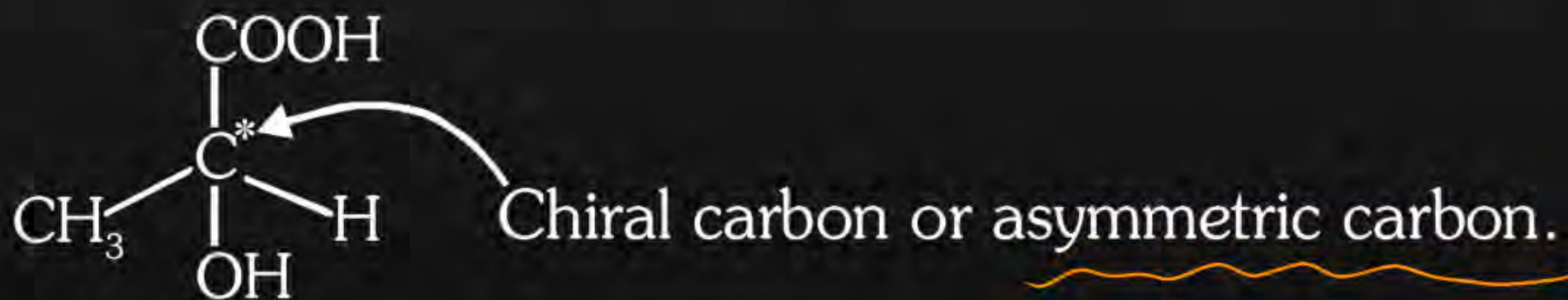
Optical isomers : Two or more than two compound have same molecular formula, same structural formula but different behavior towards PPL (plane polarised light).



Optical activity : Tendancy to rotate ~~plane of~~ PPL in a particular direction. If a compound rotates plane of PPL in clockwise direction then it will be dexterorotatory or d or (+) and if a compound rotates plane of PPL in anticlockwise direction then it will be leavorotatory or ℓ or (-).

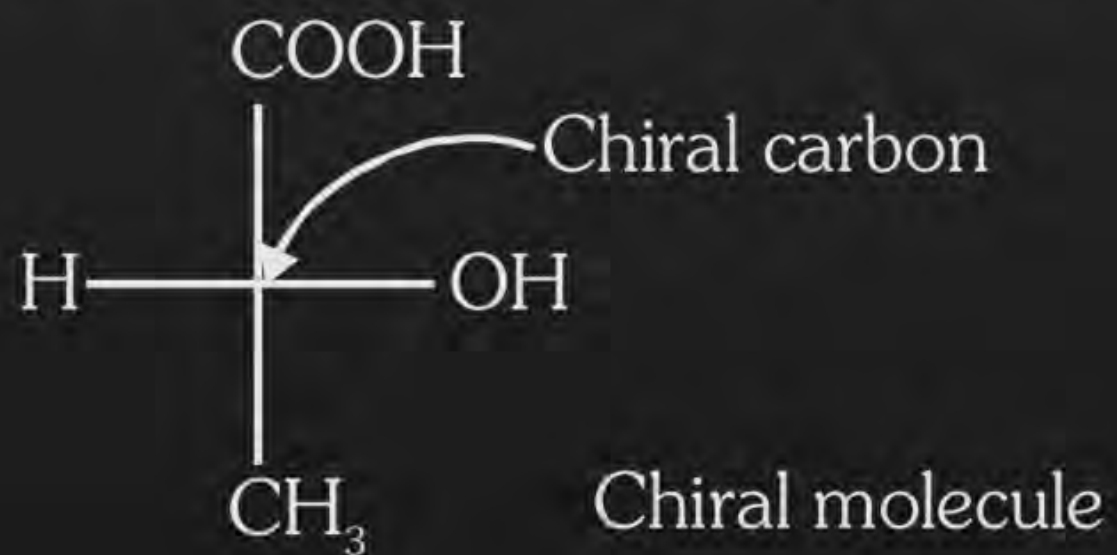


Chiral carbon : Carbon which is bonded to four different atoms or groups.

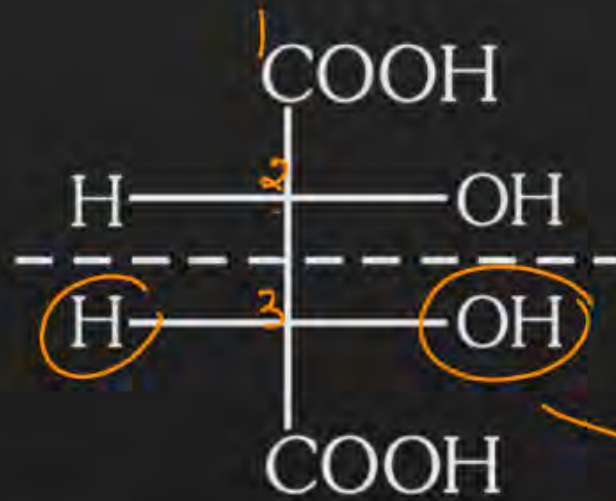


Chiral molecule :

- (i) A molecule having only one chiral centre then it will be always Chiral.

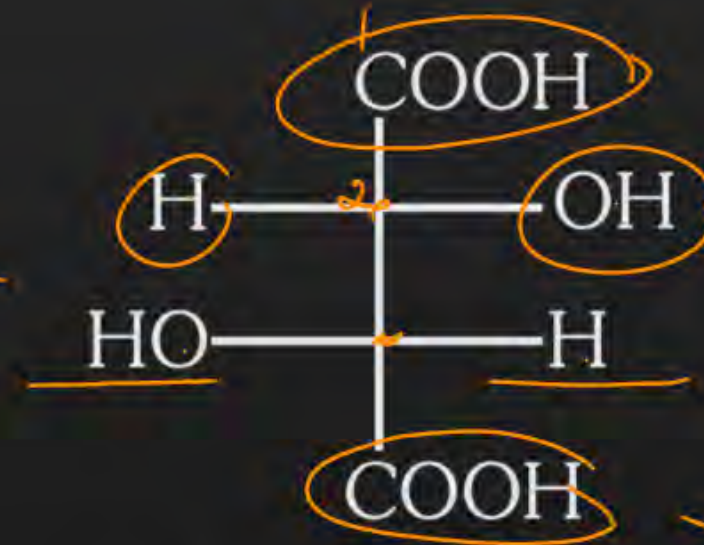


- (ii) A molecule having at least two chiral carbons and no symmetry then it will be chiral molecule.



Plane of symmetry
(Achiral molecule)

optically inactive



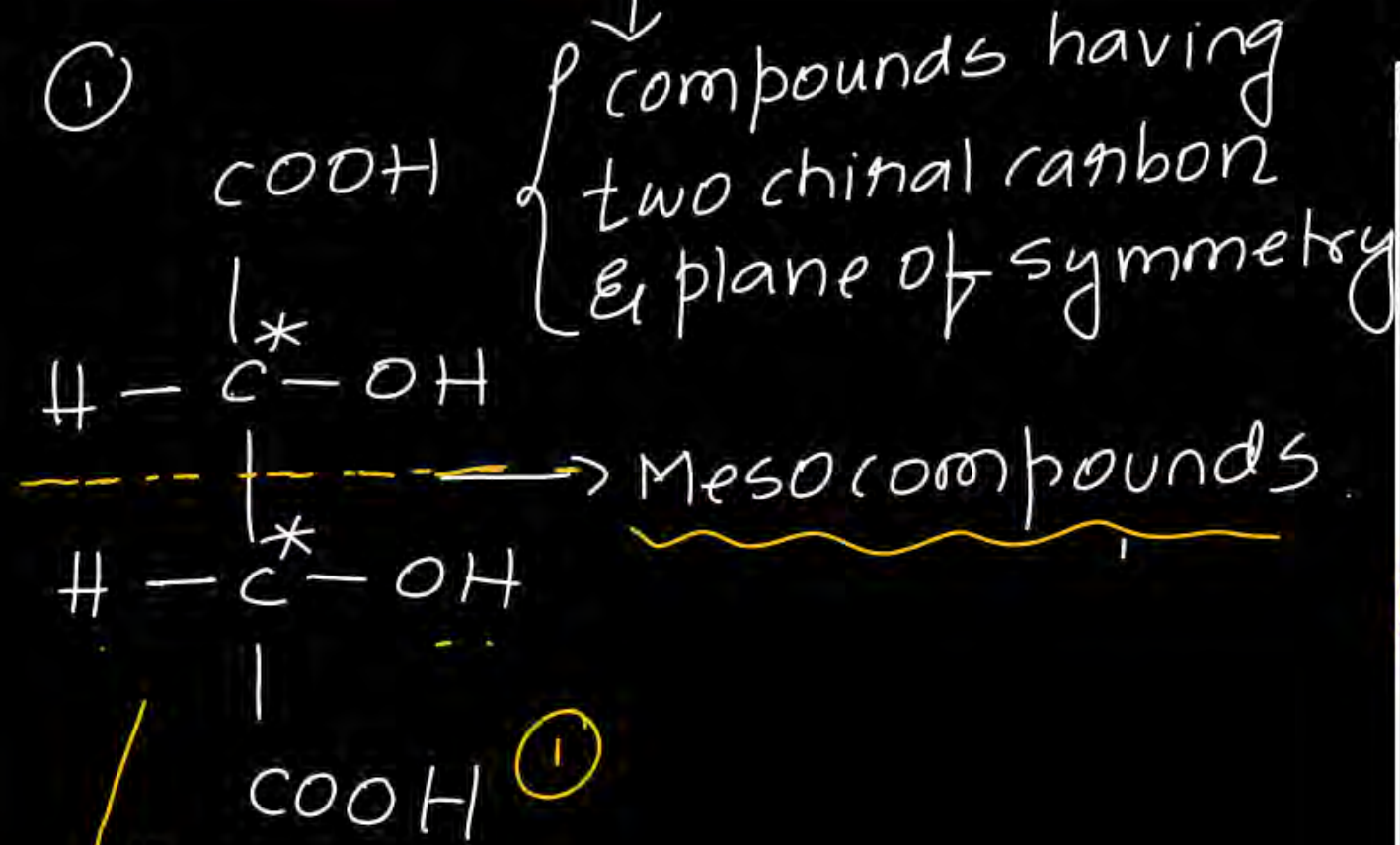
No symmetry
(Chiral molecule)

chiral carbon

Meso compounds

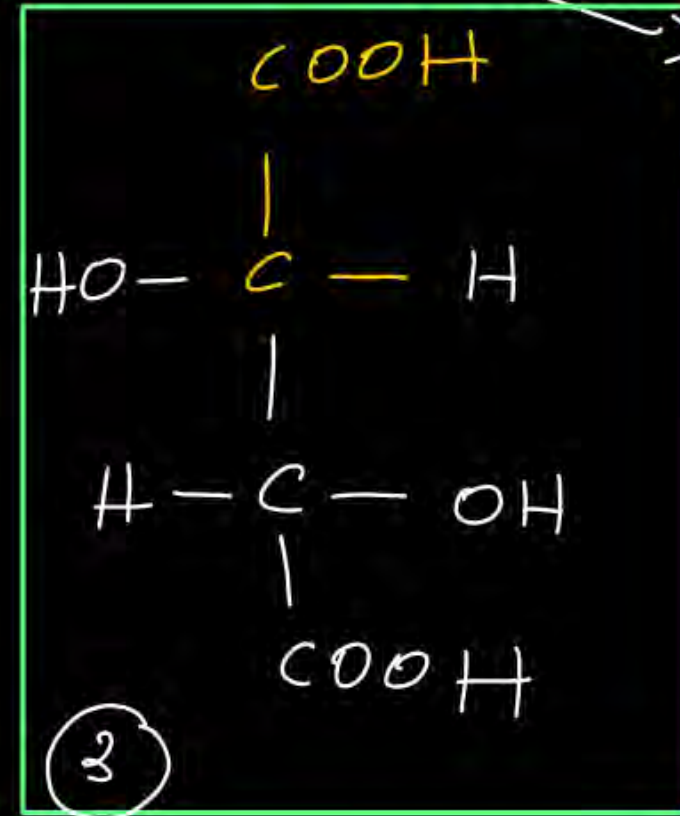
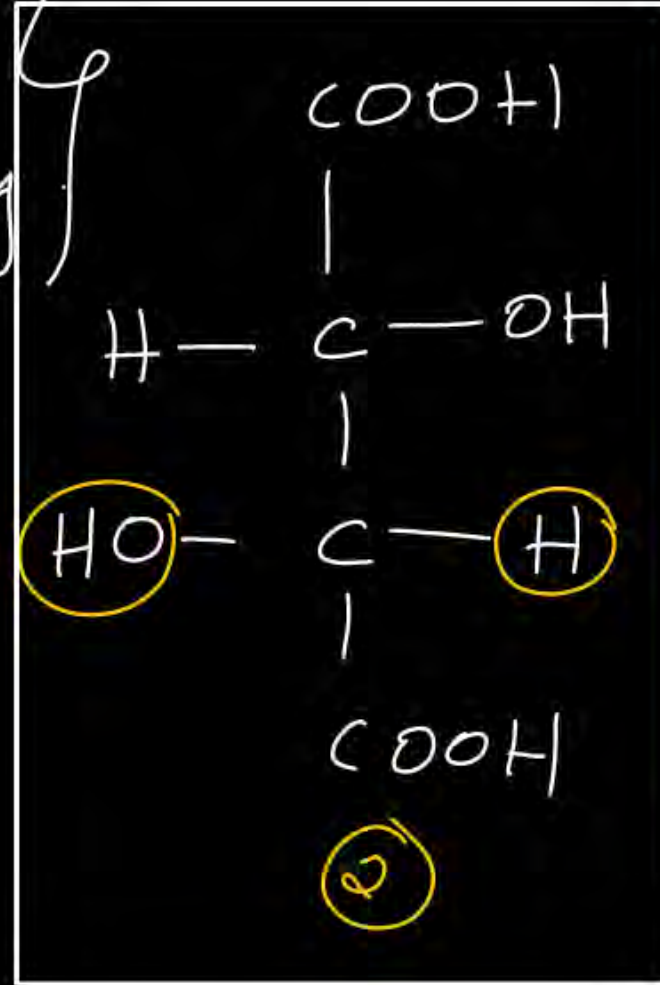
→ compounds having same molecular formula but they are non superimposable non mirror images

(1)



internal compensation → optical inactivity

Tartaric acid.

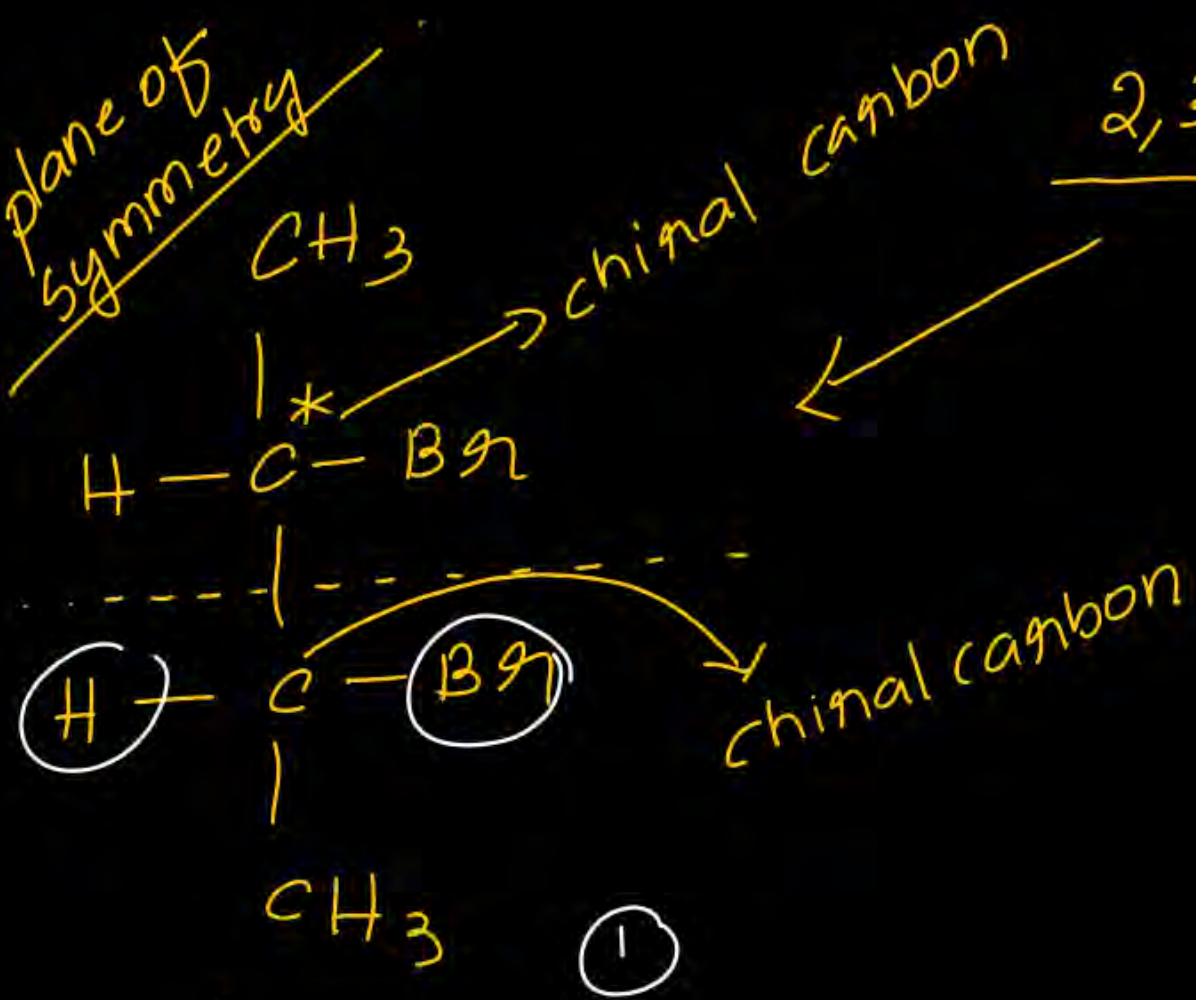


Diastereomers

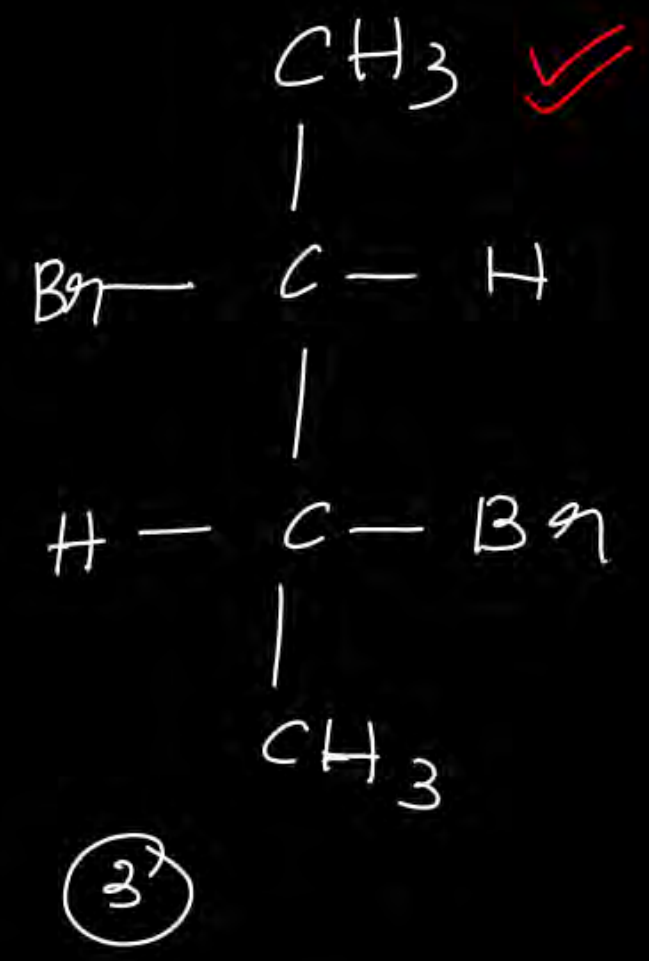
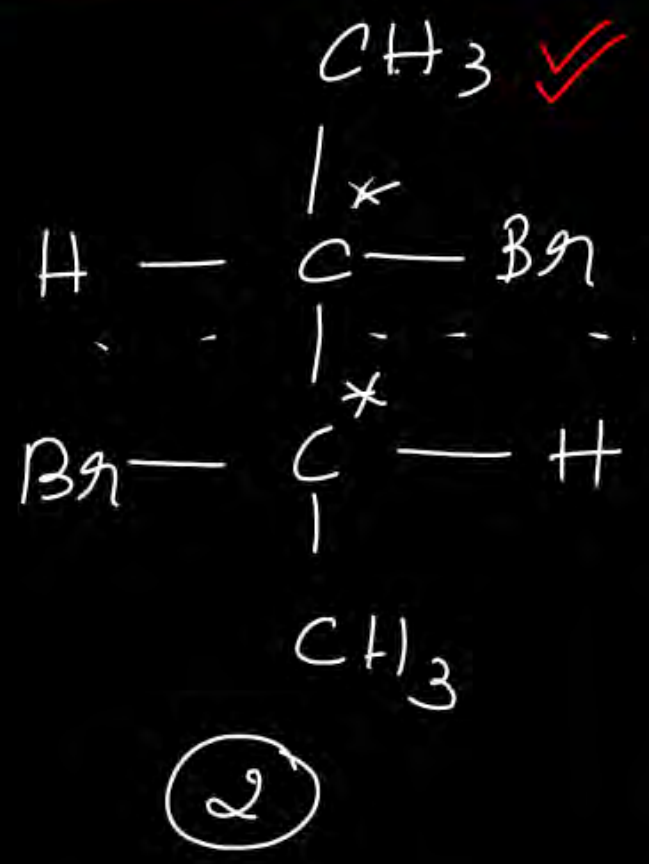
(1) & (2)

(1) & (3)

plane of symmetry
 2,3-dibromobutane

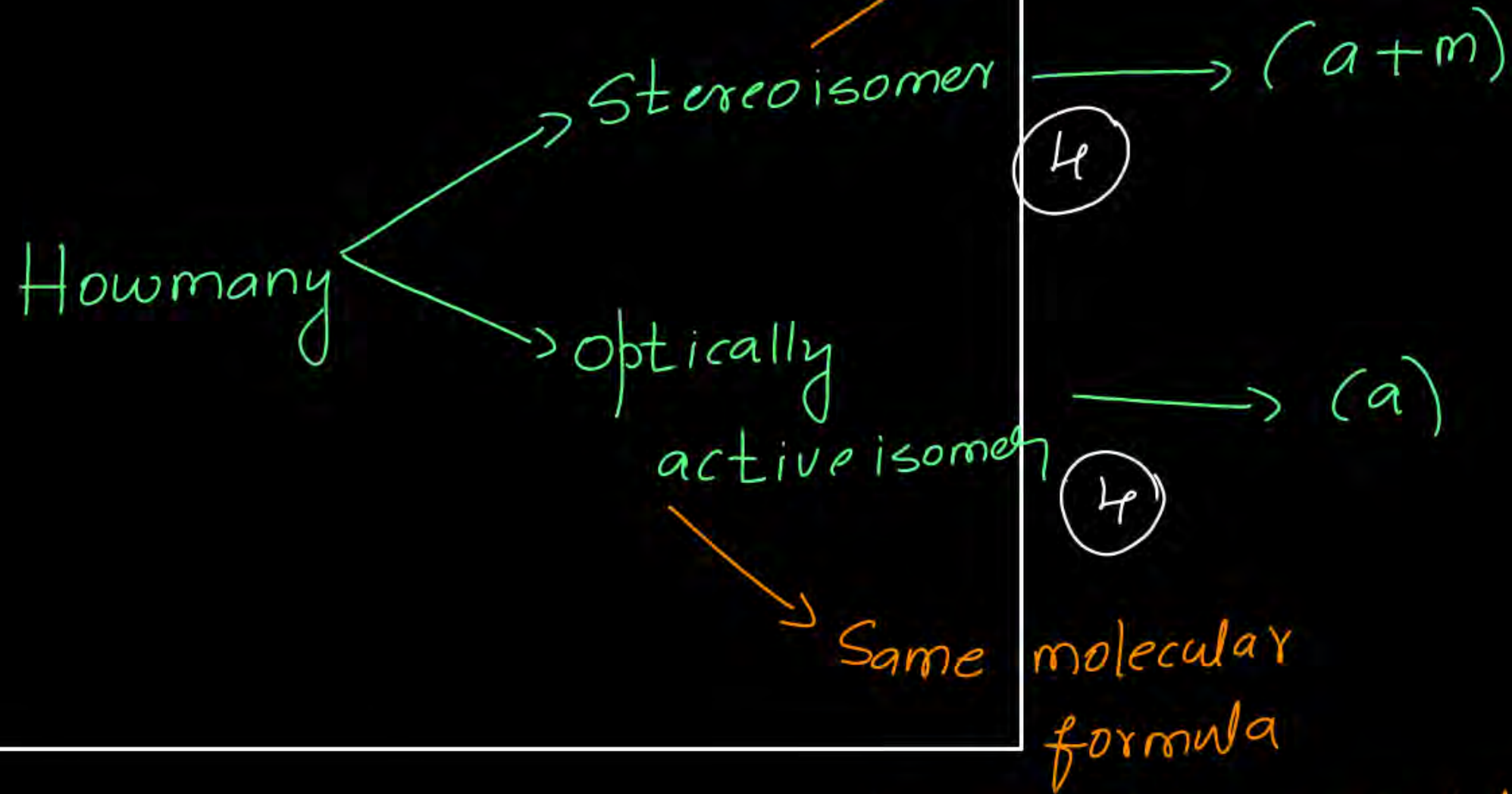


Meso compound
 Optically inactive

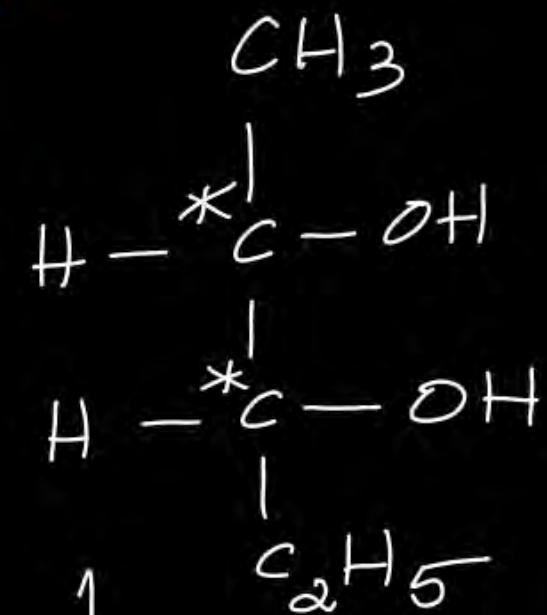


Diastereomers
 ① & ②
 ① & ③

Enantiomers
 ② & ③



Same molecular formula but different configuration



No meso compound

$2^n \rightarrow 2^2 = 4 \text{ isomers}$

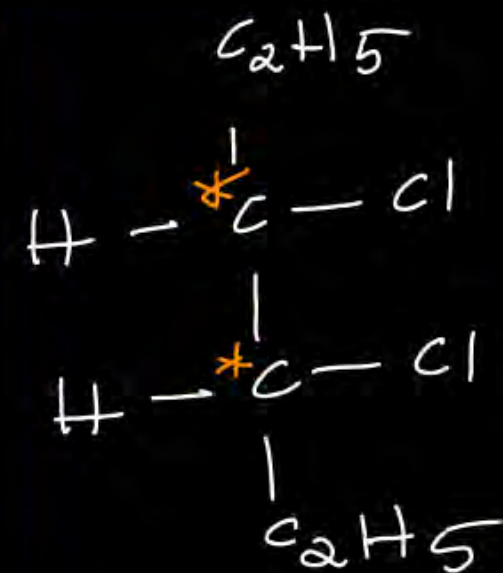
Optically active isomer

4 isomers $\leftarrow$ but notates ppl to left or right

How many $\rightarrow$ Stereoisomer $a+m$
 $\rightarrow$ optically active isomer

$$2+1$$

$$2 \xrightarrow{n-1} 2 \xrightarrow{2-1} 2 \xrightarrow{1} 2 //$$



1-Meso Compound

optically inactive $\frac{\frac{n}{2}-1}{2}$

$$2^{\frac{2}{2}-1} = 2^0 = 1$$

Essential and sufficient condition for optical activity is :

"Molecule should be chiral"

or

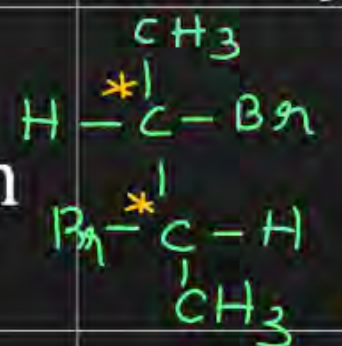
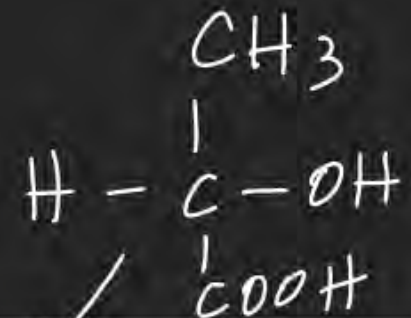
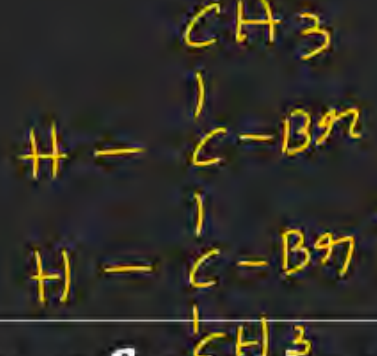
"Molecule should be unsymmetrical"

or

"Nonsuperimposable mirror images"

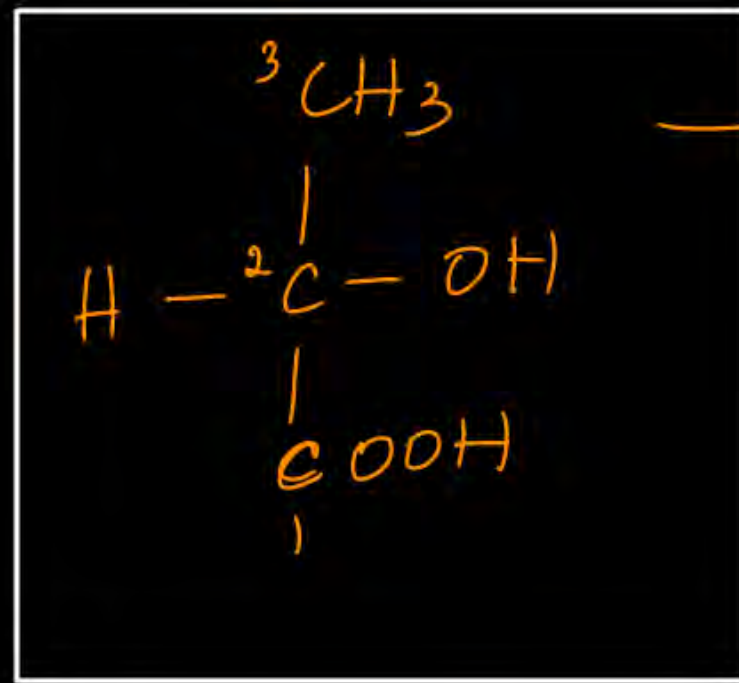
Number of stereoisomers :

S.N.	Nature of compounds	No. of optically active isomers (a)	No. of meso compounds (m)	Total no. of Stereoisomer (a + m)
1.	Compounds having dissimilar ends	2^n (n = No. of chiral centre)	0	$(2^n + 0)$
2.	Compounds having similar ends with even chiral centres	2^{n-1} $2^{2-1} = 2^1 = 2$ $n=2$	$2^{\frac{n}{2}-1}$ $2^{\frac{2}{2}-1} = 2^{1-1} = 2^0 = 1$	$(2^{n-1} + 2^{\frac{n}{2}-1})$
3.	Compounds having similar ends with odd chiral centres	$2^{n-1} - 2^{\frac{n-1}{2}}$ $\otimes$	$2^{\frac{n-1}{2}}$ $\otimes$	2^{n-1} $\otimes$



ICE

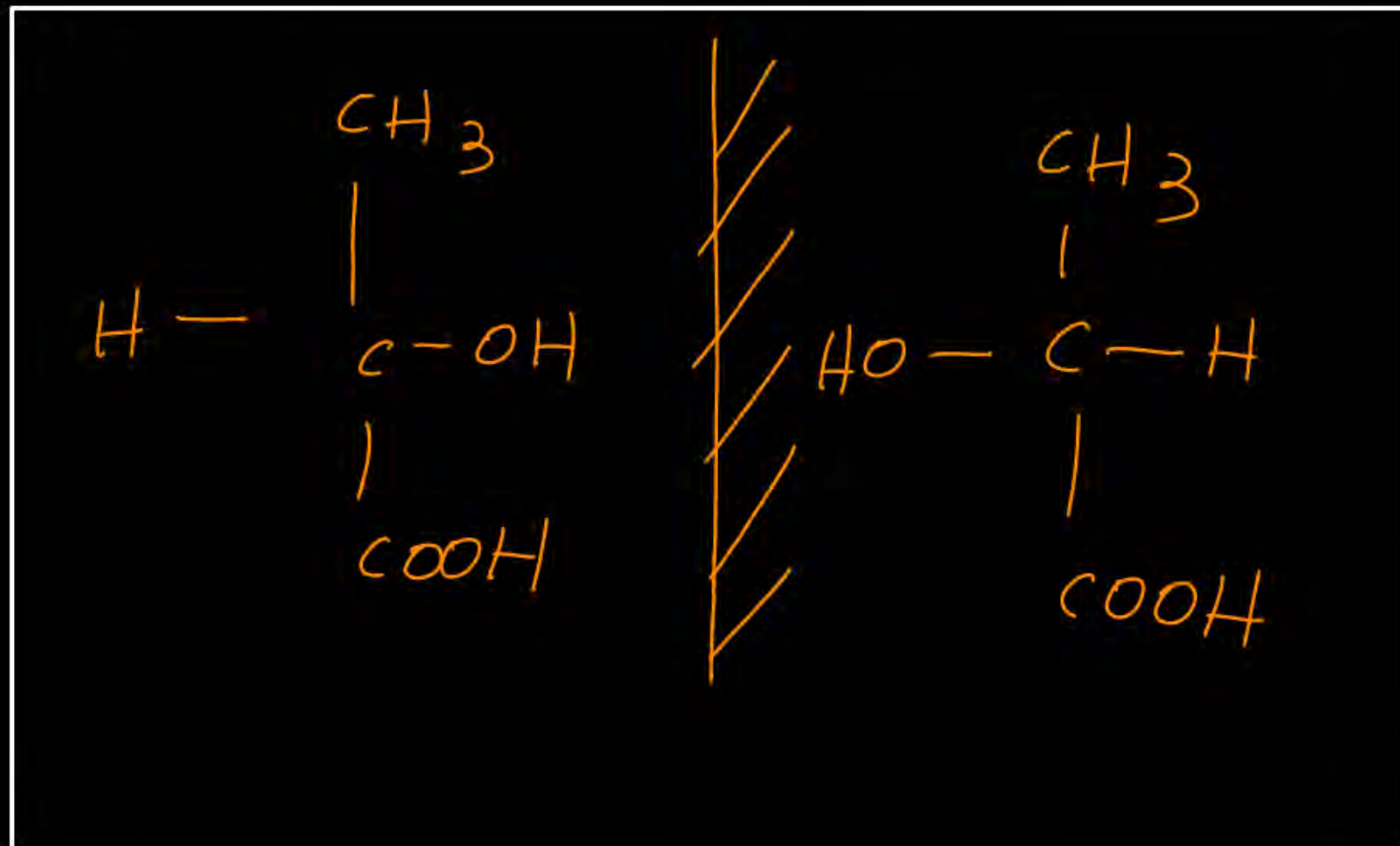
configuration



→ Total no. of optical active isomers.

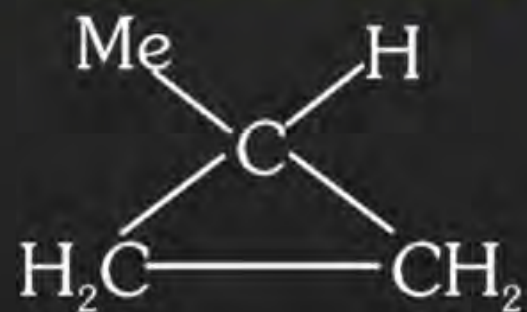
$$\begin{array}{c}
 n \\
 2
 \end{array}
 \rightarrow 2^1 = 2$$

$n \rightarrow$ no. of chiral carbon.



Optical Isomerism in cyclic compounds :

(i)



No chiral carbon,

Molecule is achiral

Molecule is optical inactive

(ii)



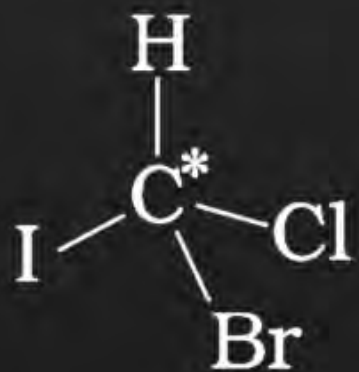
Chiral carbon,

Chiral molecule,

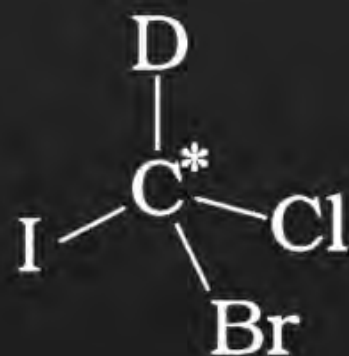
Optically active

Question

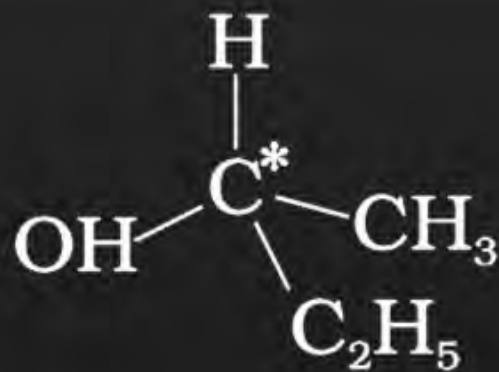
In which of the following molecules carbon atom marked with asterisk (*) is asymmetric?



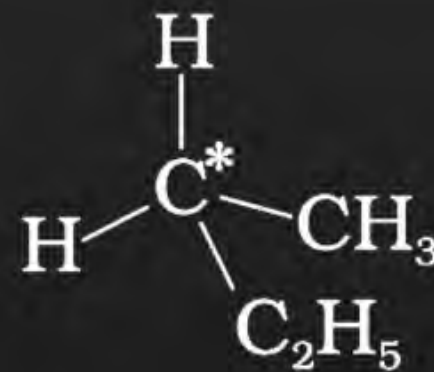
(a)



(b)



(c)



(d)

A (a), (b), (c), (d)

B (a), (b), (c)

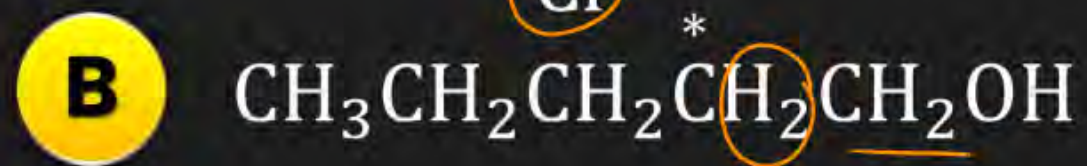
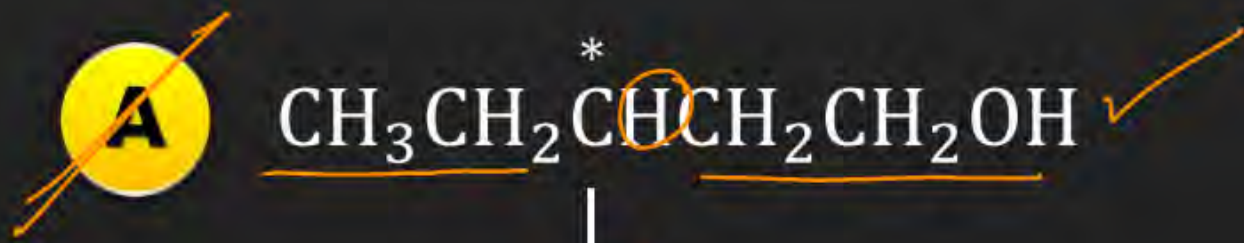
C (b), (c), (d)

D (a), (c), (d)

Question



Which one of the marked carbons is the asymmetric one?



→ chiral

↓
4 diff. groups.

Question



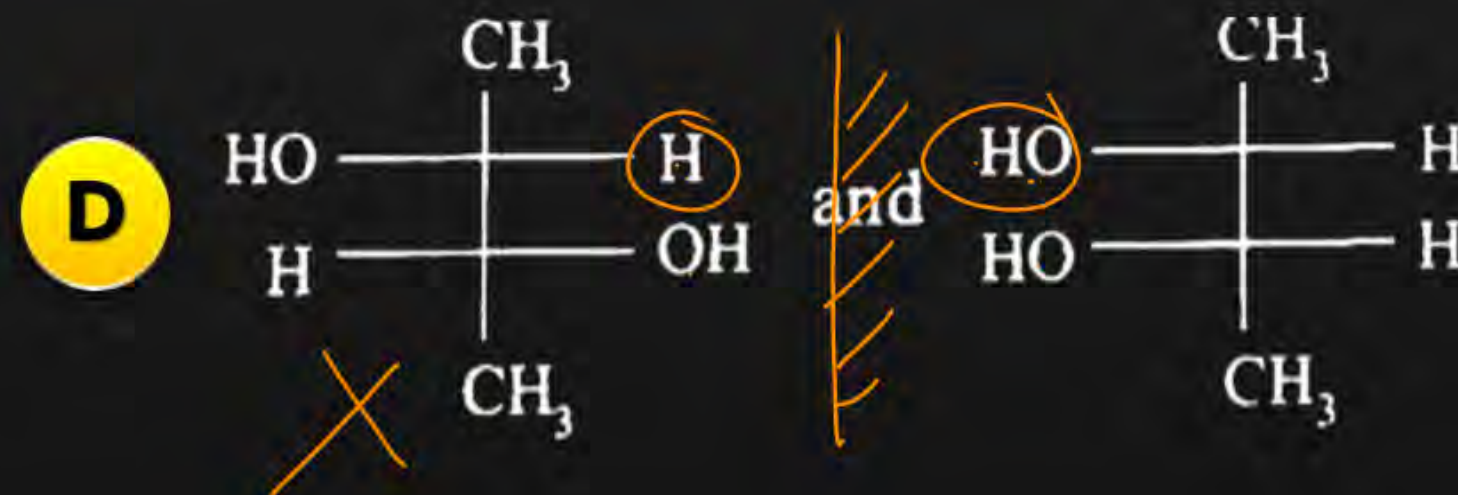
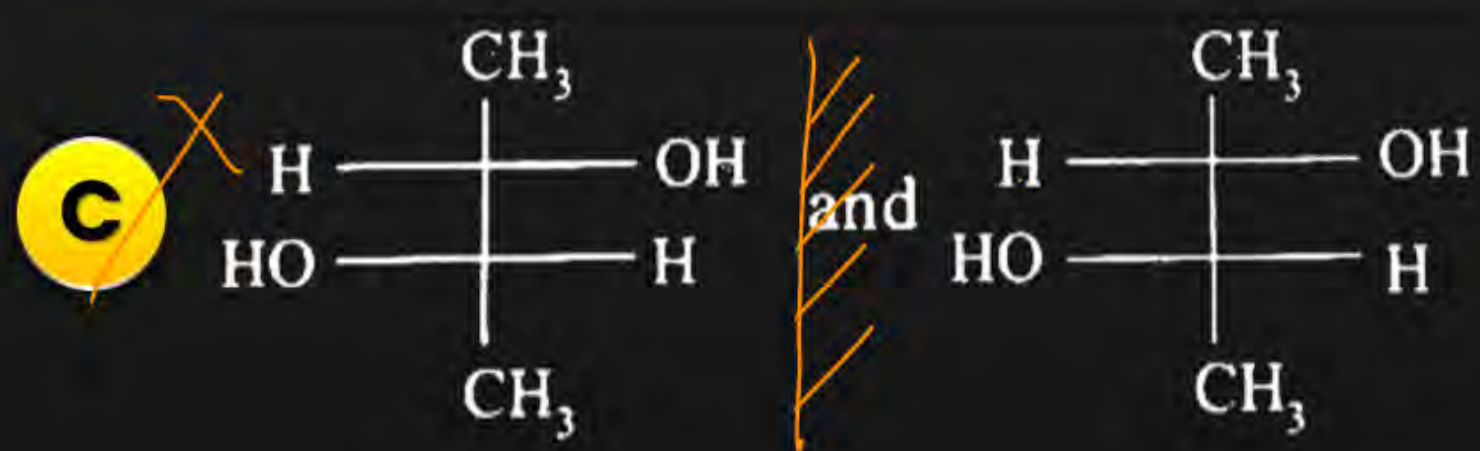
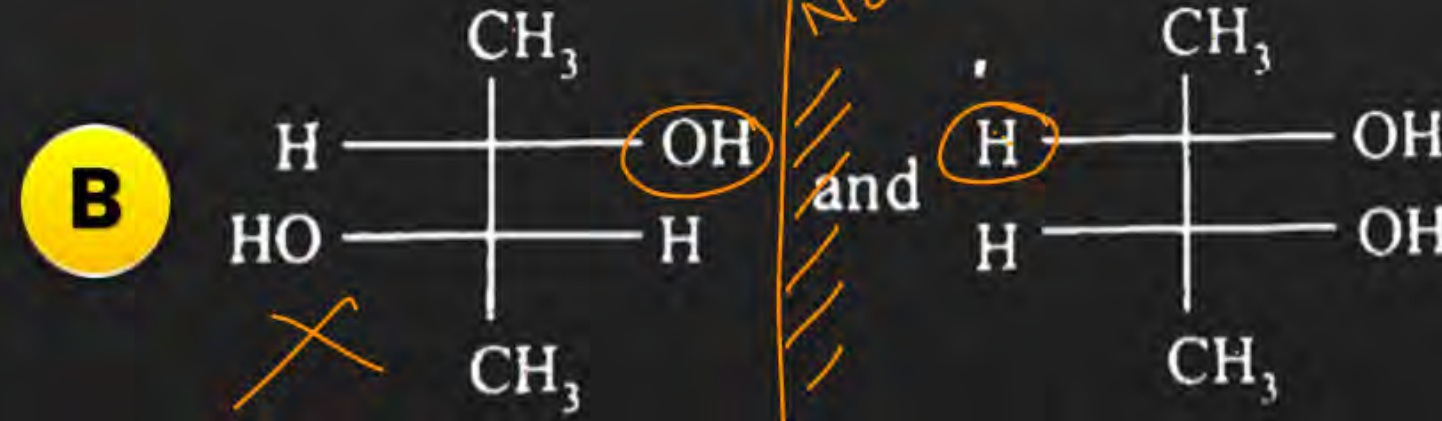
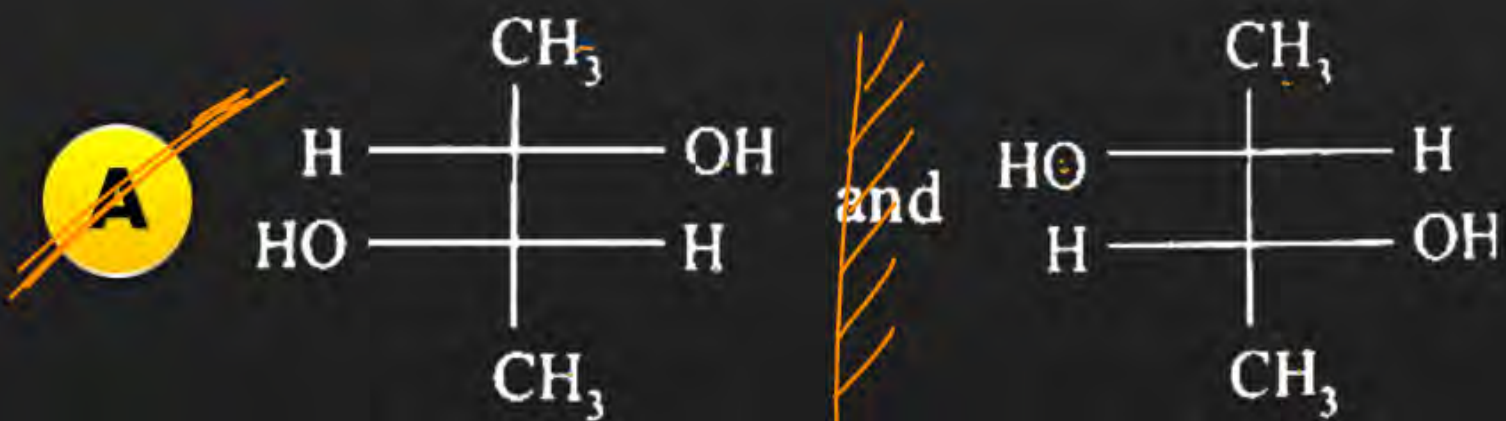
Eclipsed and staggered forms of n-butane are called a pair of

- A** Diastereomers
- B** Conformers
- C** Isomers
- D** Enantiomers

Question



Which of the following pairs of compounds are enantiomers?



Same molecular formula
Nonsuperimposable mirror image

Question



Which of the following exhibits zero dipole moment ?

Homework

- A** cis-But-2-ene
- B** trans-But-2-ene
- C** But-1-ene
- D** 2-Methylprop-1-ene

Question



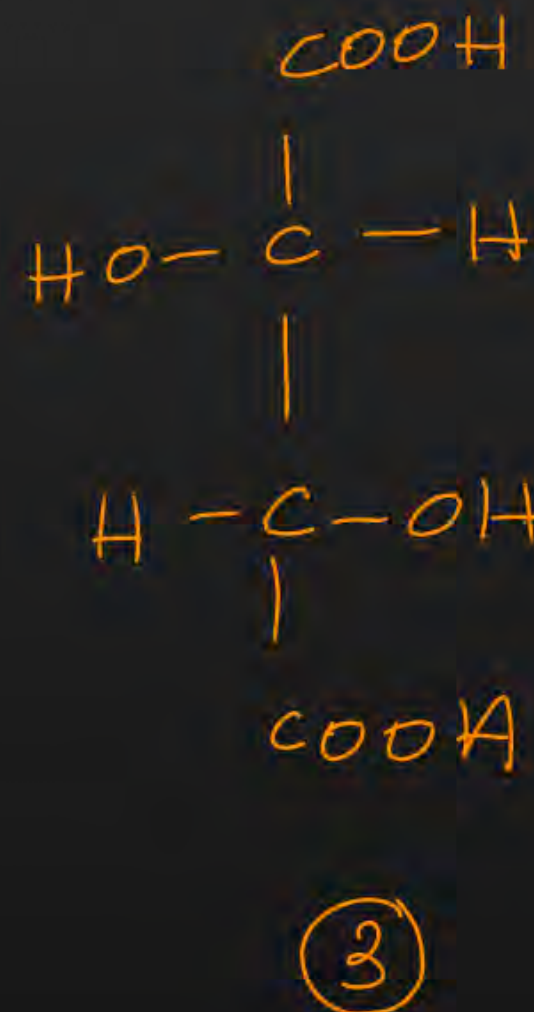
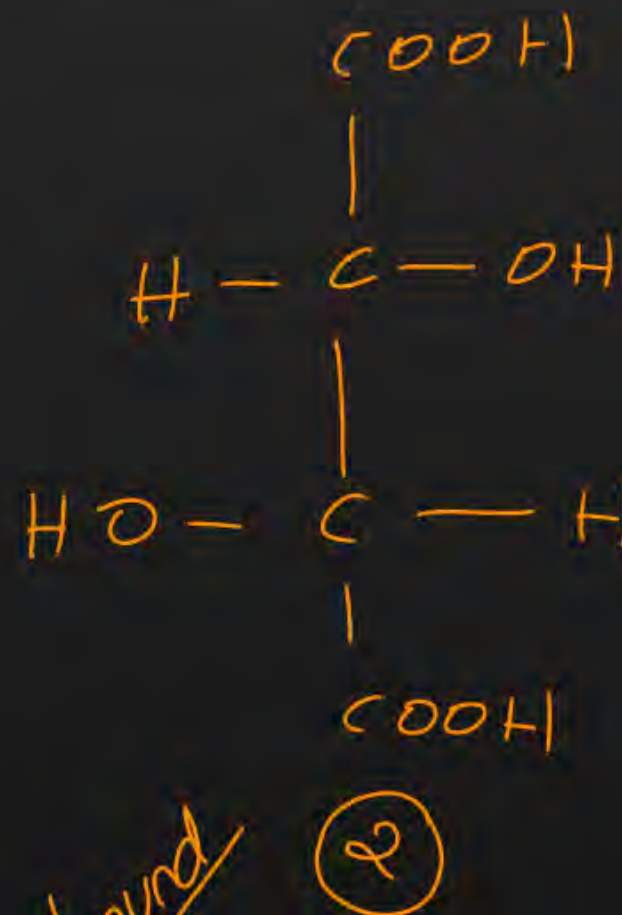
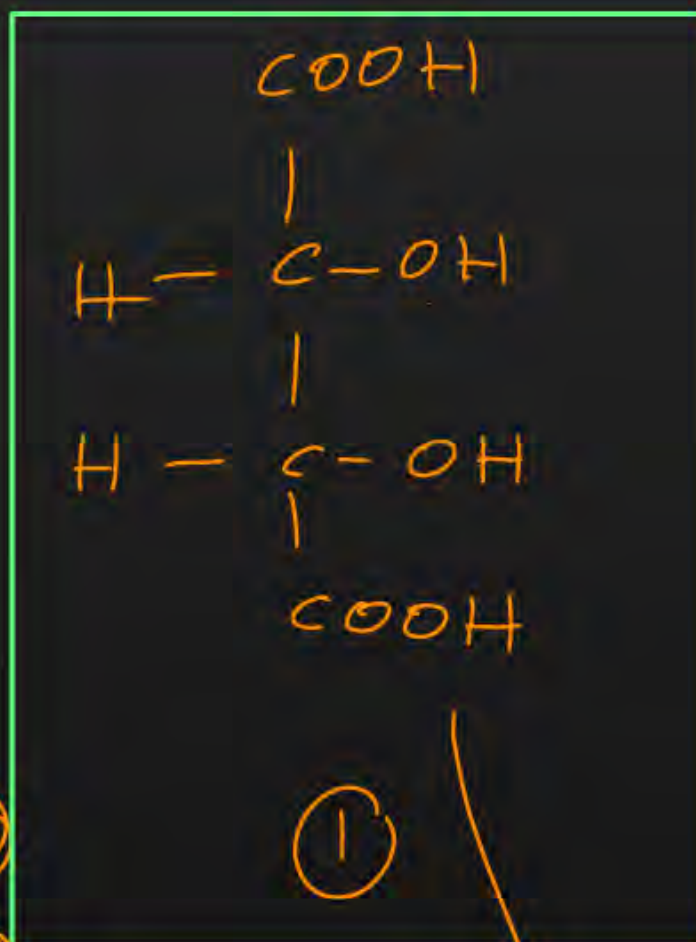
Optically active isomers but not mirror images are called

A Enantiomers

B Mesomers

C Tautomers

D Diastereomers ^{(1) & (2)}
^{(1) & (3)}



Mesocompound

Question



The number of optical isomers of the compound $\text{CH}_3\text{CHBrCHBrCOOH}$ is

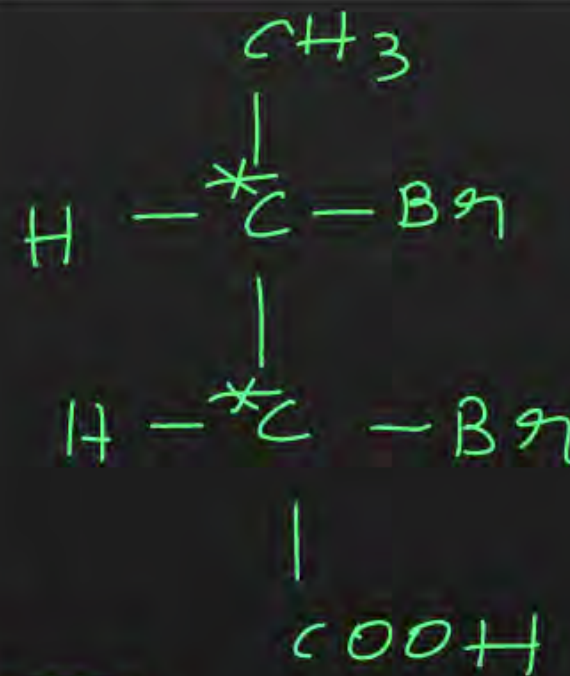
A 0

B 1

C 3

D 4

$$2^n \rightarrow 2^2 \\ = 4$$



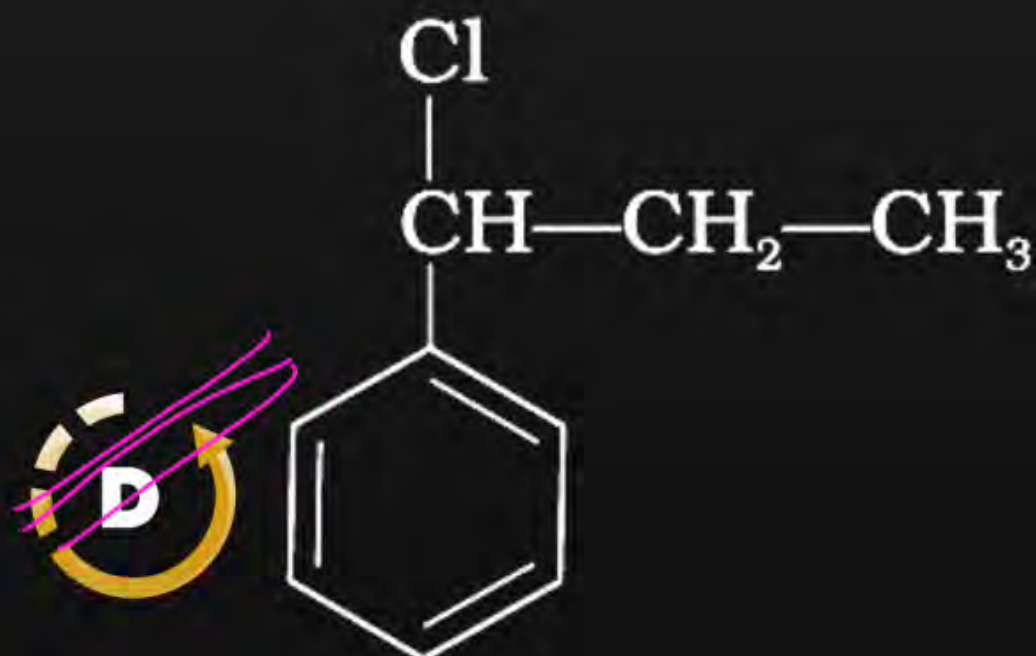
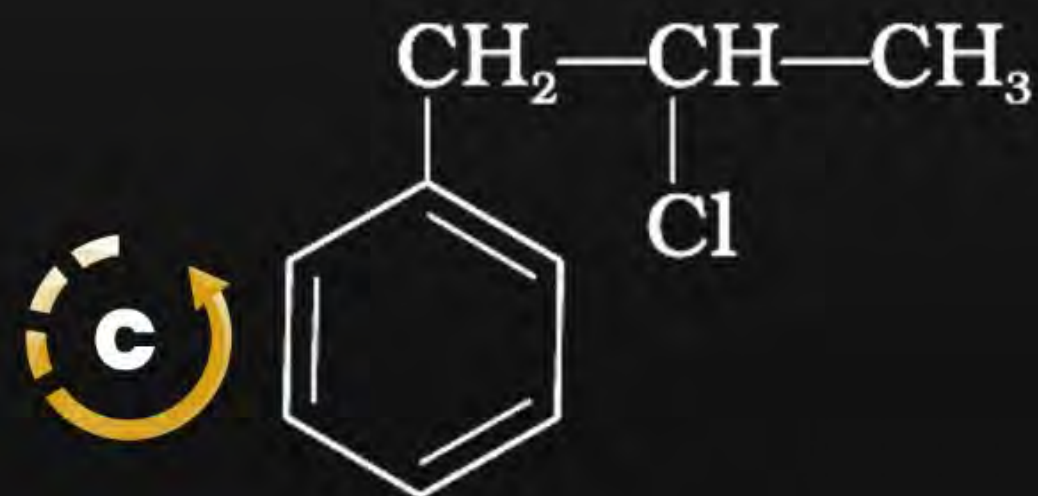
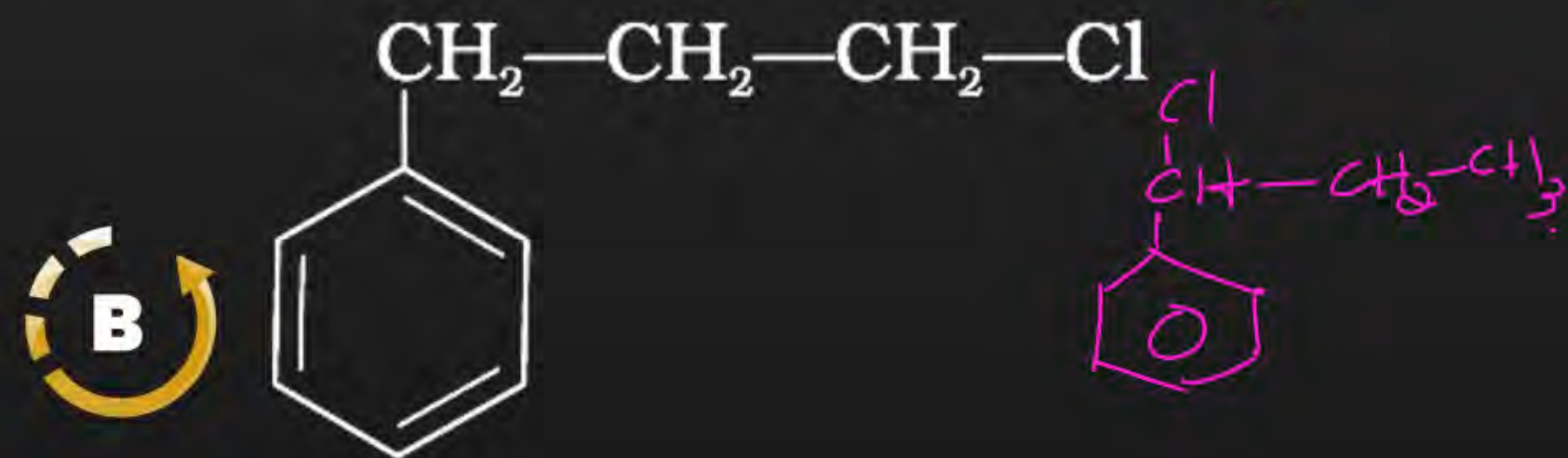
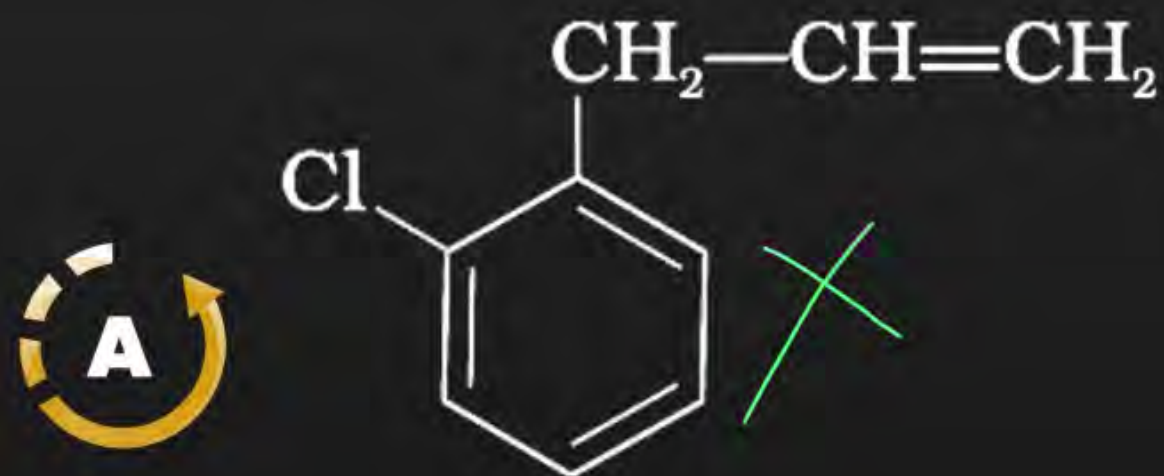
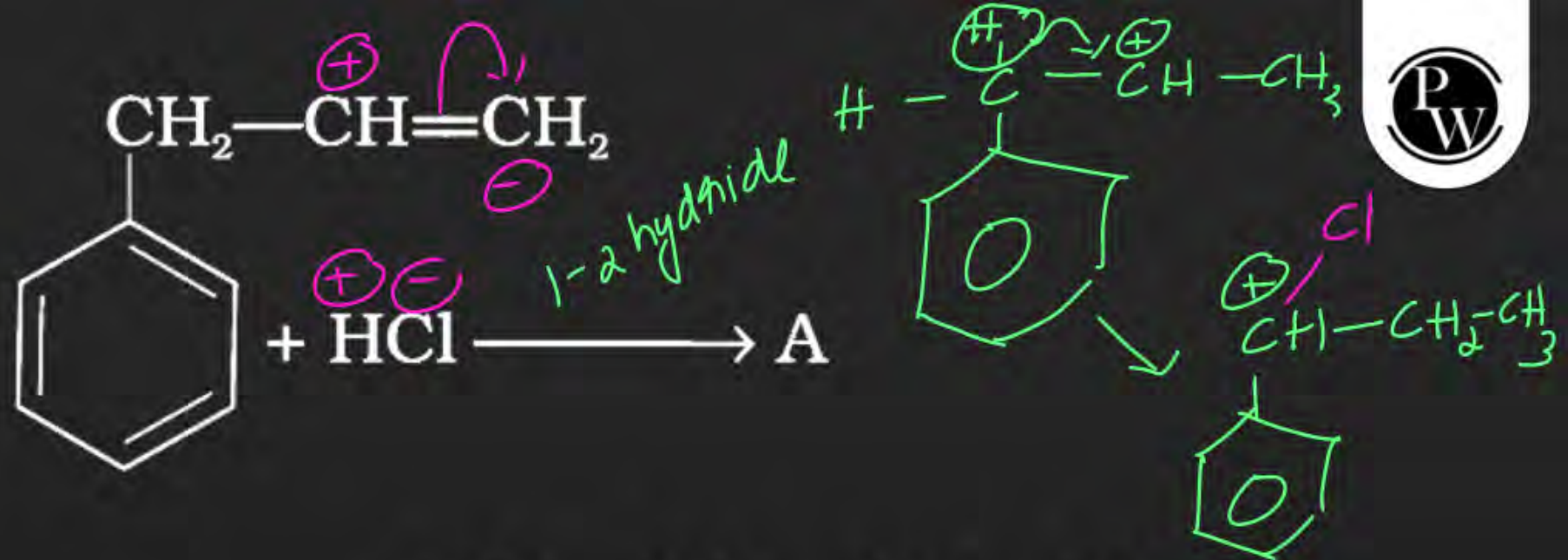
$$n = 2$$

$n = \text{chiral carbon}$

KCET
Pimp
~~~~~

## Question

What is 'A' in the following reaction?



## Question



A primary alkyl halide would prefer to undergo \_\_\_\_\_.

**A**  $S_N1$  reaction

~~**B**  $S_N2$  reaction~~

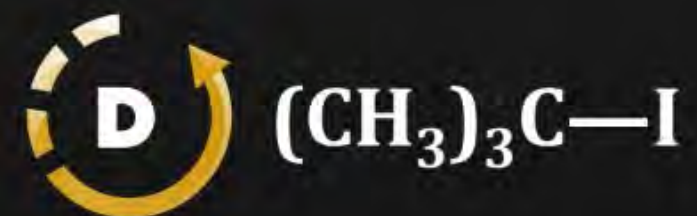
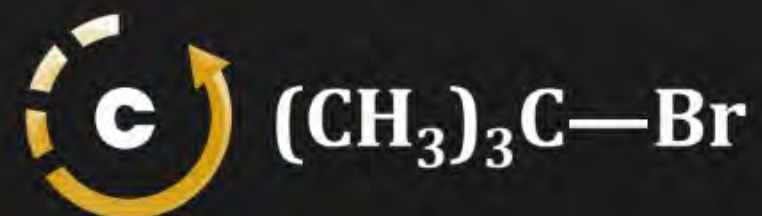
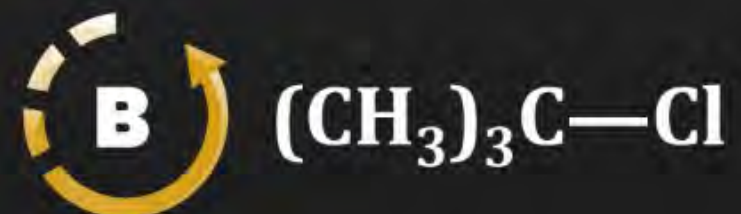
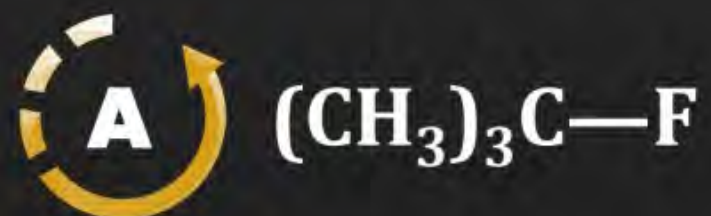
**C**  $\alpha$ -Elimination

**D** Racemisation

## Question



Which of the following alkyl halides will undergo  $S_N1$  reaction most readily?



$$\text{CH}_3-\underset{\text{C}_2\text{H}_5}{\text{CH}}-\text{CH}_2-\text{Br} ?$$

-  **A** 1-Bromo-2-ethylpropane
-  **B** 1-Bromo-2-ethyl-2-methylethane
-  **C** 1-Bromo-2-methylbutane
-  **D** 2-Methyl-1-bromobutane

## Question



What should be the correct IUPAC name for diethylbromomethane?

**A** 1-Bromo-1,1-diethylmethane

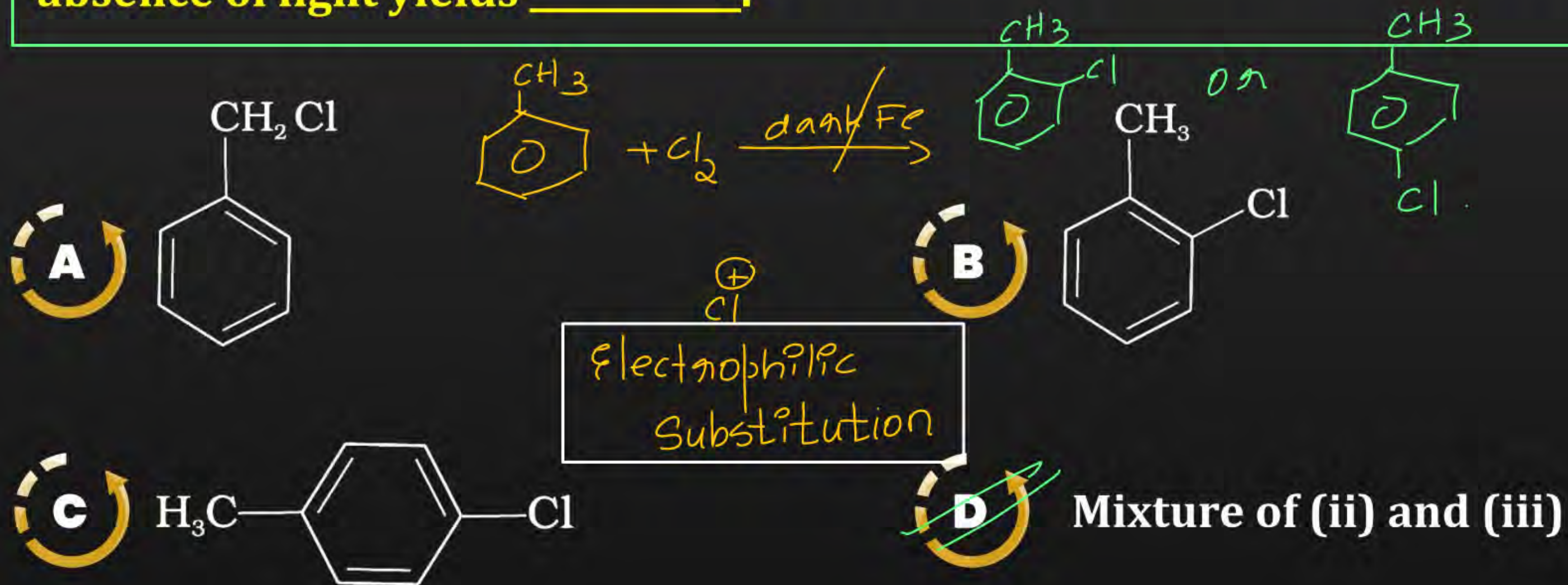
**B** 3-Bromopentane

**C** 1-Bromo-1-ethylpropane

**D** 1-Bromopentane

## Question

The reaction of toluene with chlorine in the presence of iron and in the absence of light yields \_\_\_\_\_.



## Question



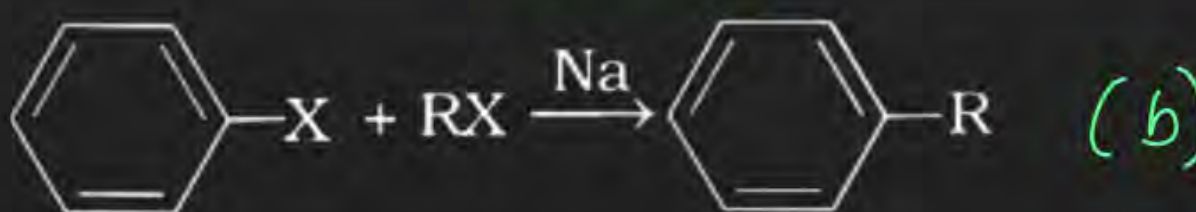
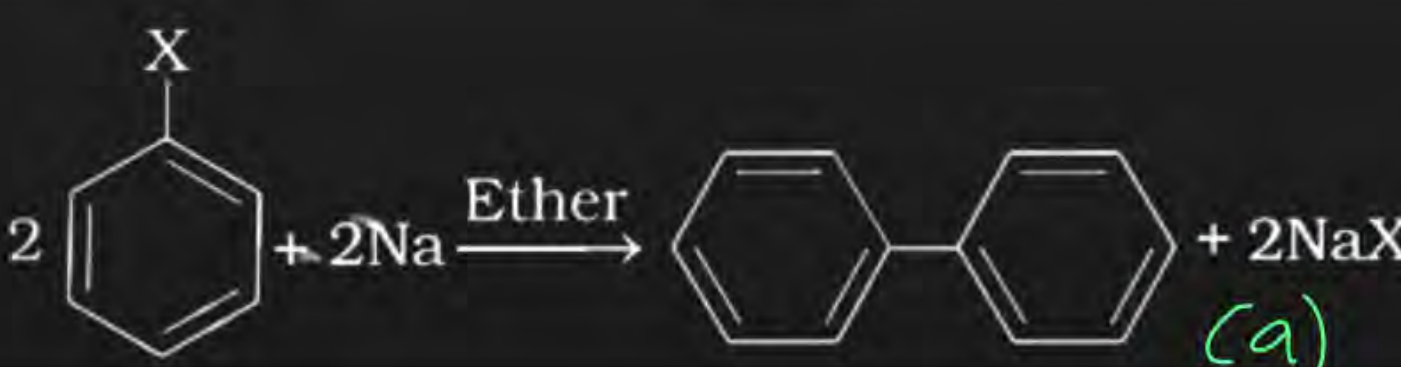
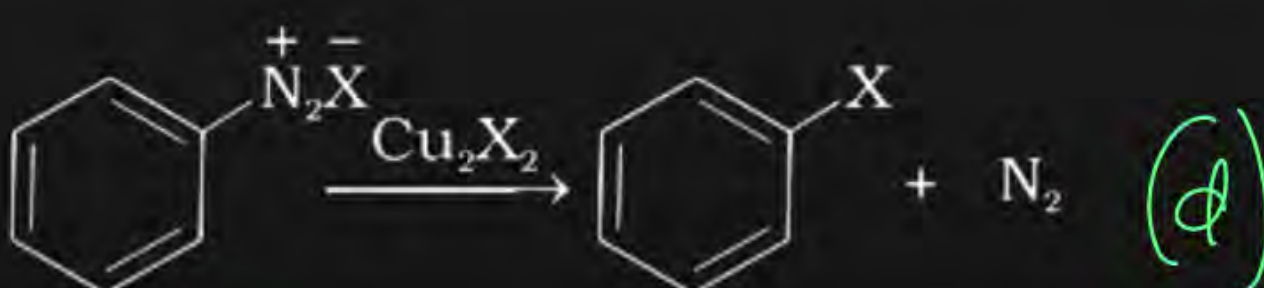
Chloromethane on treatment with excess of ammonia yields mainly

- A** N, N-Dimethylmethanamine ( $\text{CH}_3\text{—N} \begin{array}{l} \text{CH}_3 \\ \text{CH}_3 \end{array}$ )
- B** N-methylmethanamine ( $\text{CH}_3\text{—NH—CH}_3$ )
- C** Methanamine ( $\text{CH}_3\text{NH}_2$ )
- D** Mixture containing all these in equal proportion

# Question



Match the reactions given in Column I with the names given in Column II.

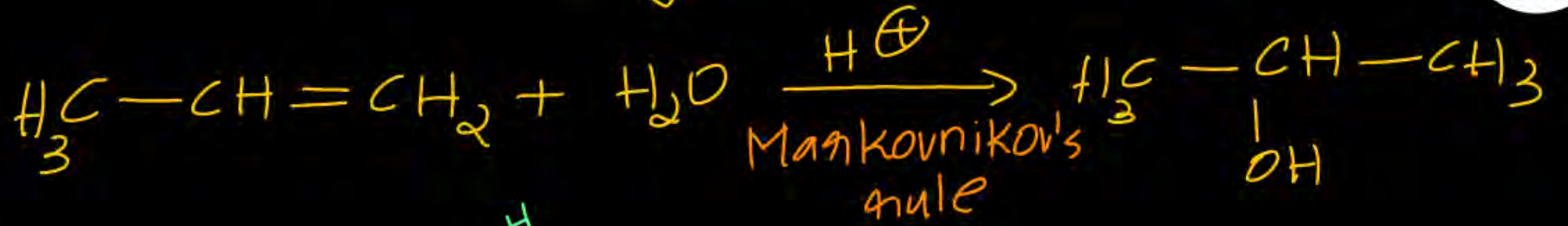
| Column I                                                                                   | Column II                 |
|--------------------------------------------------------------------------------------------|---------------------------|
| (i)      | (a) Fittig reaction       |
| (ii)    | (b) Wurtz Fittig reaction |
| (iii)  | (c) Finkelstein reaction  |
| (iv)   | (d) Sandmeyer reaction    |

## **Alcohols , phenols and ethers**

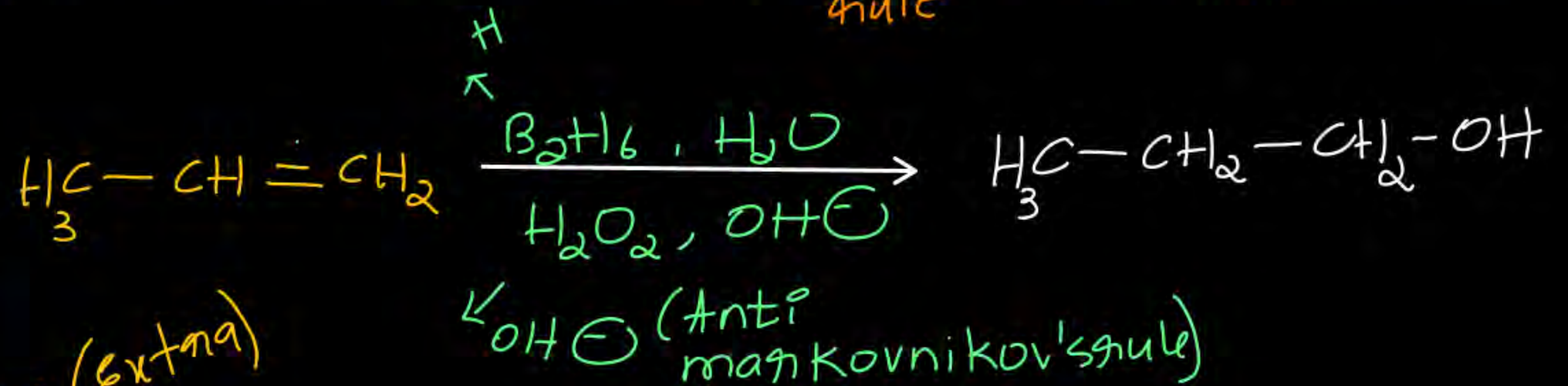
# Synopsis

## Methods of preparation of alcohols

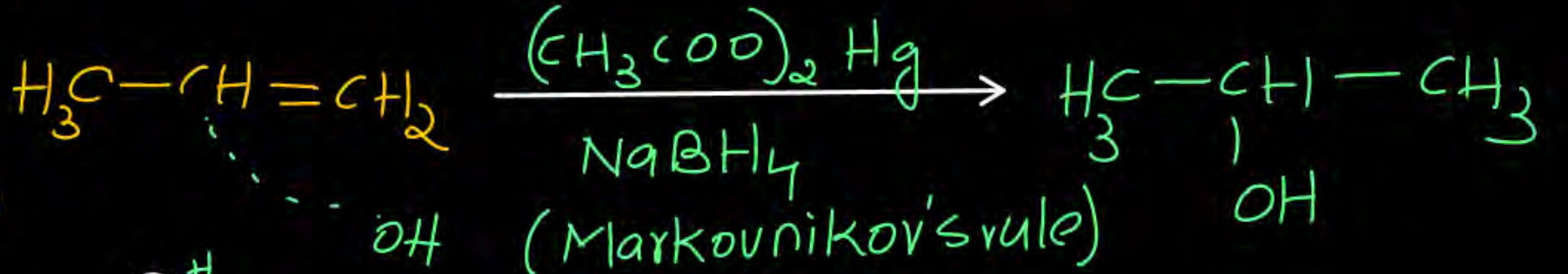
from alkene  
+ acid



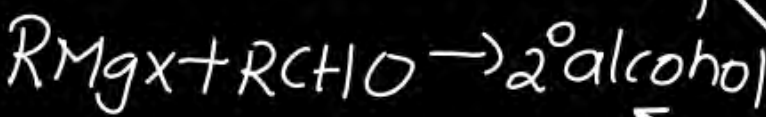
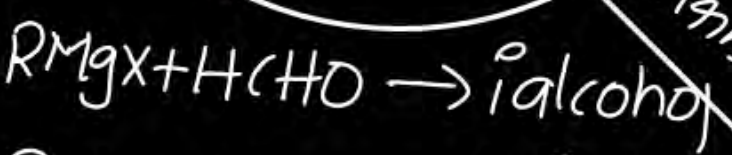
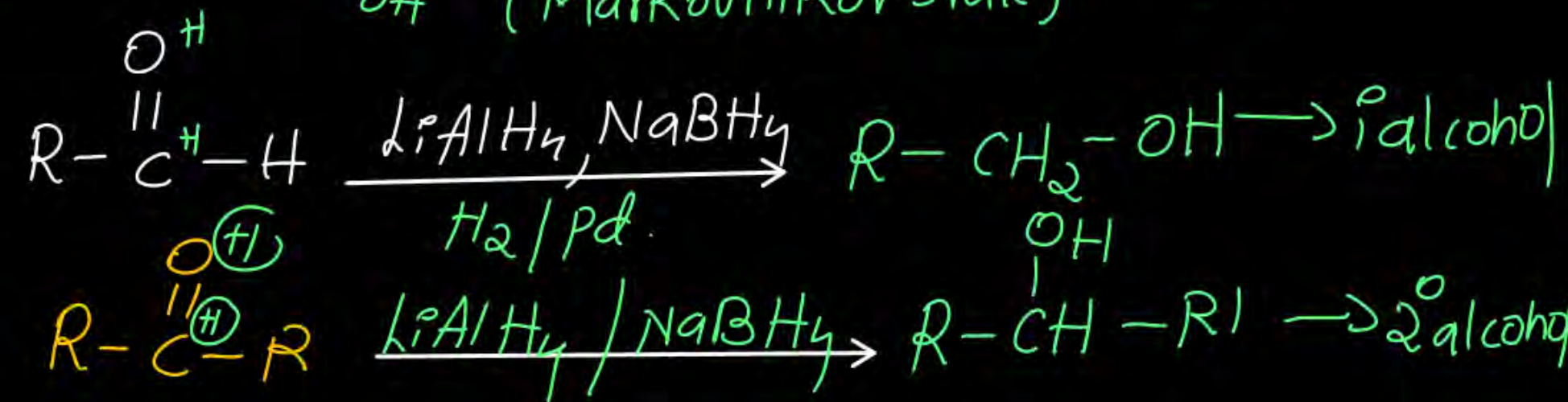
from alkene  
+ diborane  
( $\text{B}_2\text{H}_6$ )



Oxymercuration (extra)  
demercuration (extra)



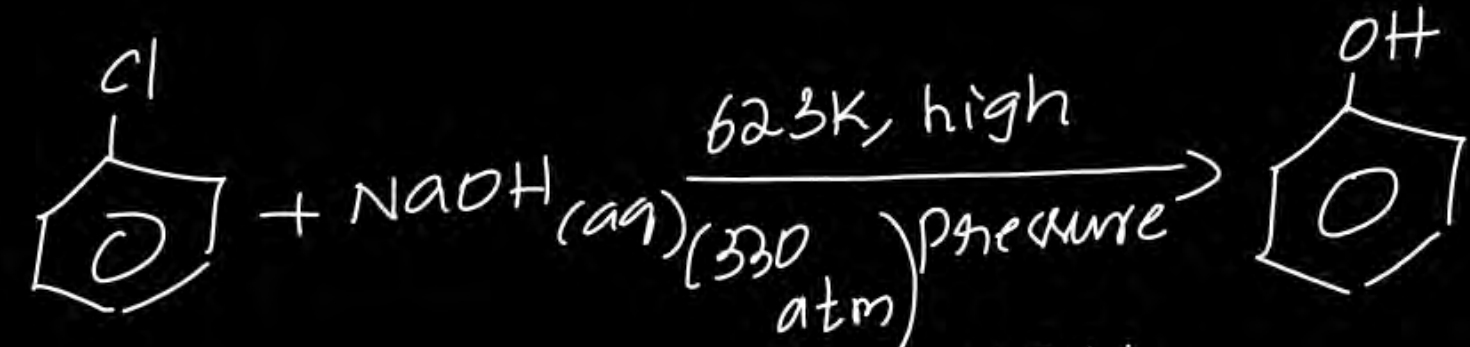
Carbonyl compound



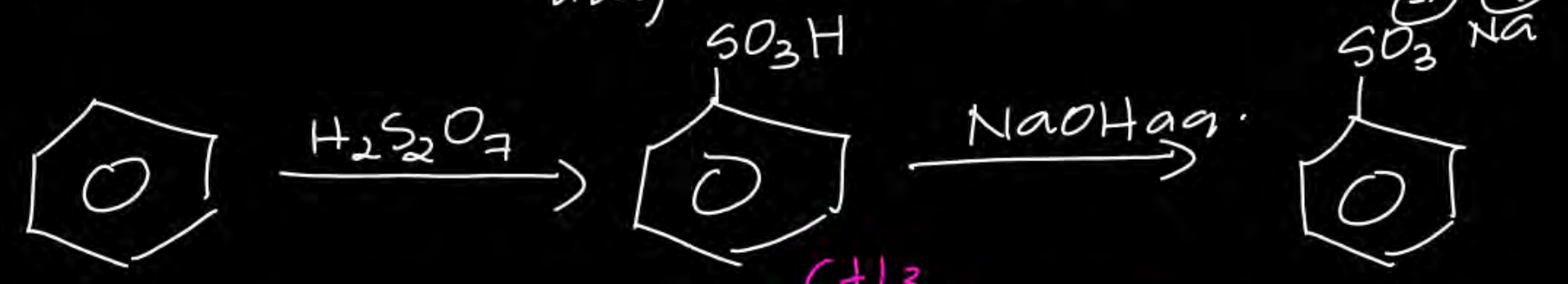
(Grignard reagent)

Preparation of phenol

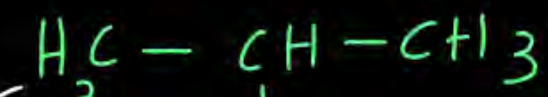
Dow's process



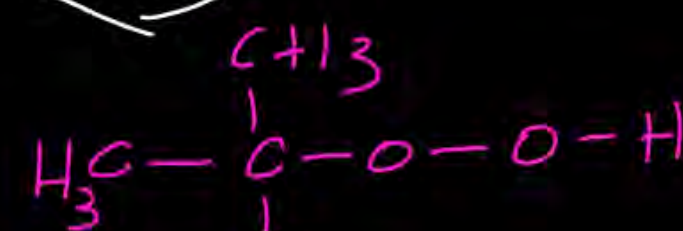
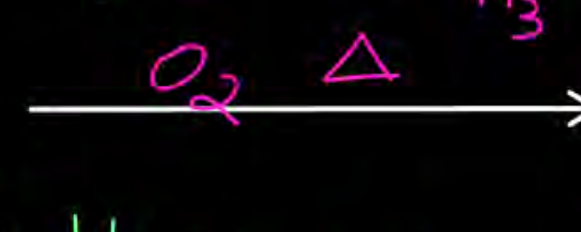
oleum ( $\text{H}_2\text{SO}_7$ )  
 $\text{H}_2\text{SO}_4 + \text{SO}_3$



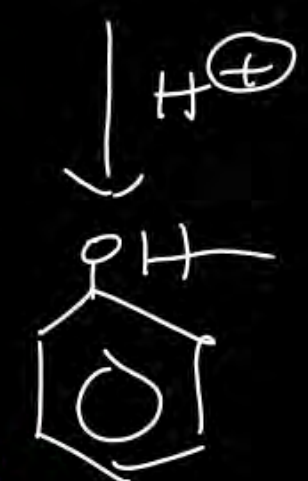
Cumene Synthesis



isopropyl benzene



cumene hydroperoxide



Diazonium +  $\text{H}_2\text{O}$

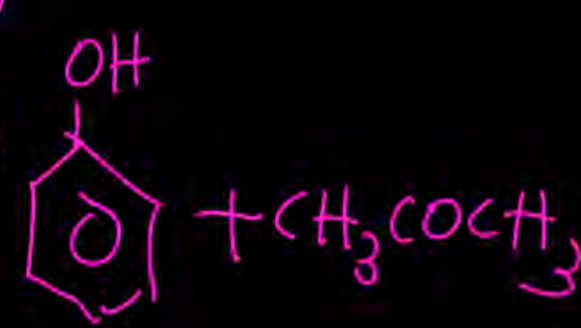


Benzenediazonium chloride

$\text{H}_2\text{O}$ , warm

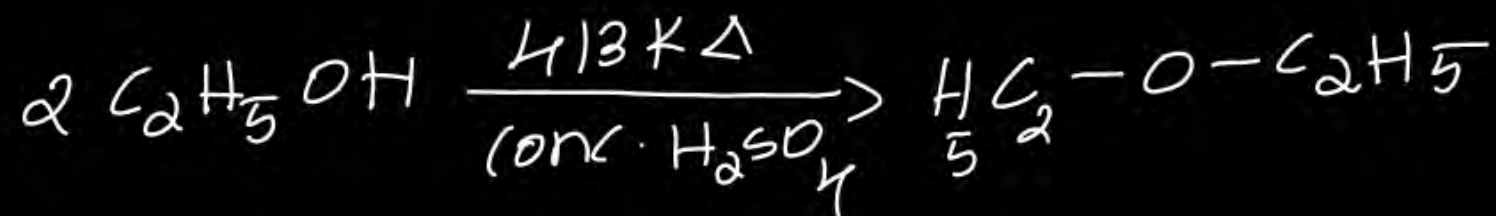


$\text{H}^+$



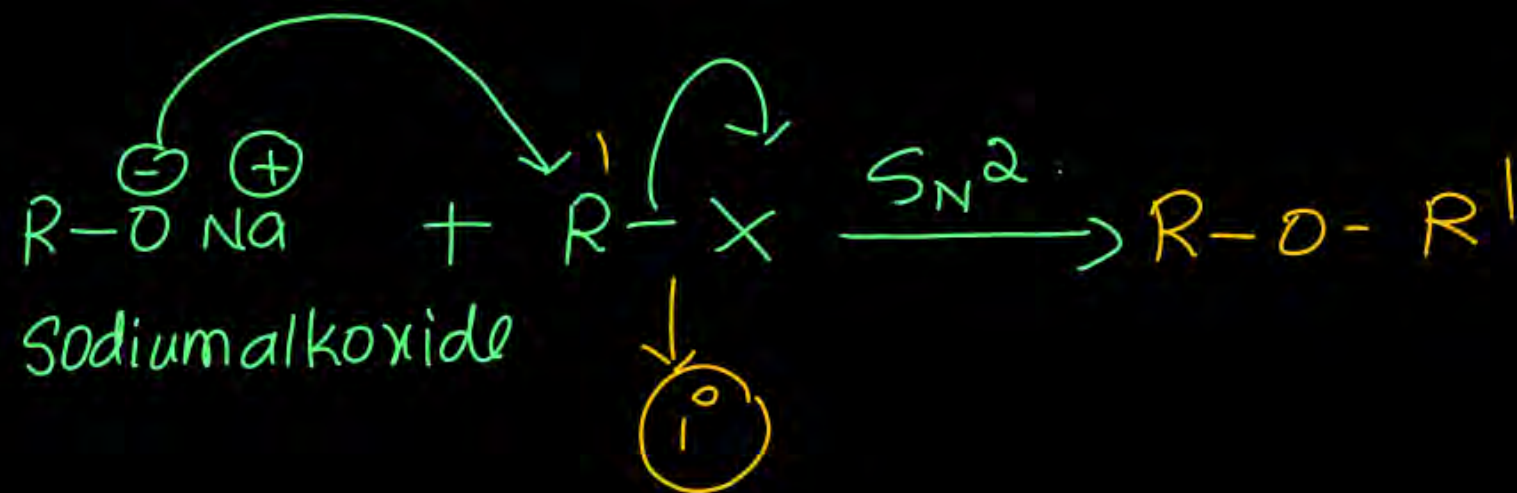
Preparation  
of  
Ether

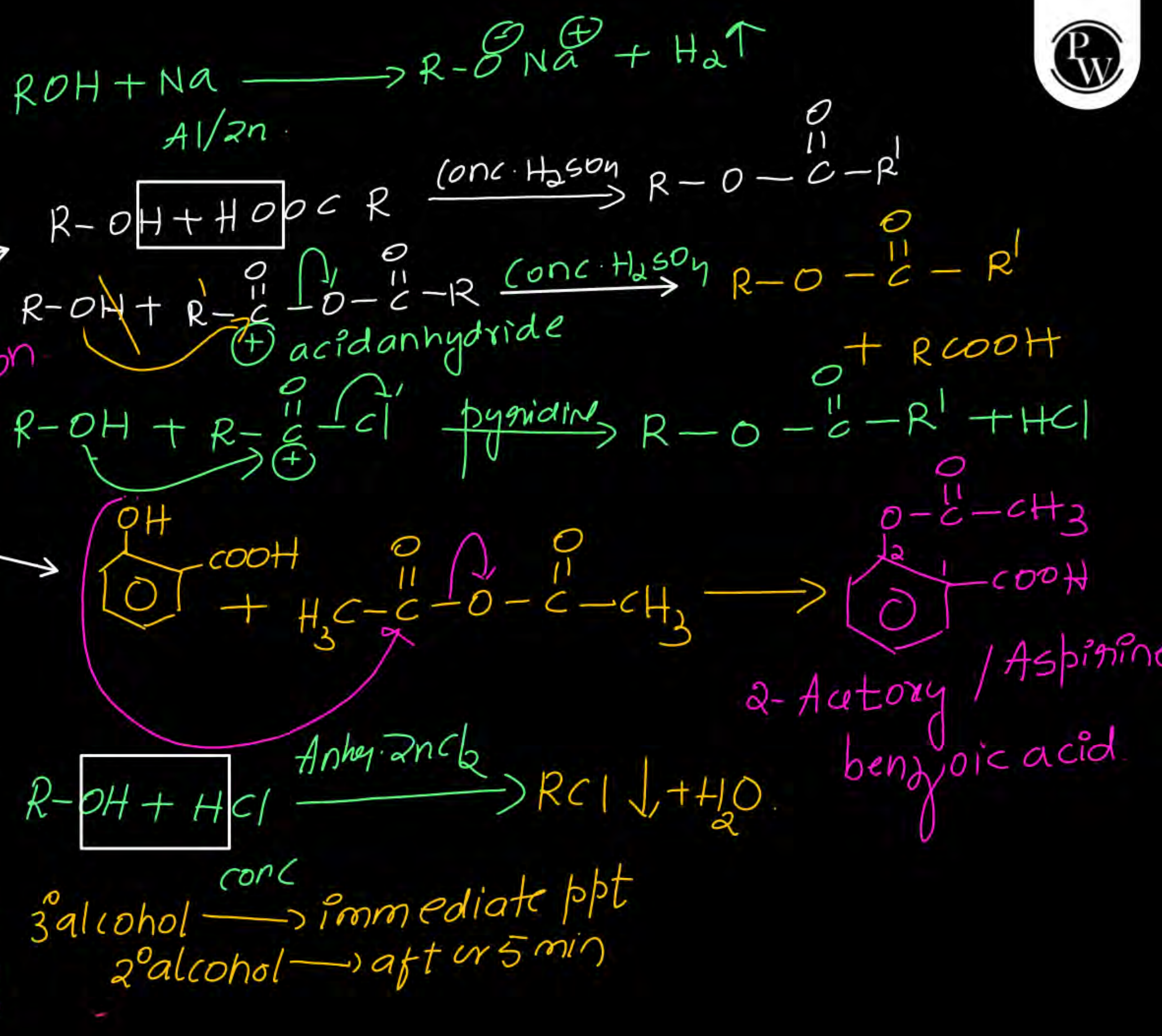
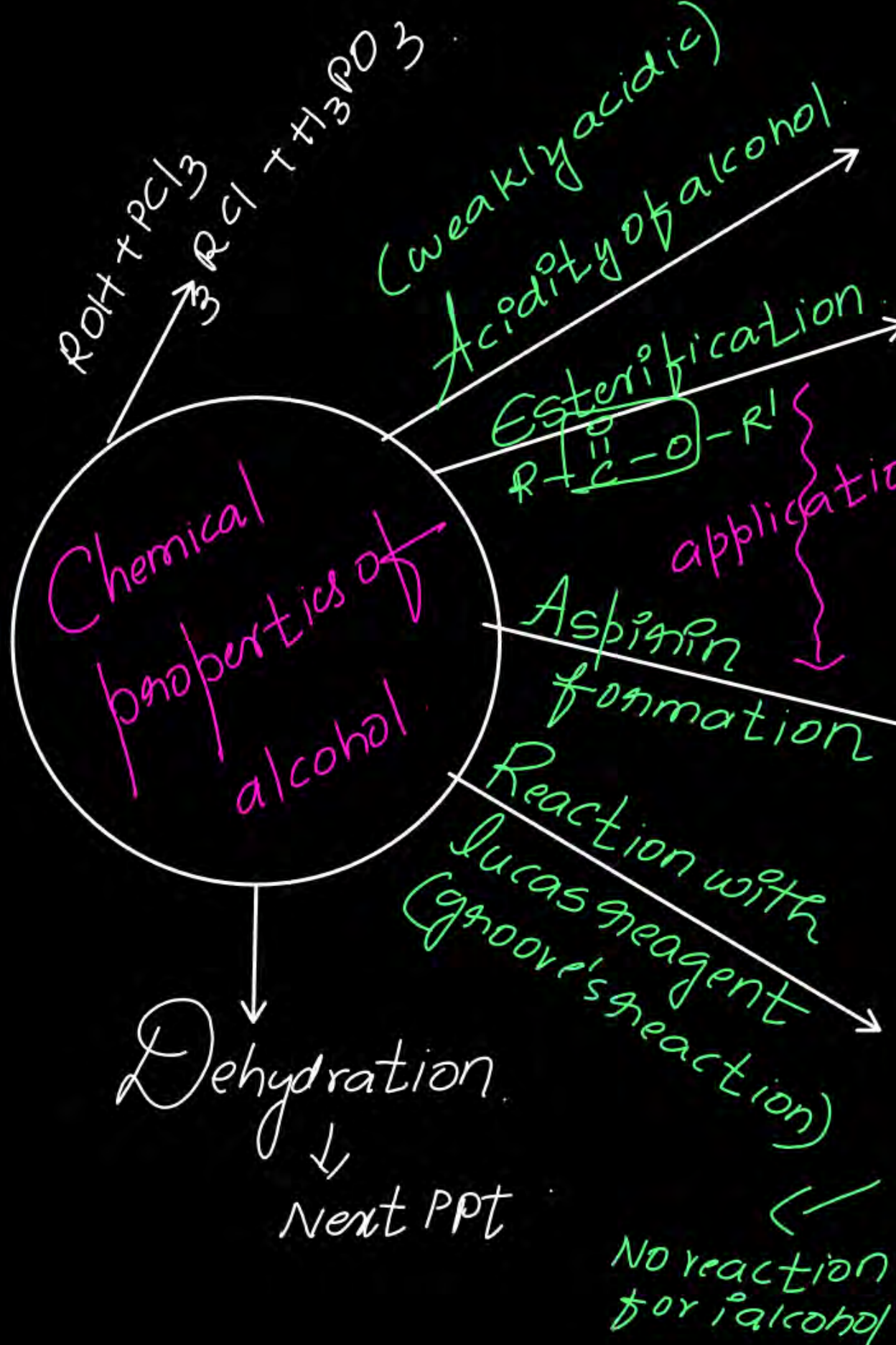
$C_2H_5OH + 413\text{ K}$   
+ heating



Diethyl ether.

Williamson synthesis  
 $RO^-Na^+ + R'-X$





# Chemical Properties of alcohol

Dehydration + 3° alcohol

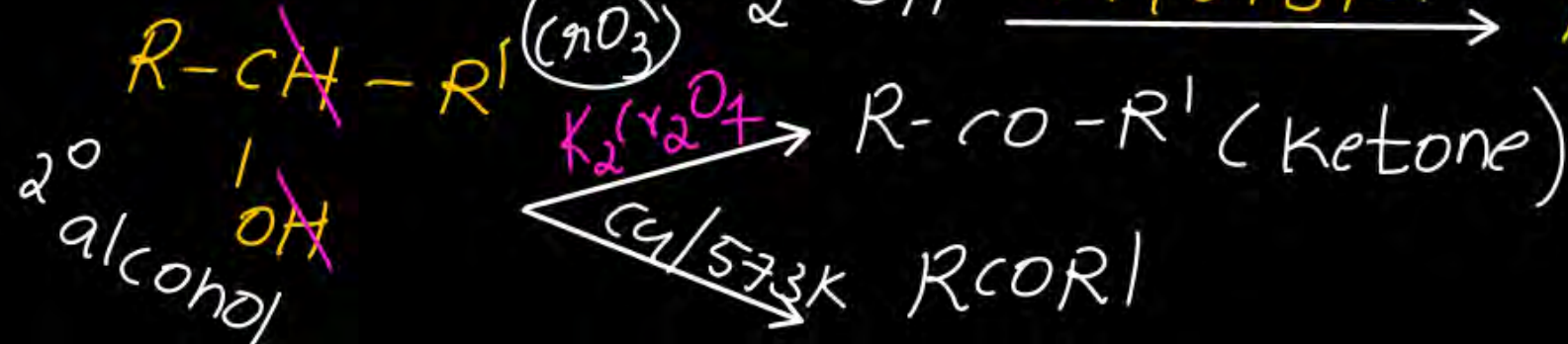
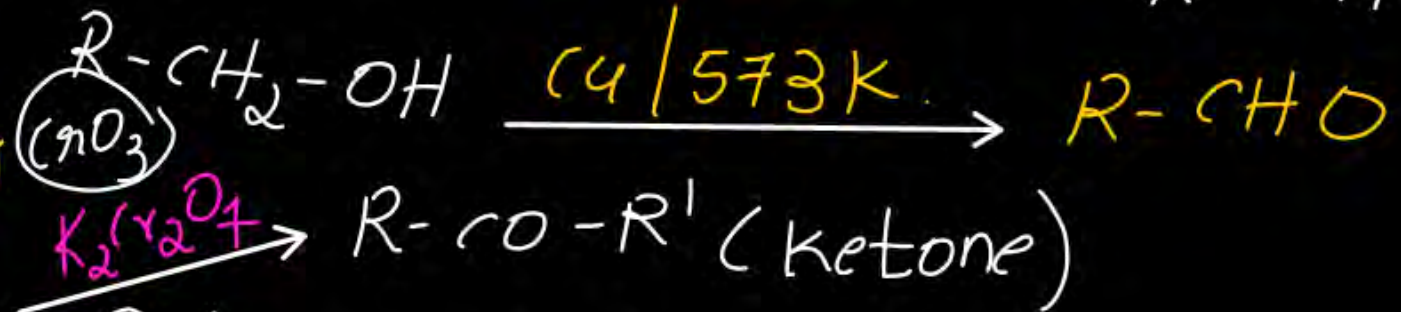
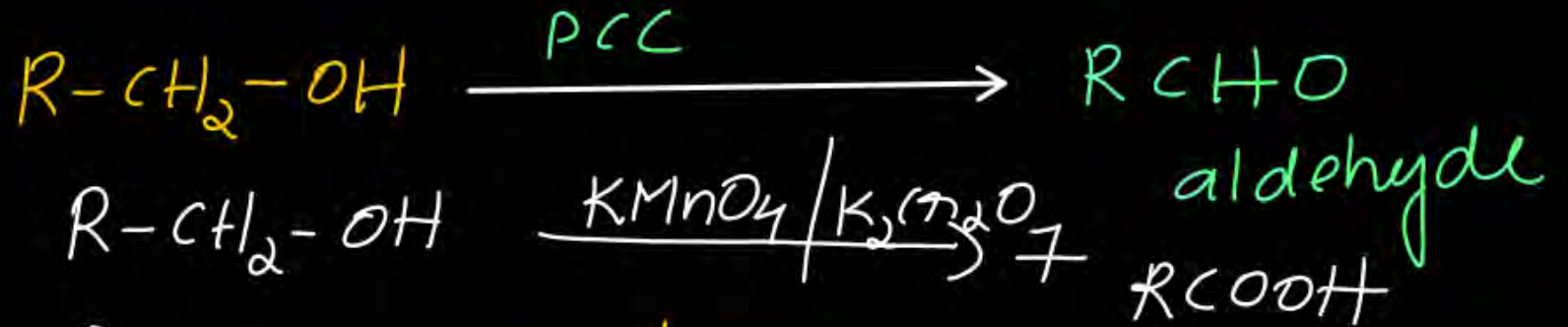
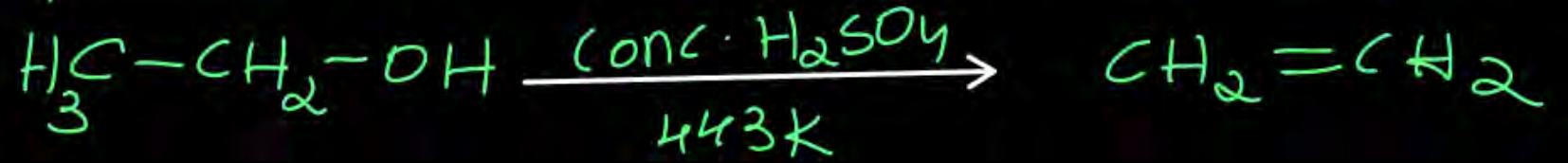
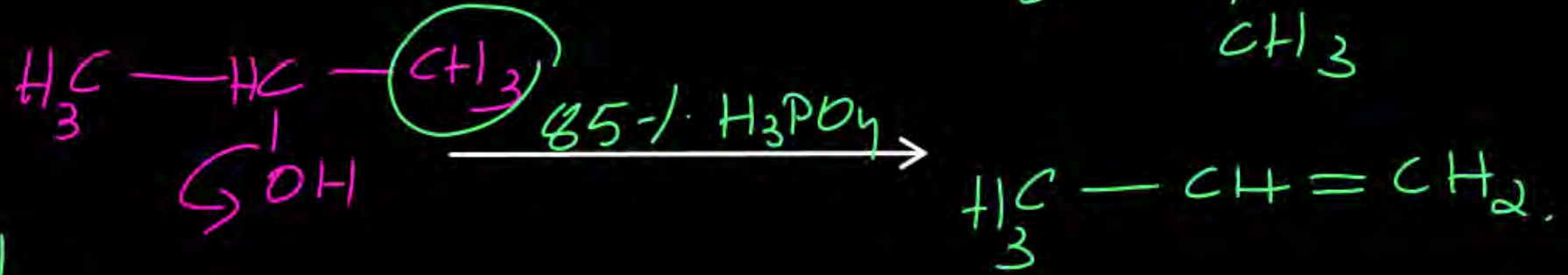
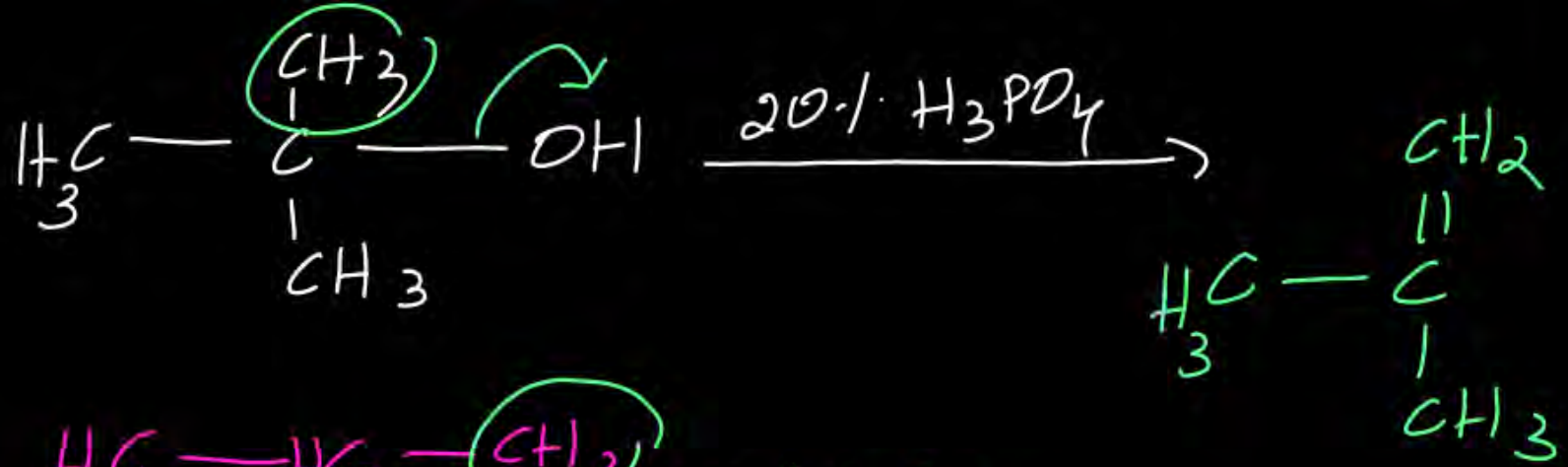
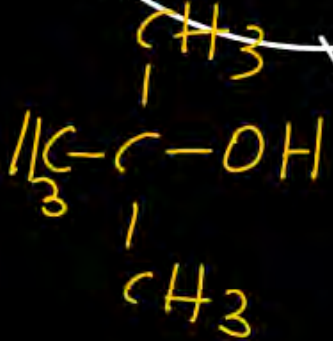
Dehydration + 2° alcohol

Dehydration + 1° alcohol

Oxidation of 1° alcohol

Oxidation of 2° alcohol

Oxidation of 3° alcohol is not possible.



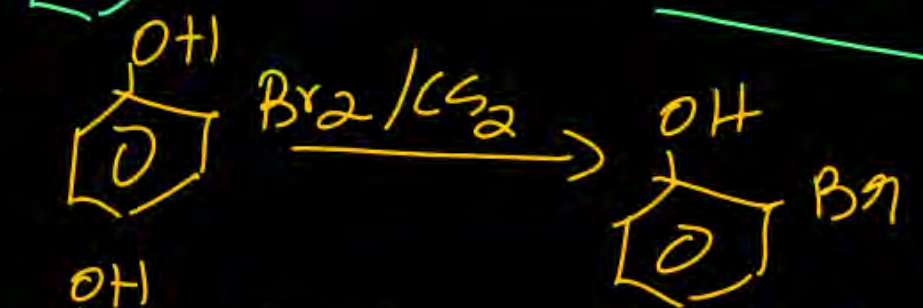
# Chemical Properties of Phenol

phenol + dil  $\text{HNO}_3$   
 conc.  $\text{HNO}_3$

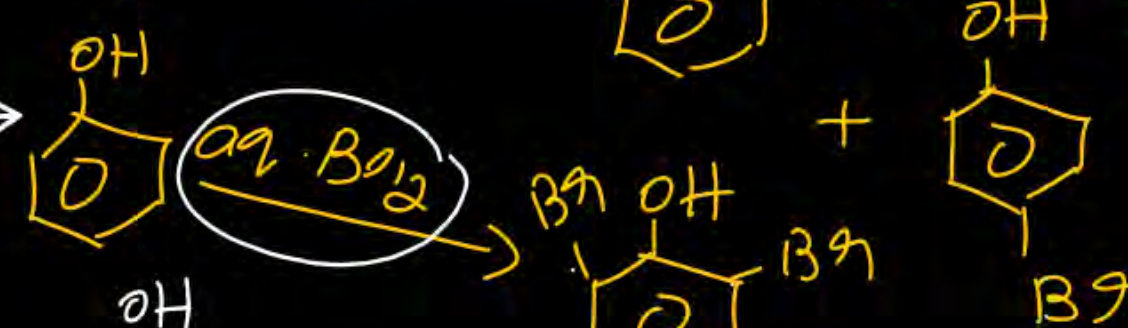


yellow solution  
 picric acid formation

$\text{CS}_2/\text{Br}_2$

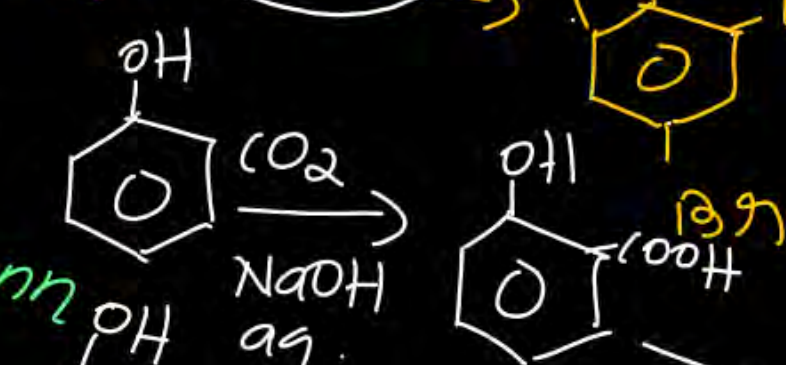


aq.  $\text{Br}_2$



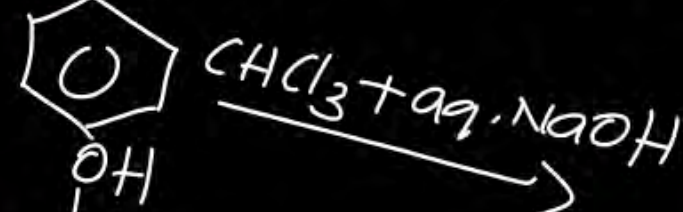
white ppt  
 2,4,6-tribromophenol

Kolbe's  $\text{aq. NaOH}$



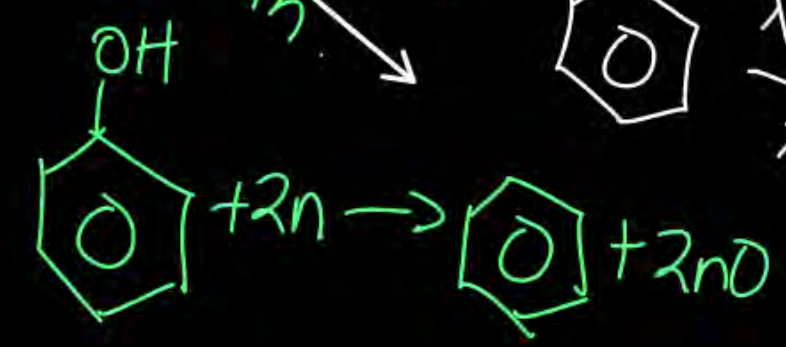
Salicylic acid

Reimer-Tiemann



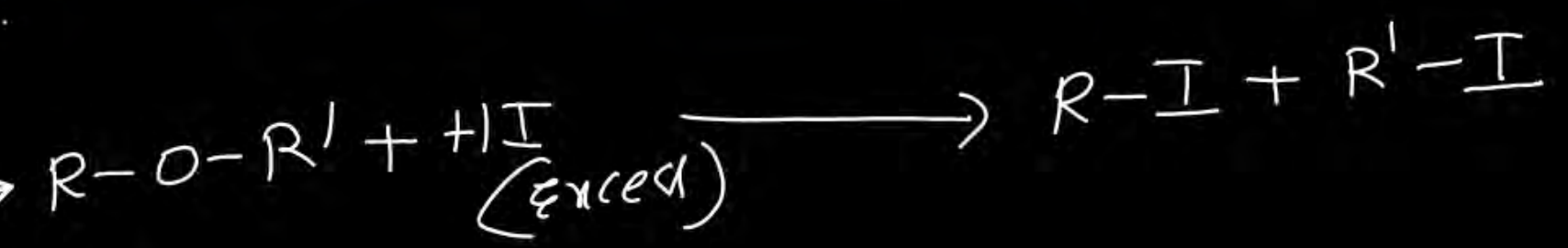
Salicylaldehyde

Oxidation  
 $\text{Na}_2\text{Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4$   
 Reduction + Zn

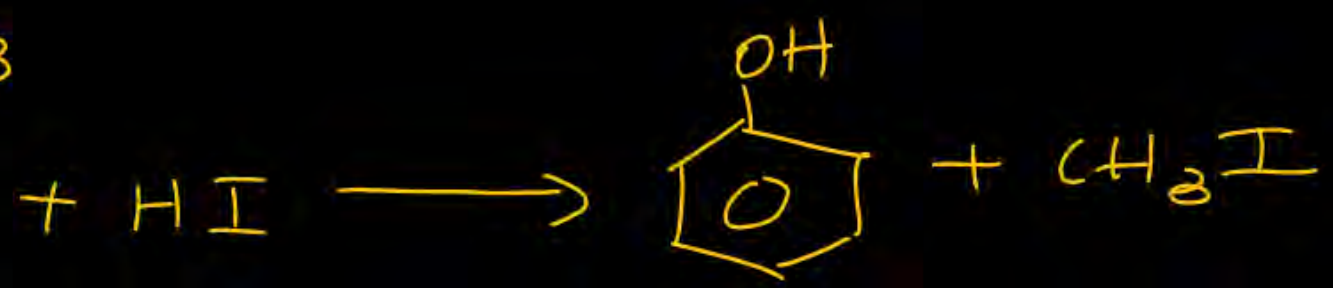
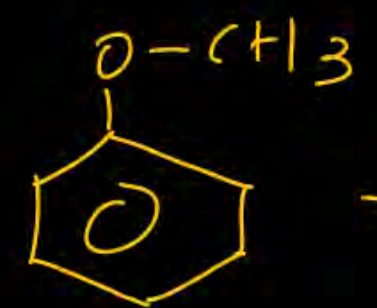
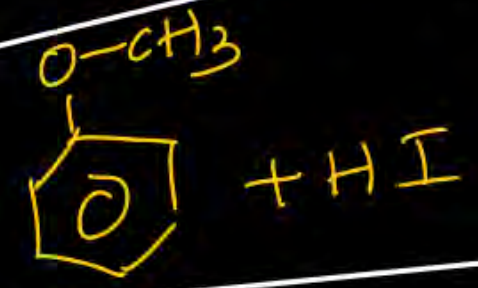


benzoquinone

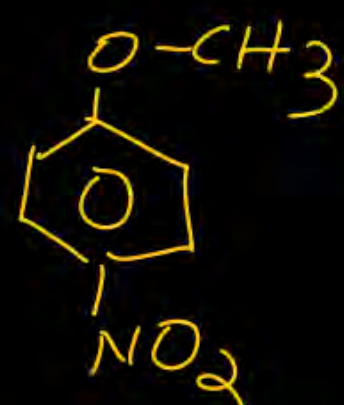
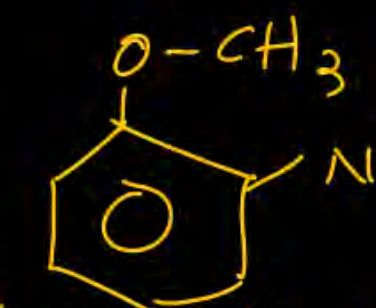
Conditions



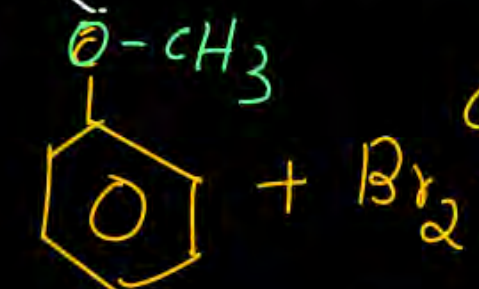
Chemical Properties of Ether



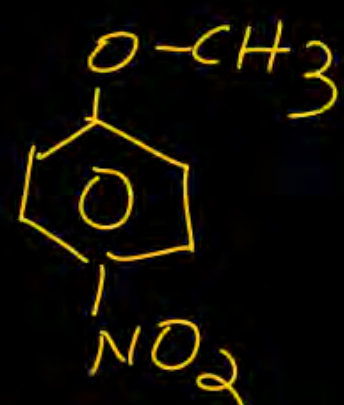
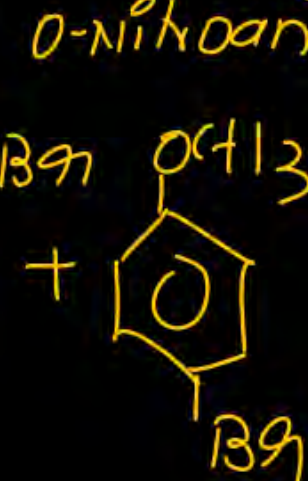
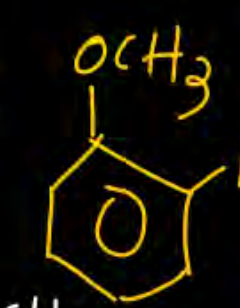
Nitration of anisole



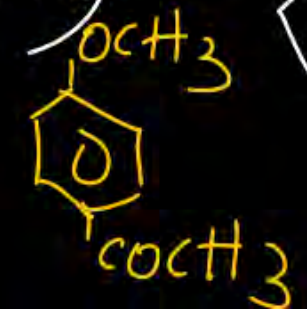
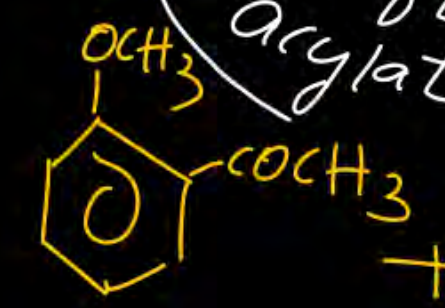
Bromination of anisole



CH3COOH



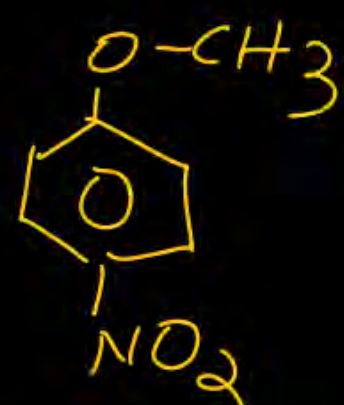
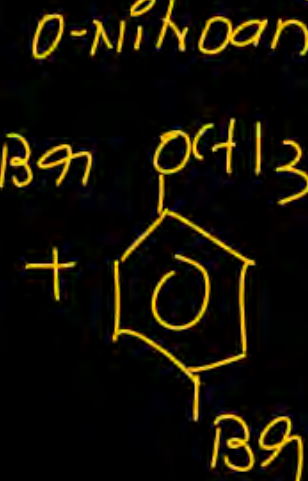
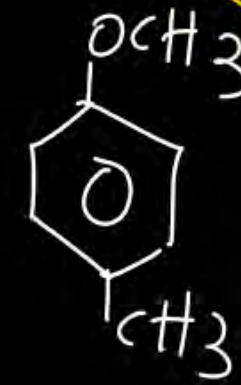
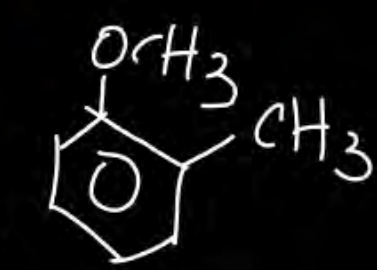
F. Craft acylation



Friedel Craft alkylation



an. AlCl3

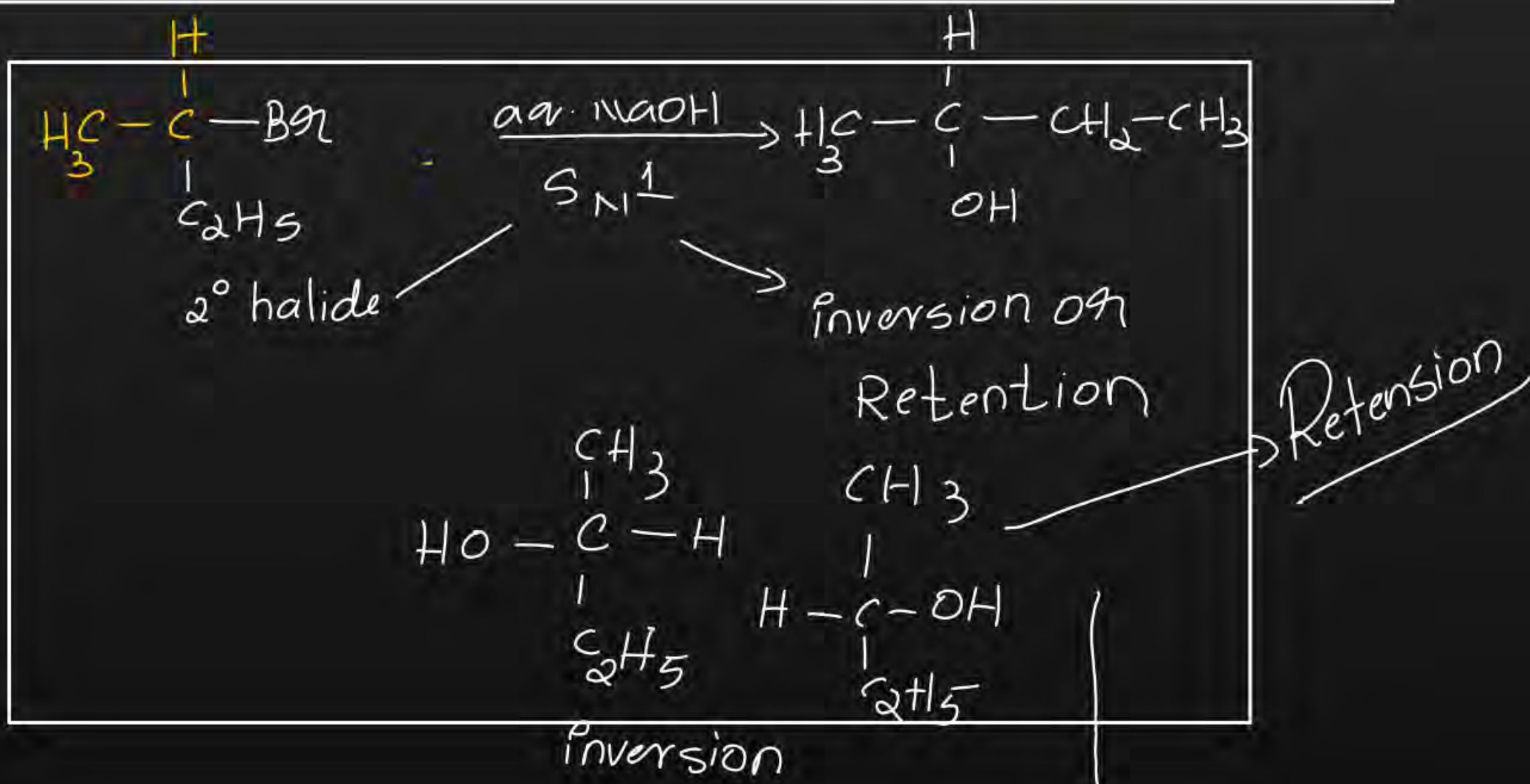


p-Nitroanisole

## QUESTION

The hydrolysis of optically active 2-bromobutane with aqueous NaOH result in the formation of **(2015)**

- A** (+) butan -2-ol
- B** (–) butan-2-ol
- C** (±) butan-1-ol
- D** (±) butan-2-ol



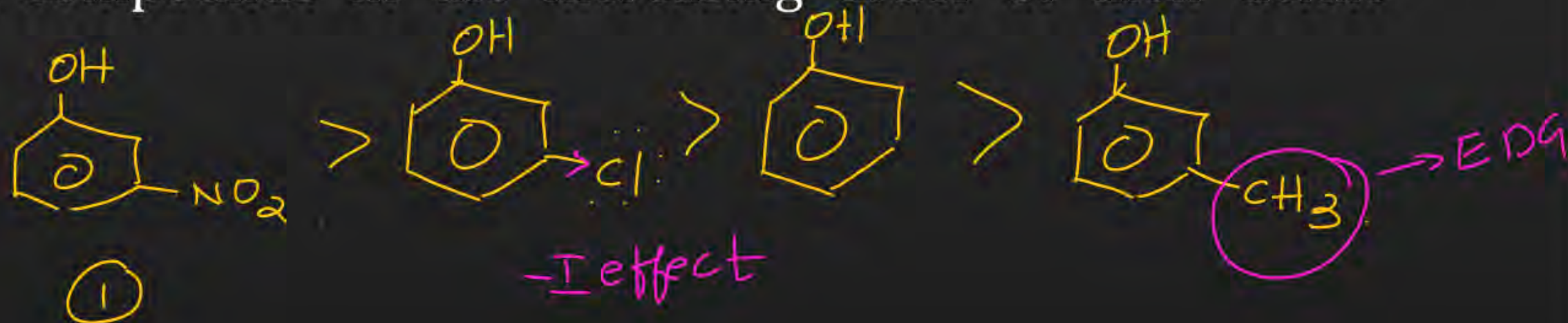
## QUESTION

Acidity of phenol



Arrange the following compounds in the increasing order of their acidic strength.

- I. m-nitrophenol
- II. m-cresol
- III. Phenol
- IV. m-chlorophenol



**A** III < II < I < IV ✗

**B** II < IV < III < I

~~**C** II < III < IV < I~~

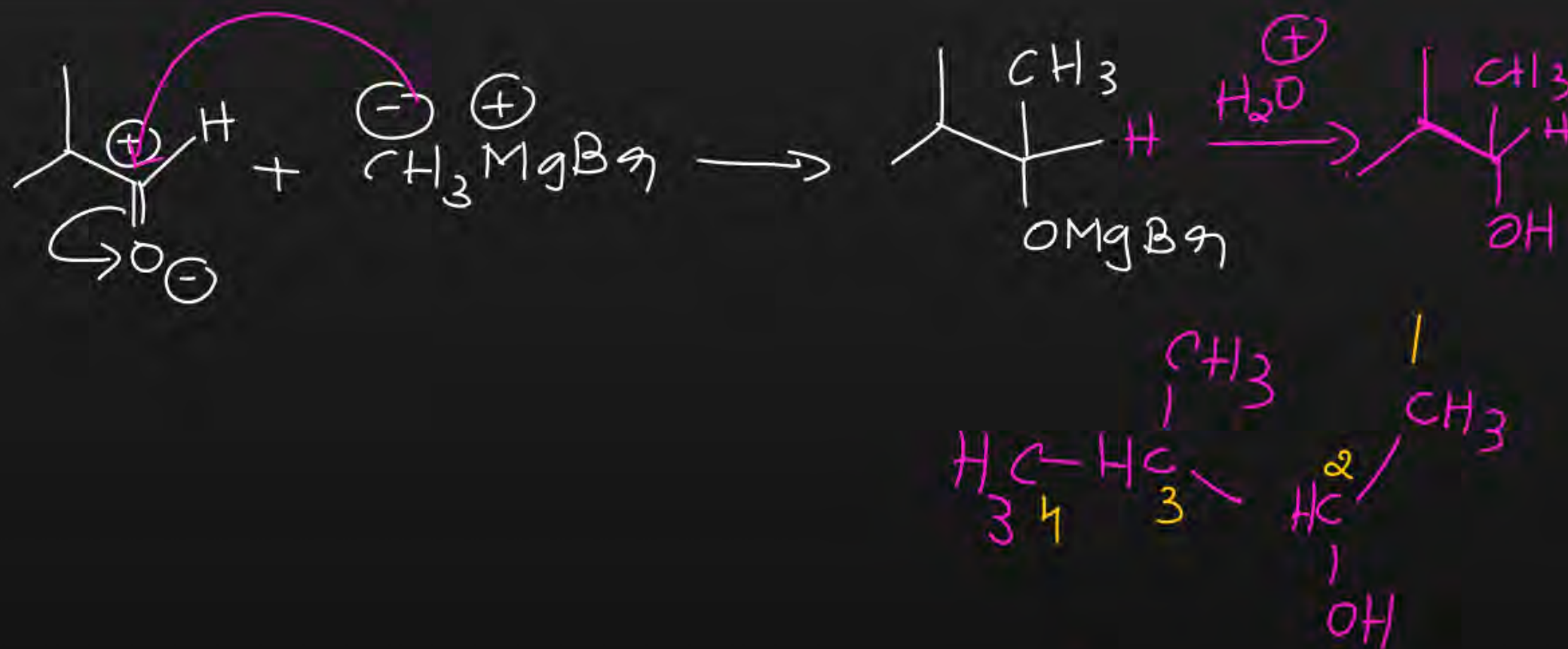
**D** II < III < I < IV ✗

# QUESTION



The IUPAC name of 'B' is

- A** 3-methylbutan-2-ol
- B** 2-methylbutan-3-ol
- ~~**C** 3-methylbutan-2-ol~~
- D** pentan-2-ol



## QUESTION



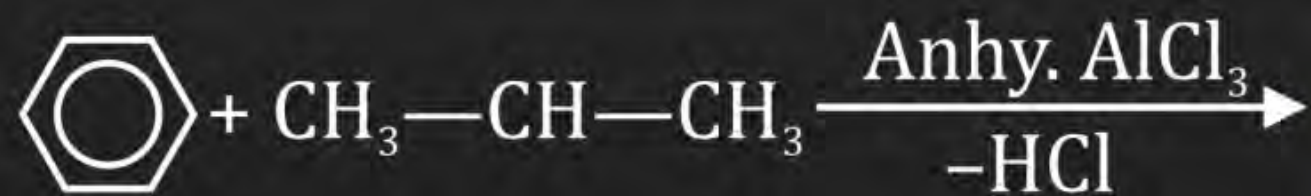
Which of the following is strongly acidic ?

(2013)

- A** Phenol
- B** o-cresol
- C** p-nitrophenol
- D** p-cresol

# QUESTION

Identify "C" in the following



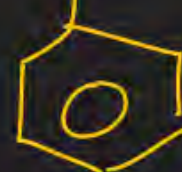
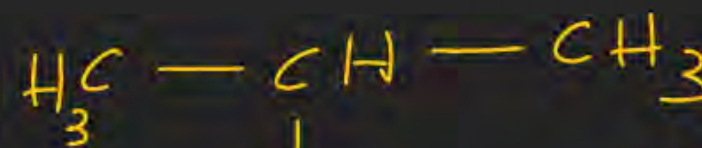
**A** ethanol

**B** propanone

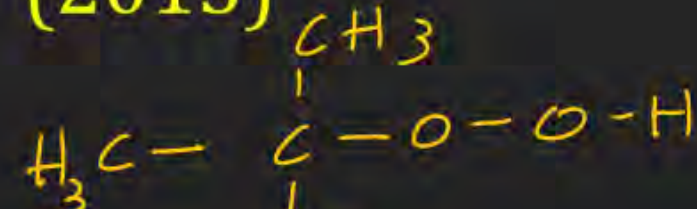
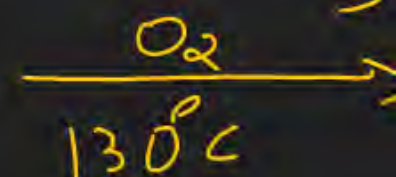
**C** cumene hydroperoxide

**D** water

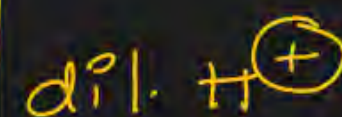
(2013)



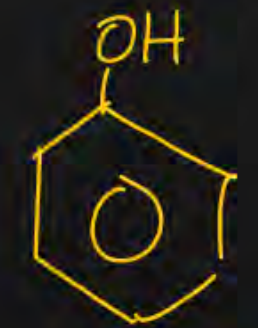
A



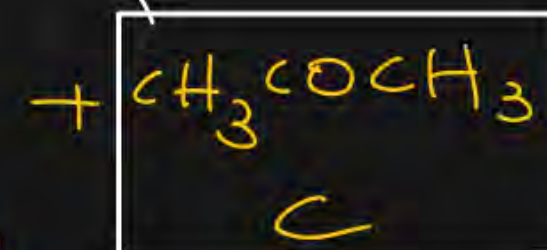
B



Acetone or  
propanone



phenol



C

## QUESTION

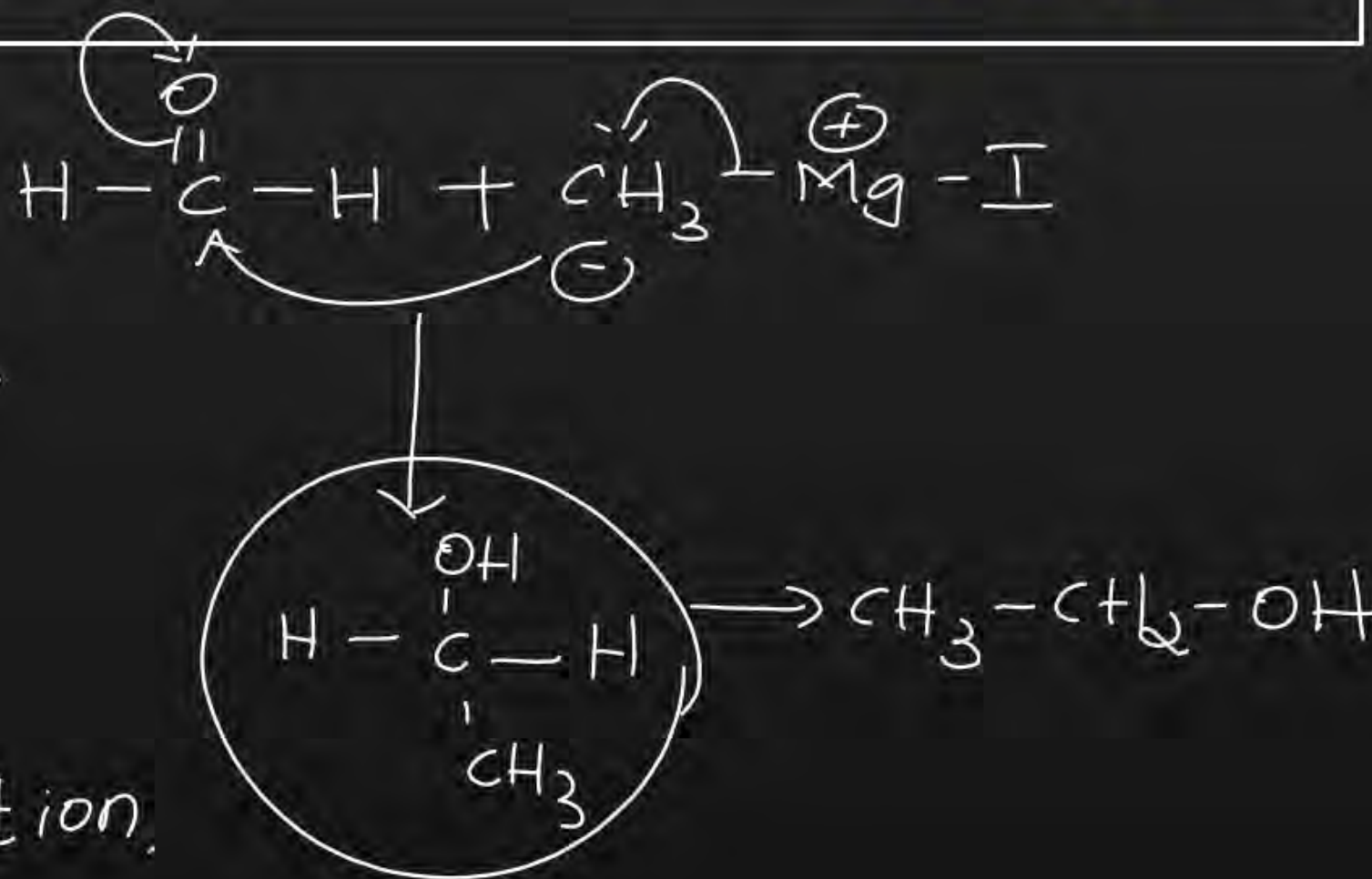
HCHO was treated with a reagent X. The product formed upon hydrolysis in the presence of an acid gave  $C_2H_5OH$ . The reagent X is (2013)

**A** alcoholic KOH

**B** alcoholic KCN  $\rightarrow$  cyanohydrin.

**C**  $CH_3MgI$  ✓

**D** aqueous KOH  $\rightarrow$  Cannizzaro reaction.

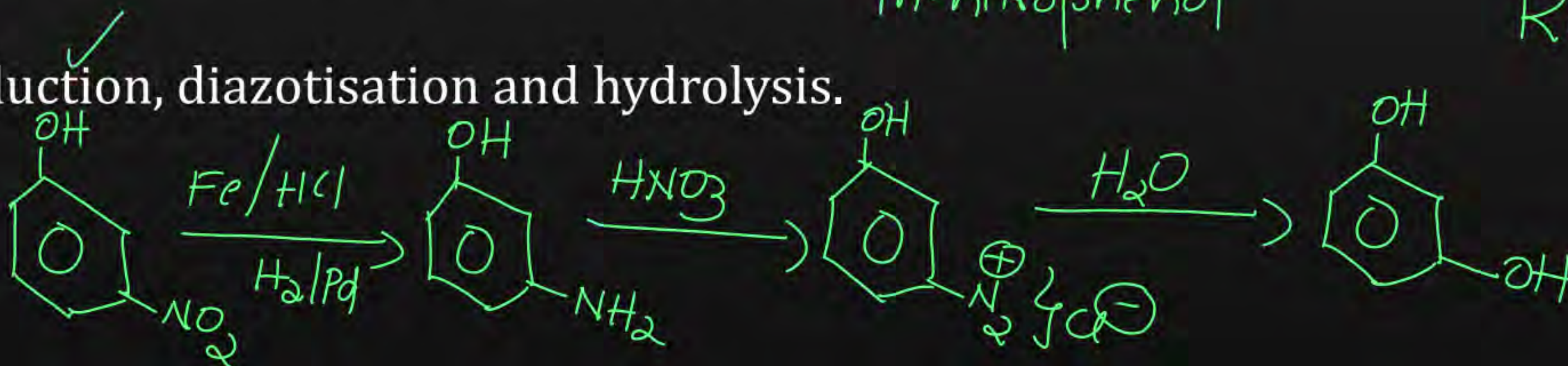
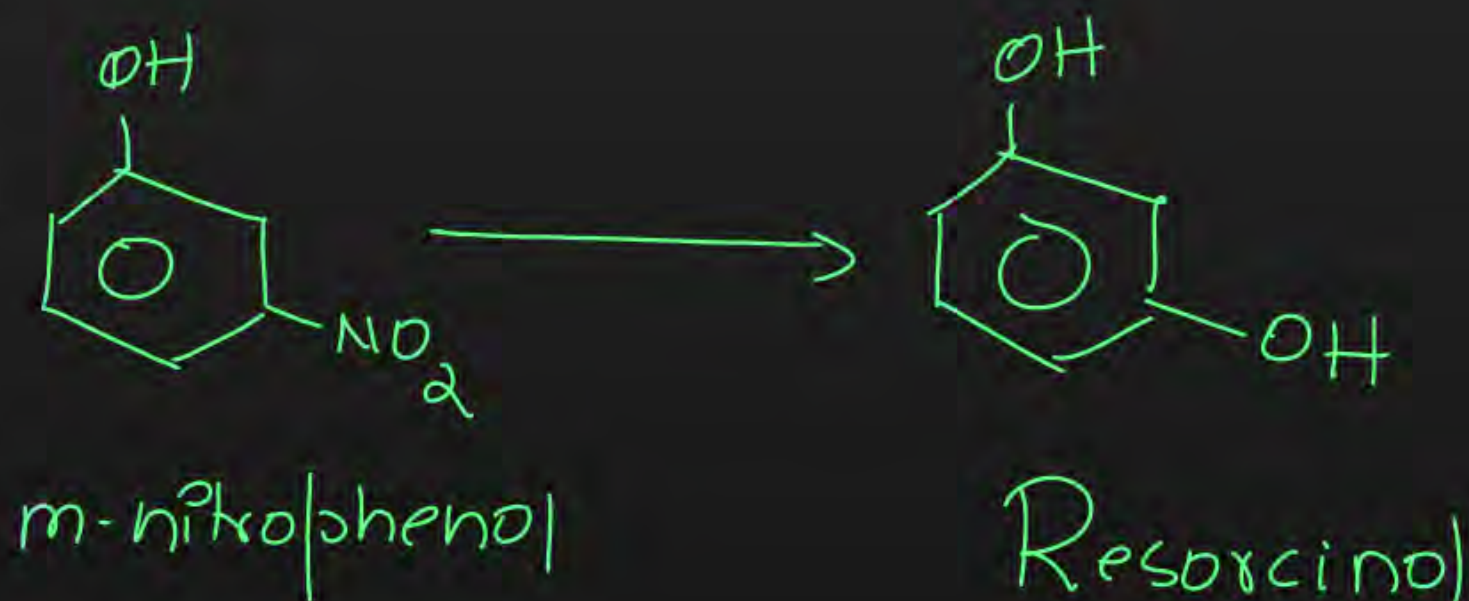


## QUESTION



The conversion of *m*-nitrophenol to resorcinol involves respectively. (2011)

- A** hydrolysis, diazotisation and reduction
- B** diazotisation, reduction and hydrolysis
- C** hydrolysis, reduction and diazotisation
- D** reduction, diazotisation and hydrolysis.



## QUESTION

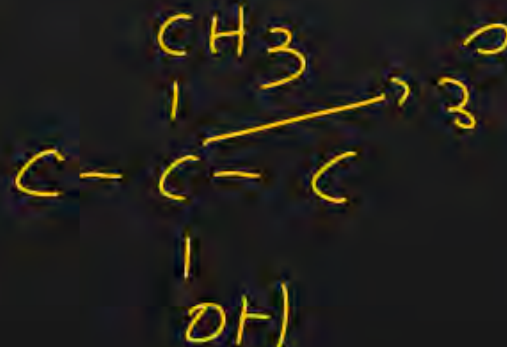
The compound which gives turbidity immediately with Lucas reagent at room temperature is

**A** butan-1-ol  $\rightarrow$  no ppt at RT

**B** butan-2-ol  $\rightarrow 2^\circ$

~~**C** 2-methyl propan-2-ol~~

**D** 2-methyl propan-1-ol



## QUESTION



Phenol  $\xrightarrow{x}$  forms a tribromo derivative. " x " is

(2010)

- A** bromine in benzene
- ~~**B**~~ bromine in water
- C** potassium bromide solution
- D** bromine in carbon tetrachloride at 0°C

## QUESTION



Lucas test is associated with

(2009)

- A** aldehydes
- B** phenols
- C** carboxylic acids
- D** alcohols

## QUESTION



The reaction  $\text{C}_2\text{H}_5\text{ONa} + \text{C}_2\text{H}_3\text{I} \rightarrow \text{C}_2\text{H}_2\text{OC}_2\text{H}_5 + \text{NaI}$  is known as (2006)

- A** Kolbe's synthesis
- B** Wurtz's synthesis
- C** Williamson's synthesis
- D** Grignard's synthesis

achiral molecule

↓  
optically inactive

↓  
it does not have  
chiral carbon



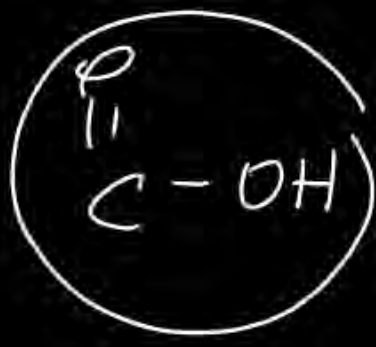
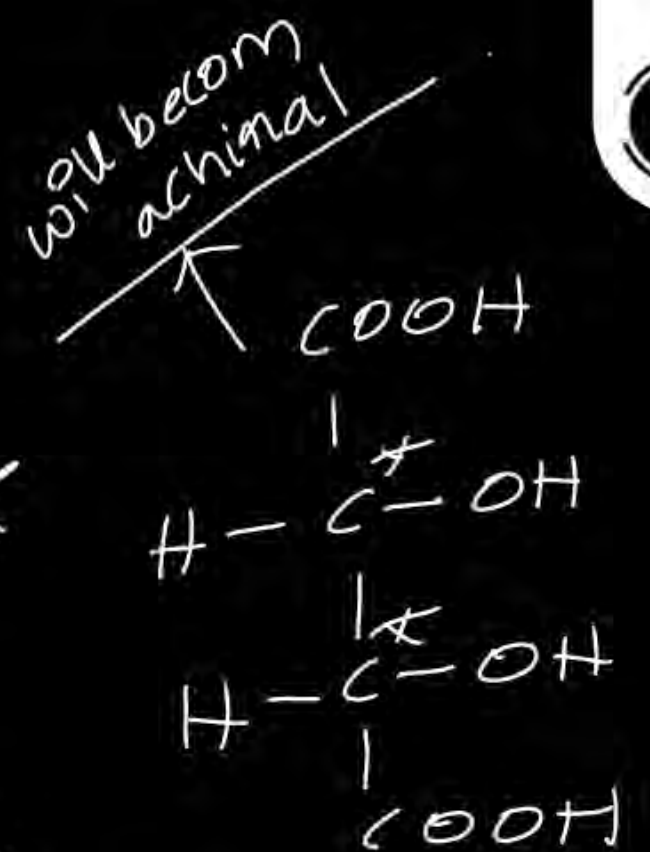
→ No chiral carbon  
present

Mesocompound

↓  
optically inactive

↓  
chiral carbon

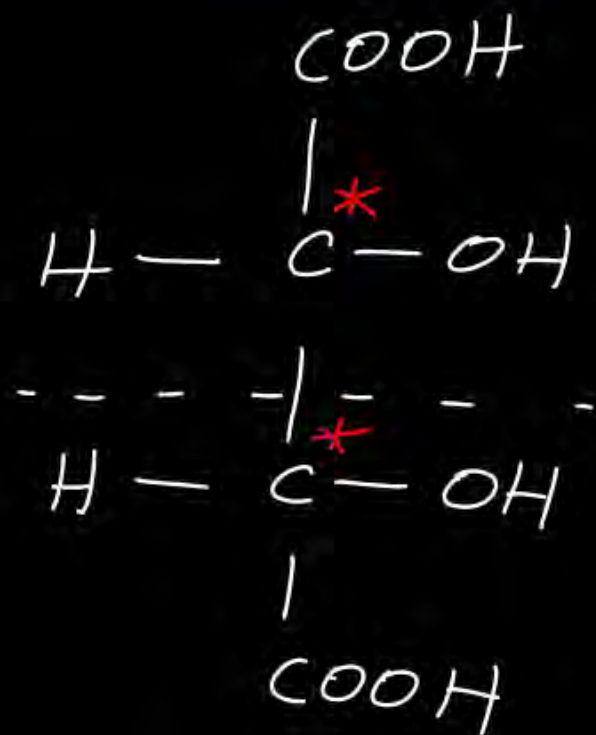
↓  
becomes internal compensation  
optically inactive due to



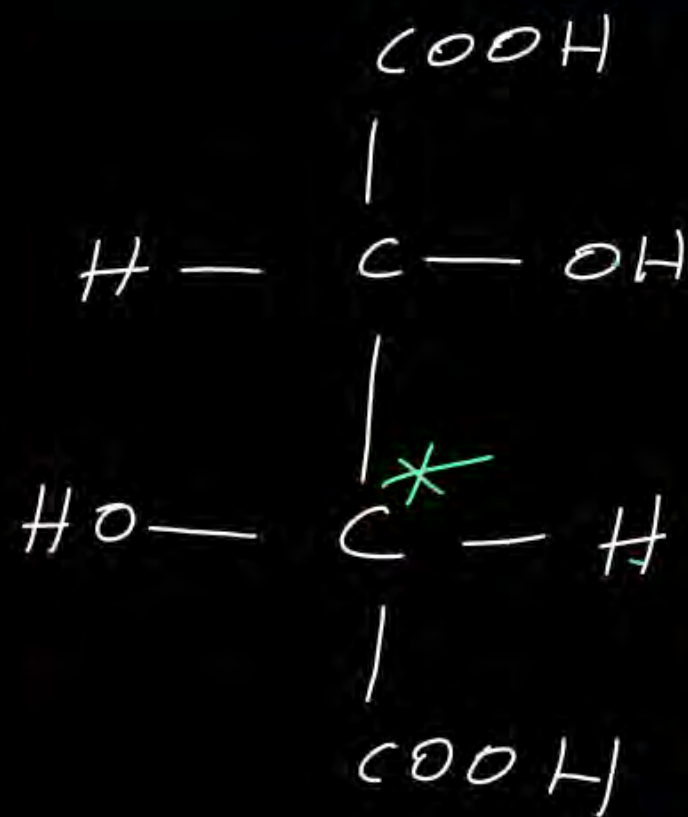
# Diastereomers.

① & ② / ① & ③

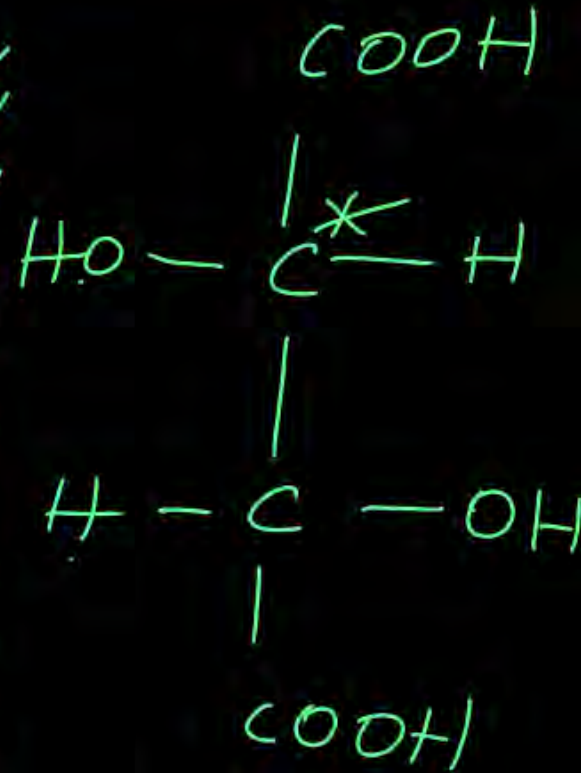
→ Non mirror images  
→ Non superimposable



↓ ①  
Mesocompound.



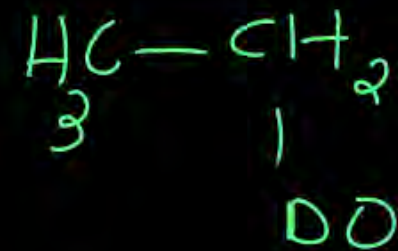
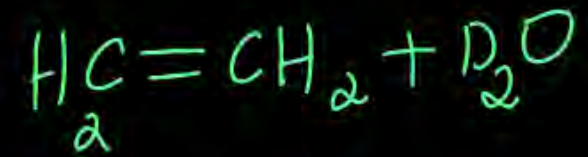
②



③

enantiomers.

non superimposable mirror images.



# Thank

**You**