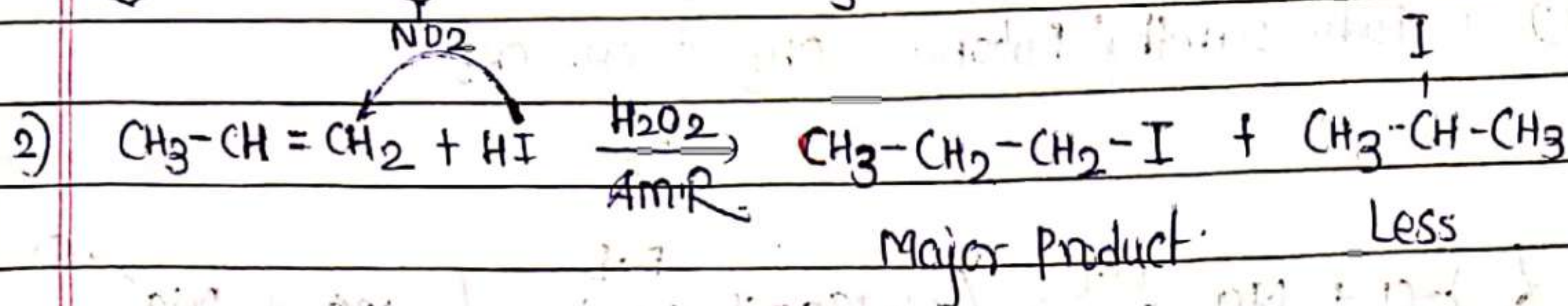
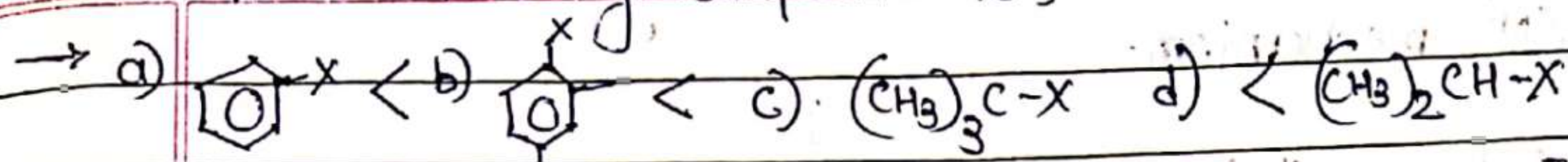
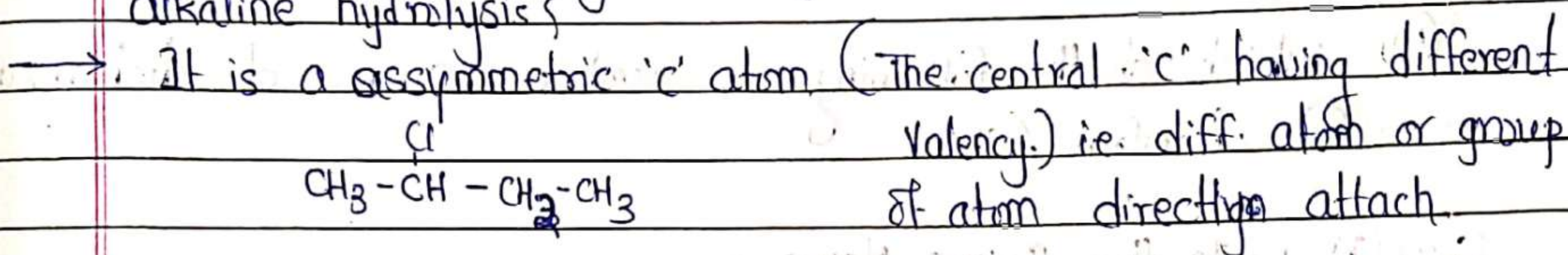


M.C.Q.

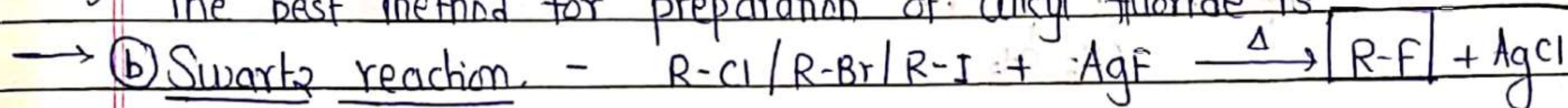
- 1) The correct order of increasing reactivity of bond towards nucleophile in the following compound is,



- 3) Which of the following is likely to undergo racemization during alkaline hydrolysis?

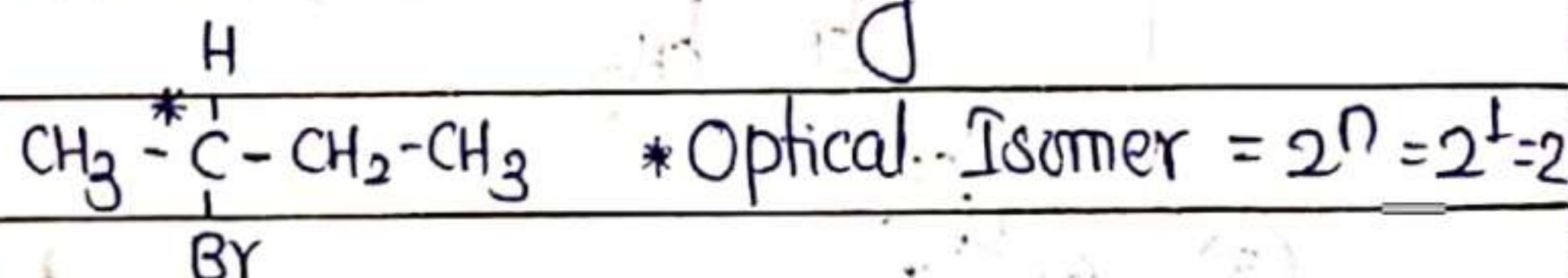


- 4) The best method for preparation of alkyl fluoride is

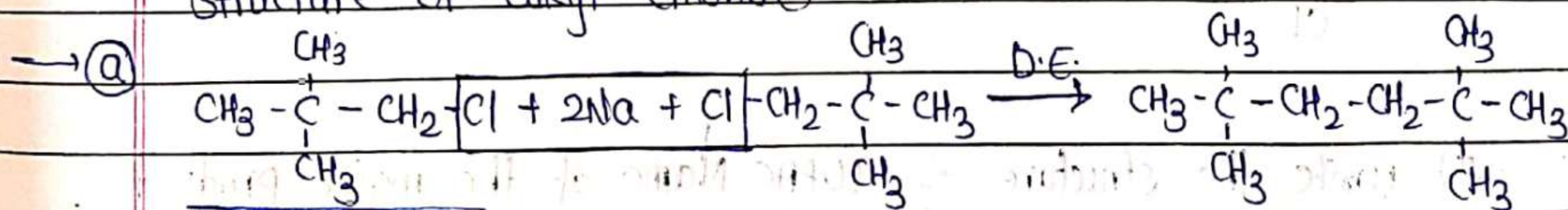


- 5) Identify the chiral molecule from the following -

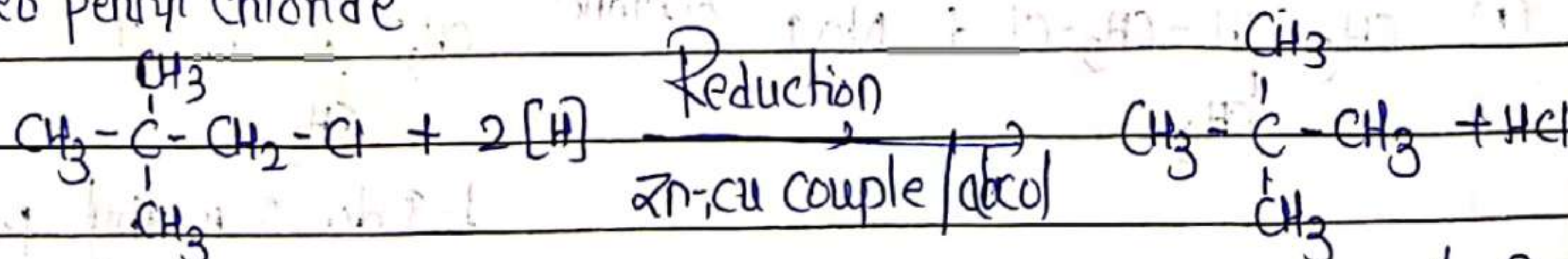
(d) 2-Bromo Butane



- 6) An alkyl chloride on Wurtz reaction gives 2,2,5,5-Tetramethylhexane. The same alkyl chloride on reduction with Zn/Cu couple in alc. gives hydrocarbon with molecular formula  $C_5H_{12}$ . What is the structure of alkyl chloride.

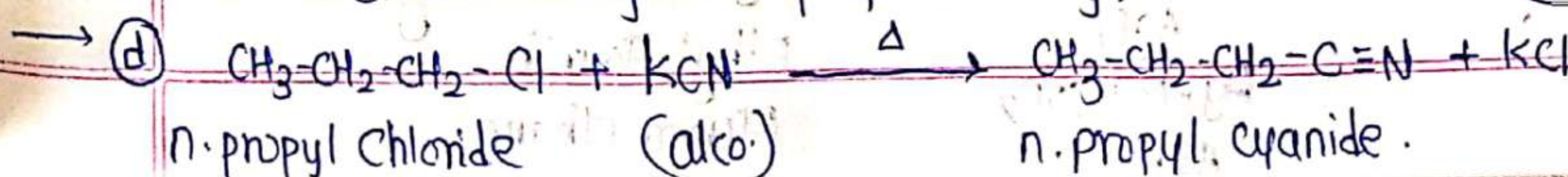


Neo pentyl chloride

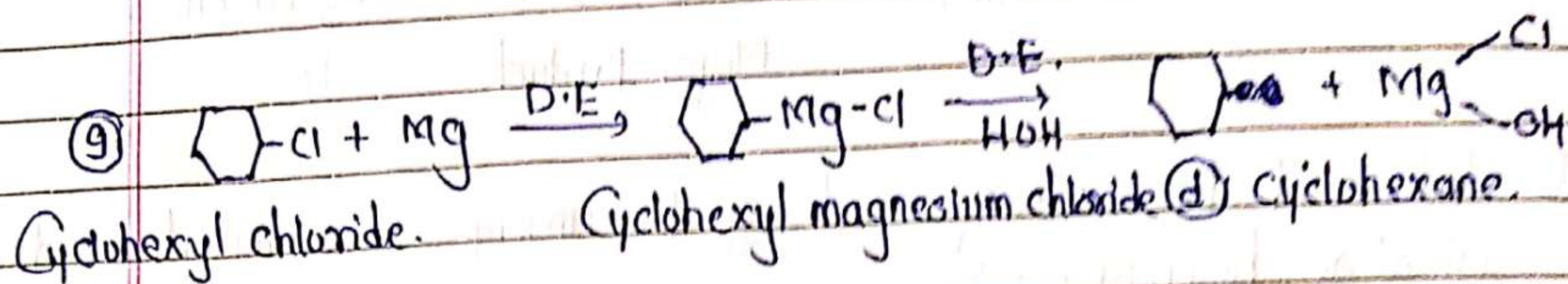
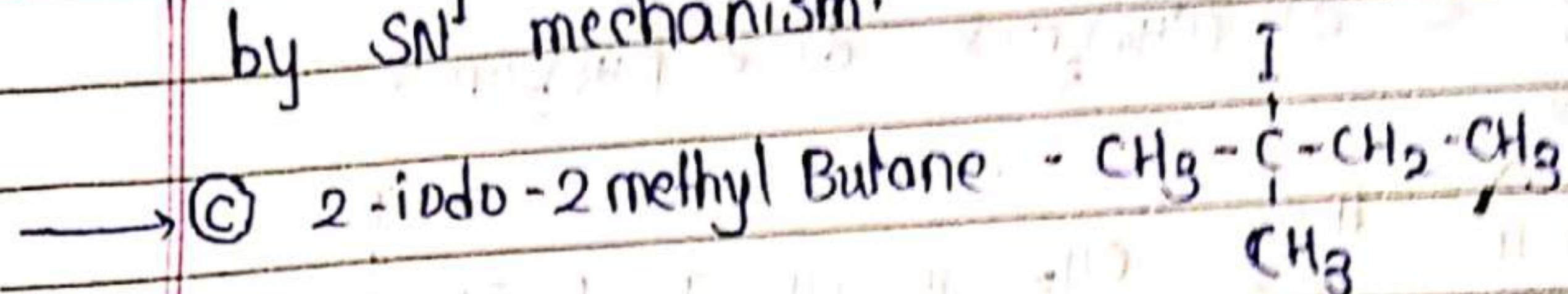


mol. formula

- 7) Butanenitrile may be prepared by,

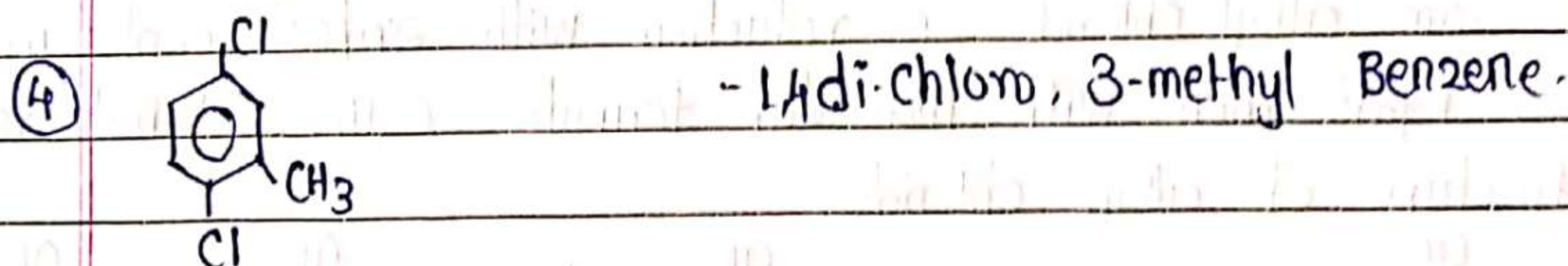
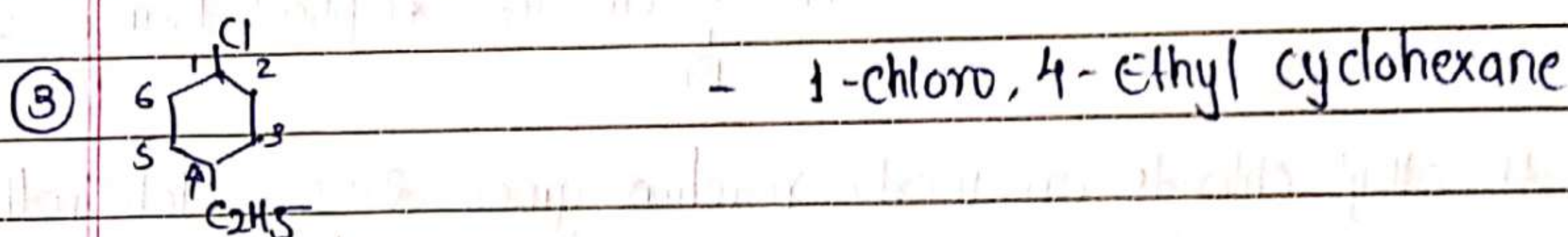
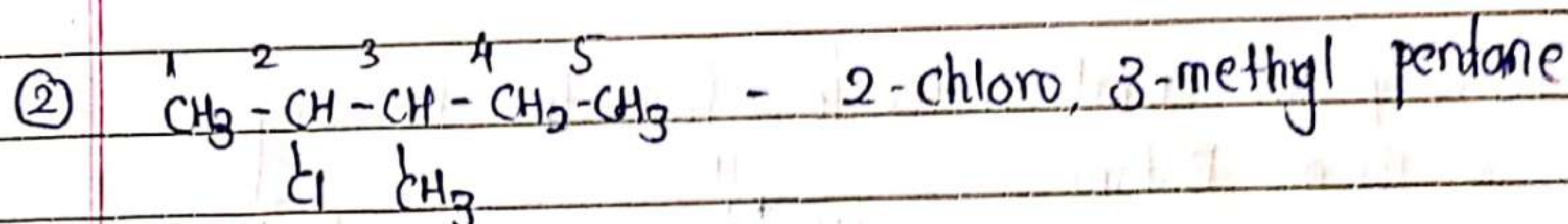
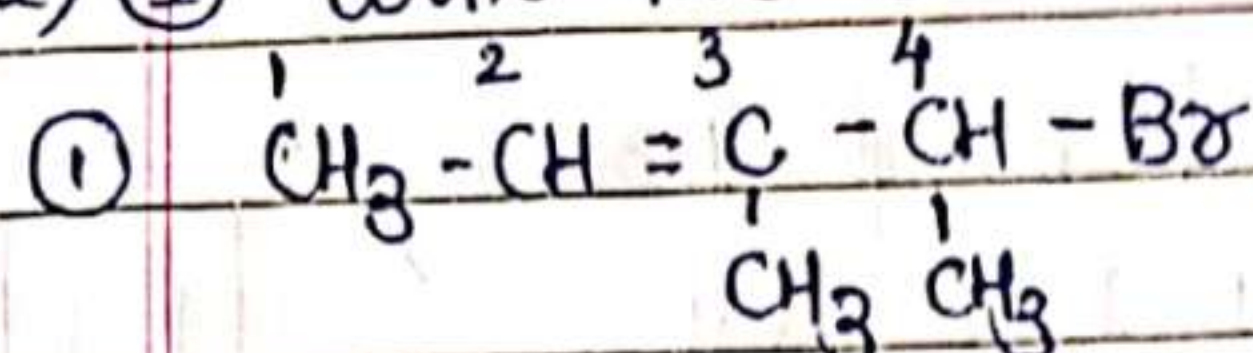


⑧ Choose the compound from the following that will react fastest by  $S_N1$  mechanism.

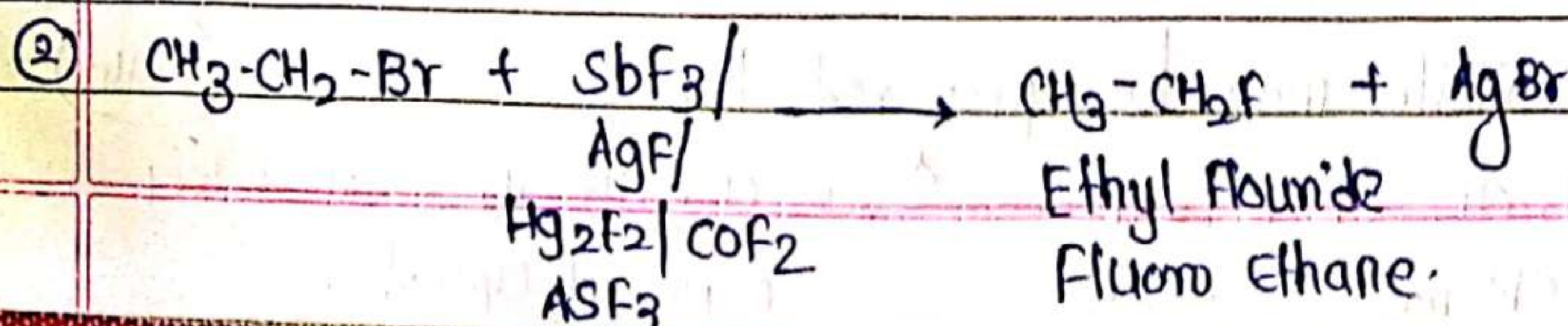
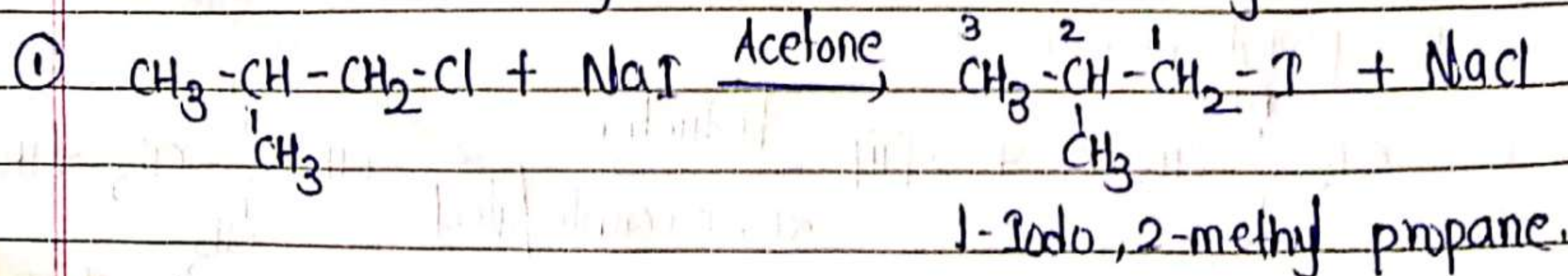


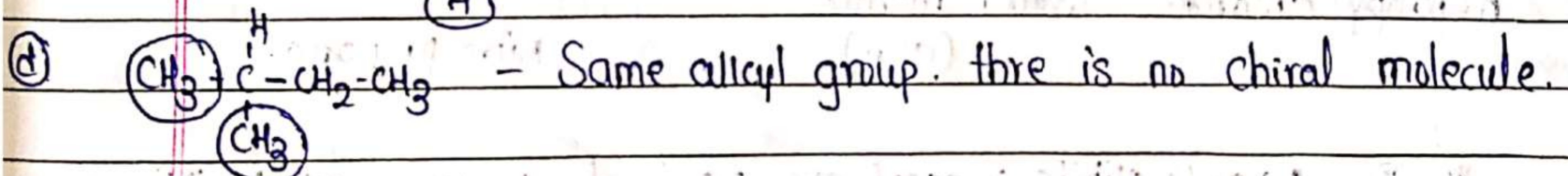
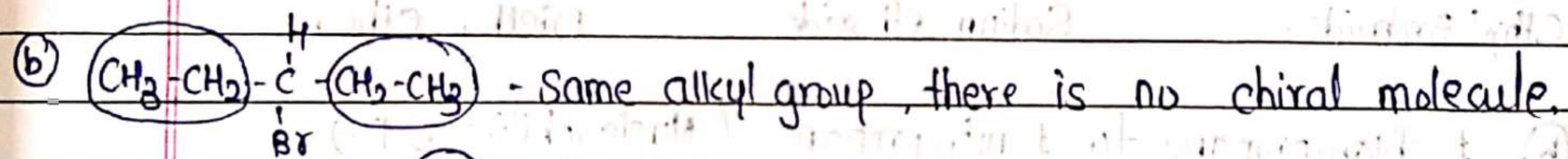
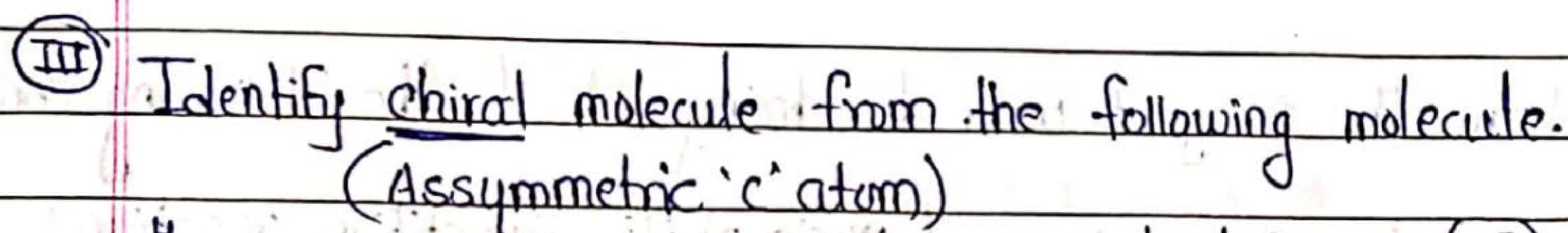
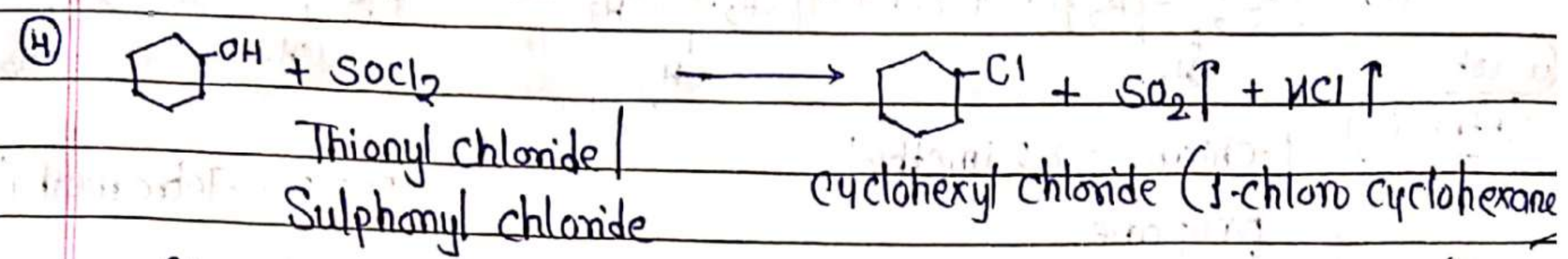
⑩ Which of the following is used as source of dichlorocarbene  
 → ⑥ Chloroform ( $\text{CHCl}_3$ )

Q.2) I Write the IUPAC Name—

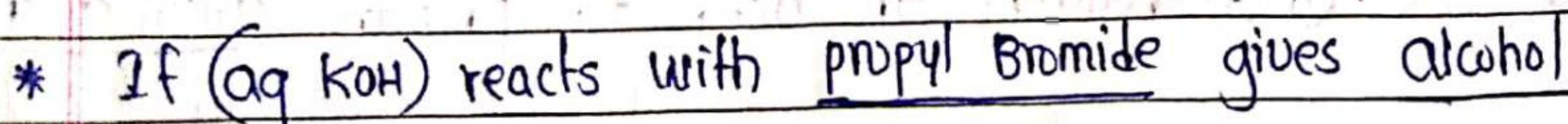


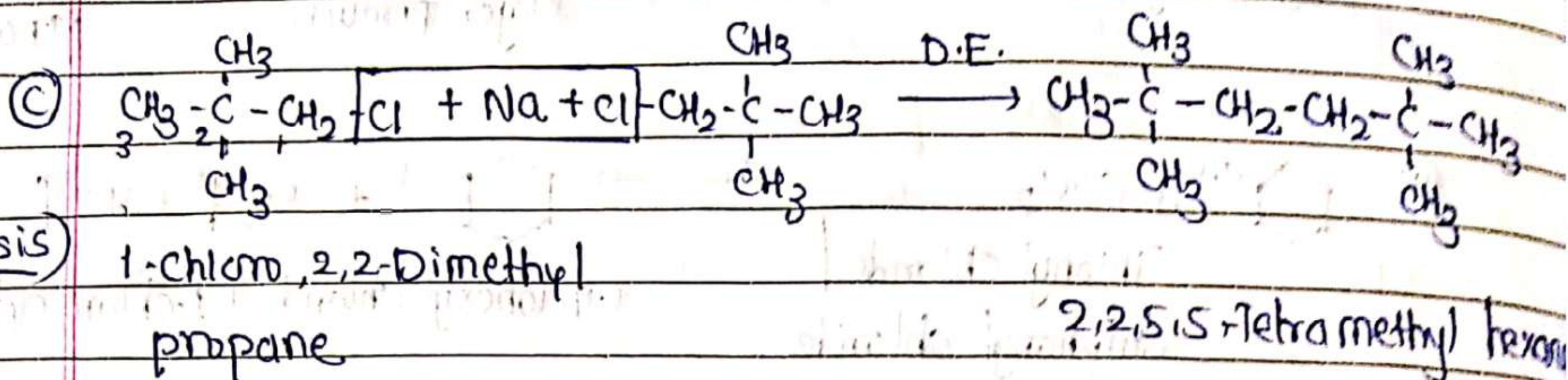
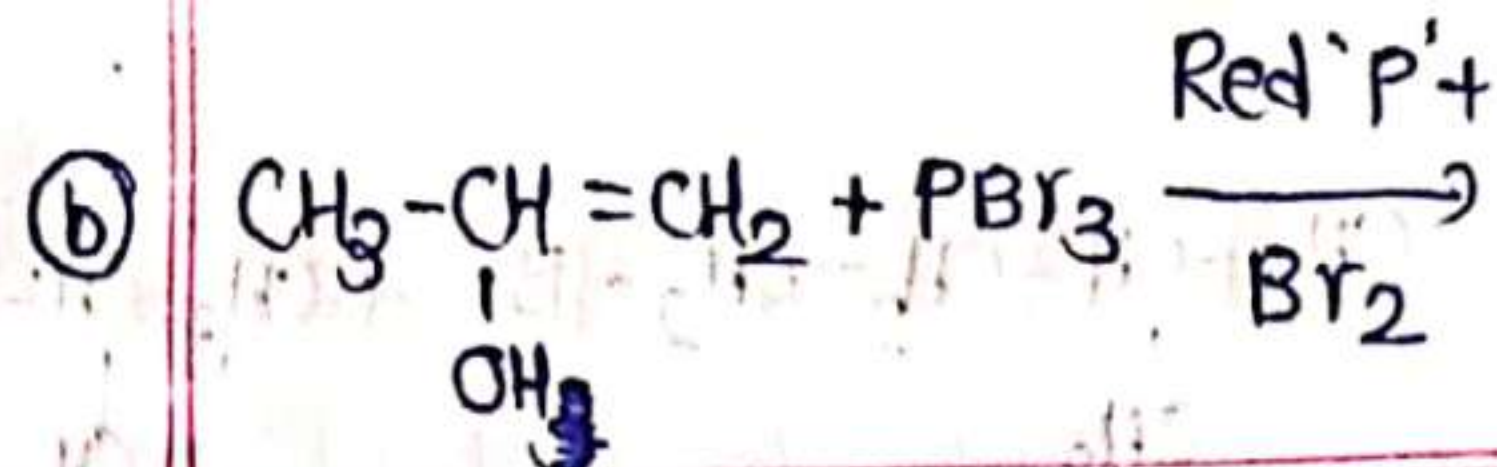
II) Write the structure & IUPAC Name of the major product.





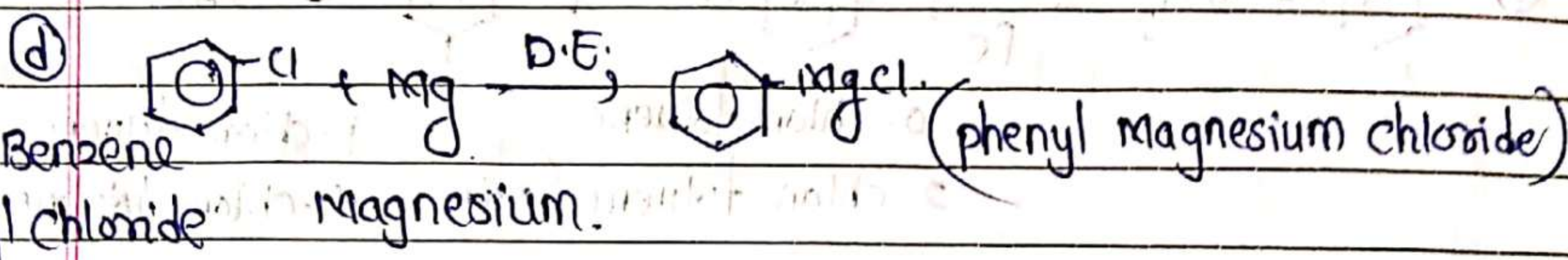
⑤ Complete the following reaction's giving major products:





(Wurtz synthesis)

(Neo pentyl chloride)

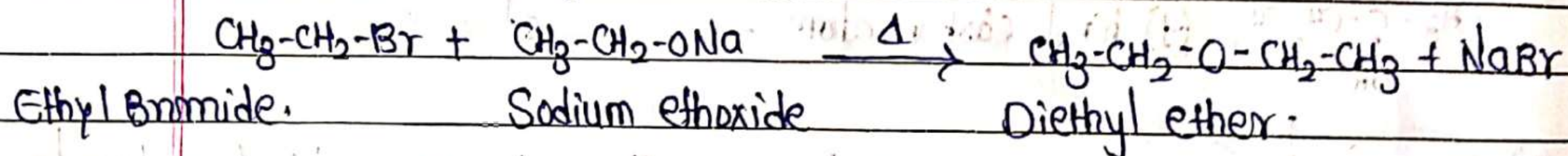


phenyl chloride

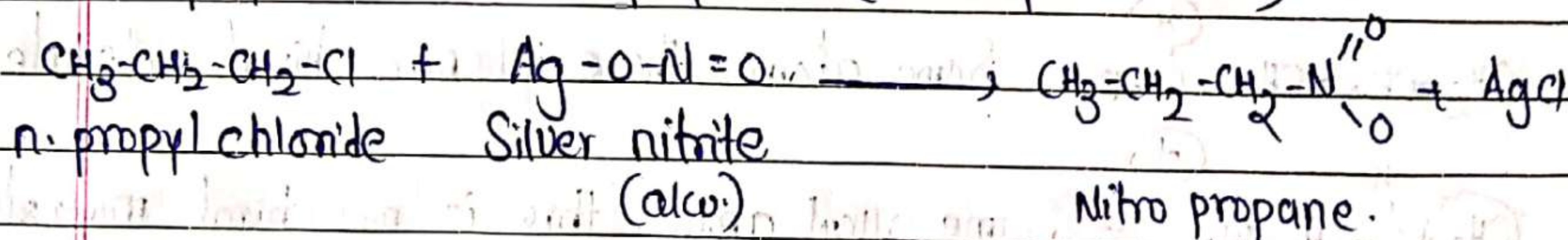
magnesium

(VI) Name the reagent used to bring about the following conversion

(a) Bromoethane to Ethoxyethane. (Nucleophilic Substitution reaction)

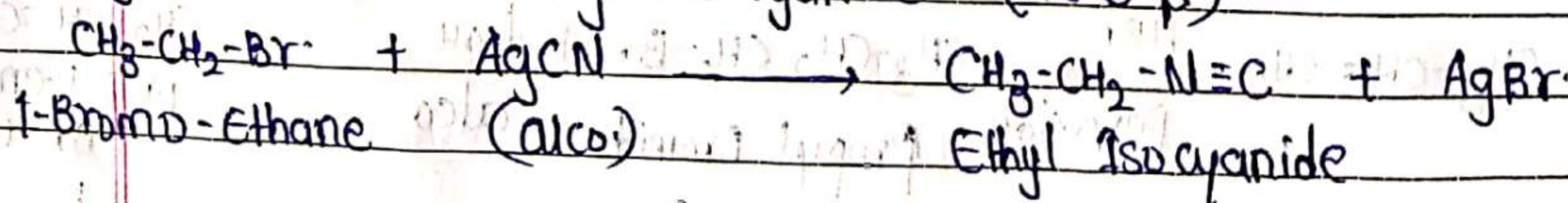


(b) 1-chloropropane to 1-nitropropane. (Nucleophilic S.R.)



\* If Na or K Nitrite reagent are used to prepare alkyl nitrite group

(c) Ethyl Bromide to Ethyl Isocyanide. (N.S.R.)

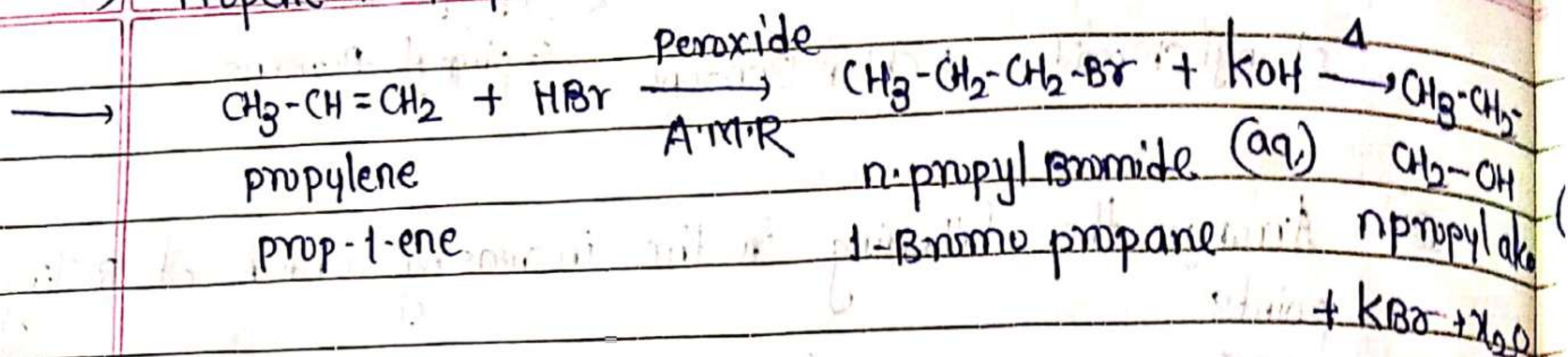


\* If KCN (alco) reagent are used to prepare alkyl cyanide group

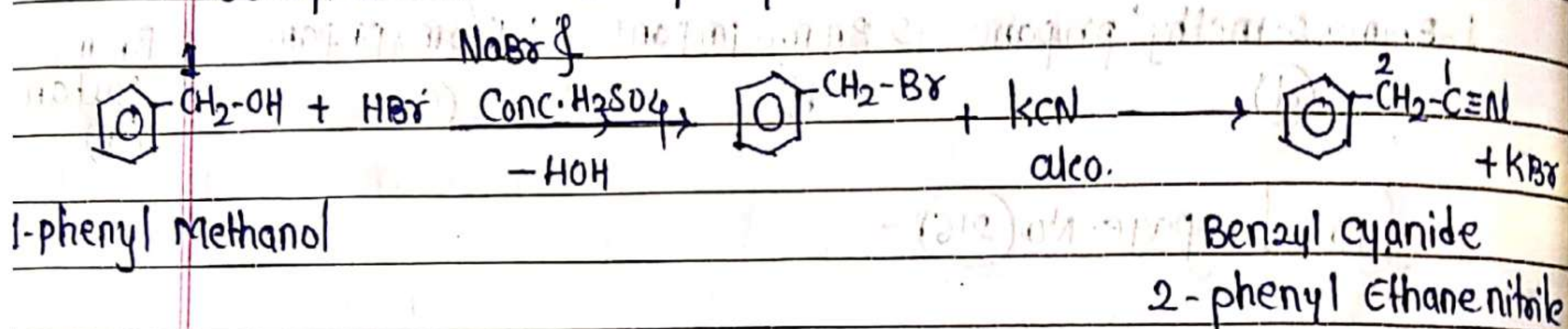


⑥ Convert the following:-

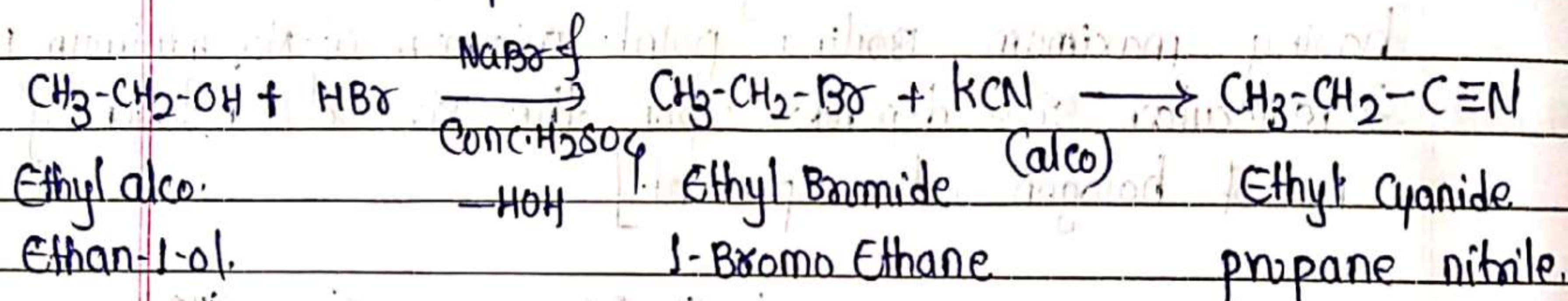
I) Propene to Propan-1-ol.



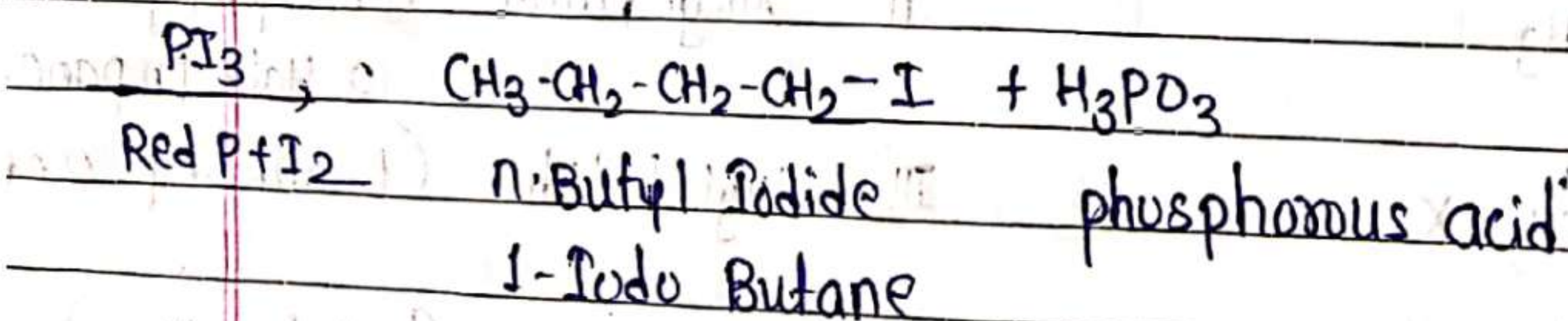
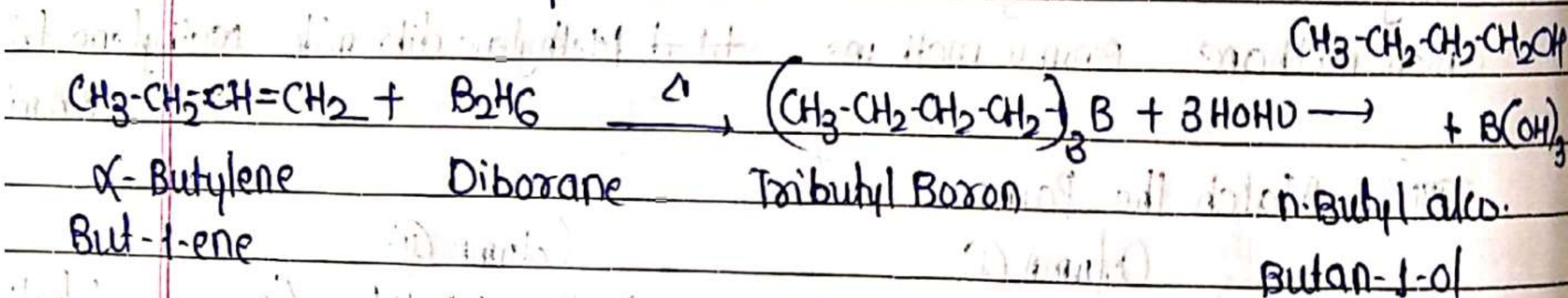
II) Benzyl alcohol to Benzyl cyanide.



III) Ethanol to Propane nitrile.

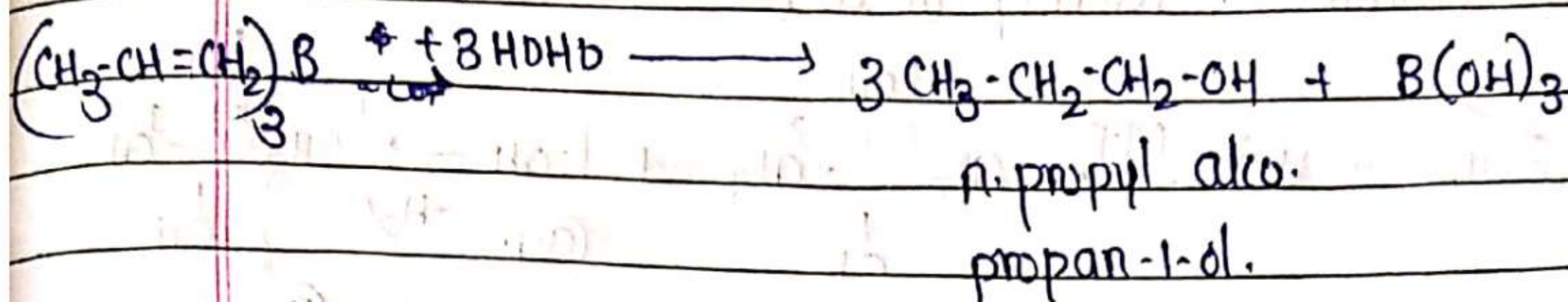
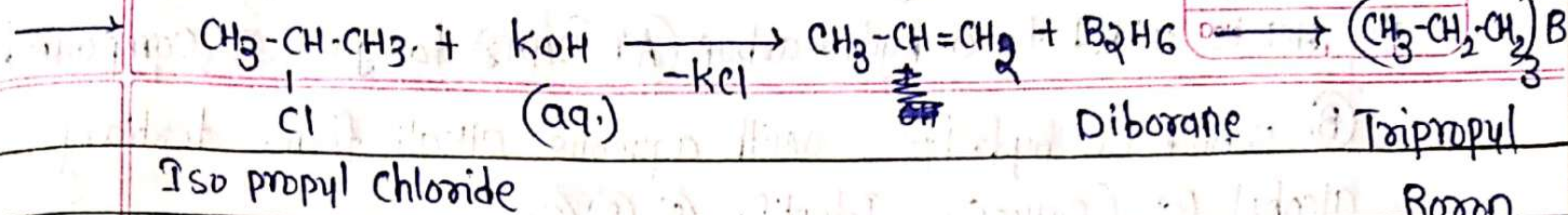


IV) But-1-ene to n-Butyl Iodide.

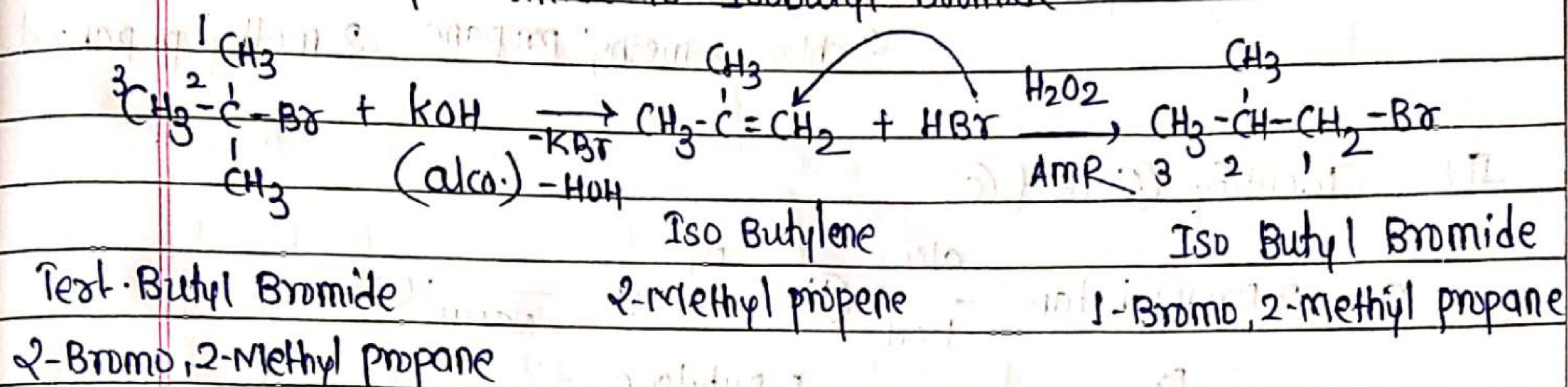


[Hint - They also convert step (I) - But-1-ene + HBr  $\xrightarrow{\text{H}_2\text{O}_2}$  Butan-1-ol  $\xrightarrow{\text{aq. KOH}}$  Butyl alkoxide  $\xrightarrow{\text{PI}_3}$  Butyl iodide]

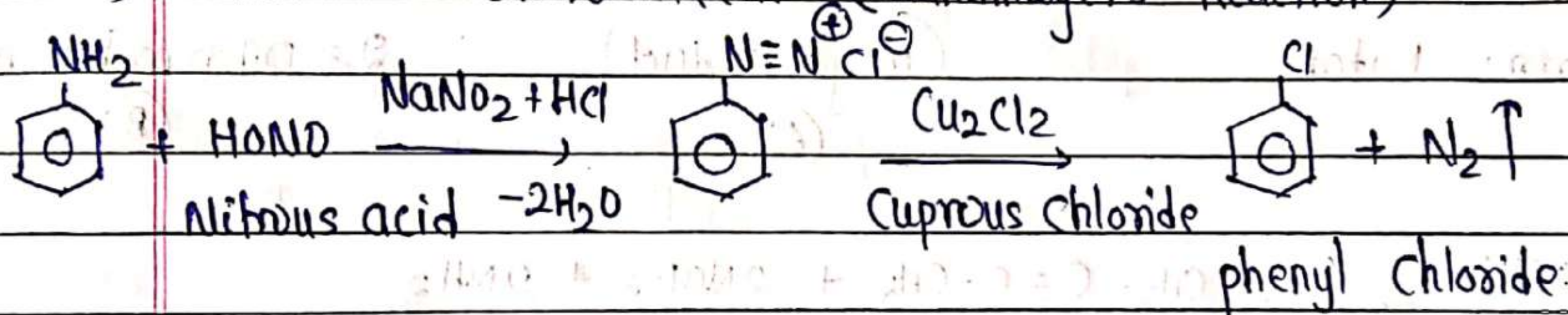
## V) 2-chloro propane to propan-1-ol.



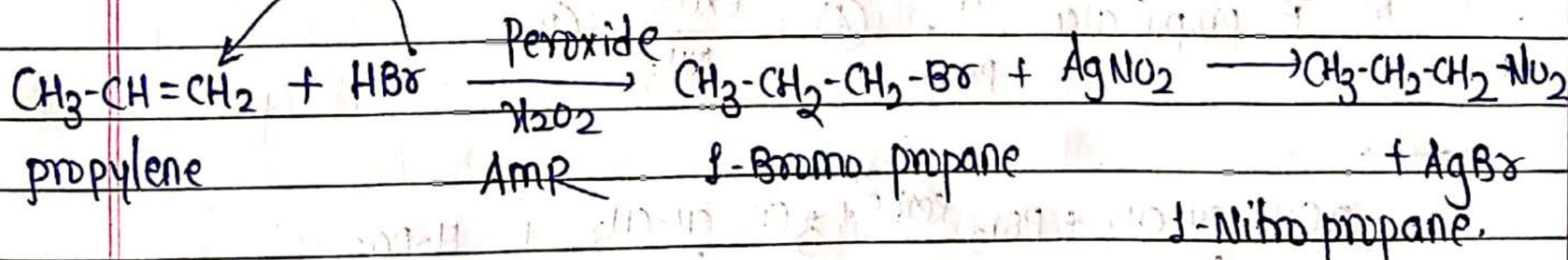
## VI) Test: Butyl Bromide to Isobutyl Bromide:



## VII) Aniline to chlorobenzene. (Sandmeyer's Reaction.)



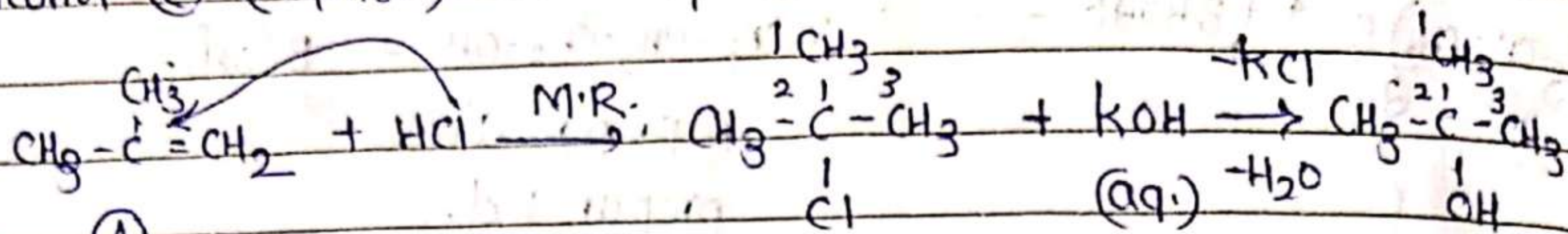
## VIII) Propene to 1-nitropropane.



⑦ Answer the following

i) HCl is added to a hydrocarbon (A) ( $C_4H_8$ ) to give a compound

(B) which on hydrolysis with aqueous alkali forms tertiary alcohol (C) ( $C_4H_{10}O$ ). Identify (A), (B), (C).



Iso Butylene

2-methyl Prop-1-ene

(B)

Test: Butyl chloride

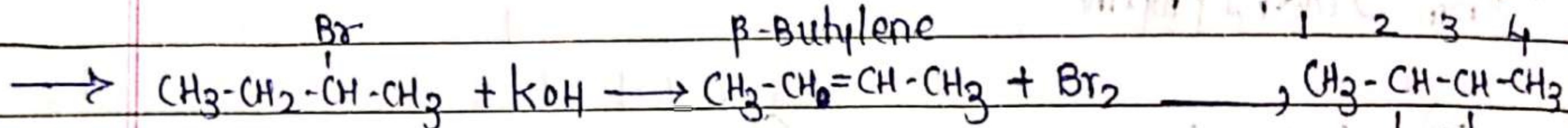
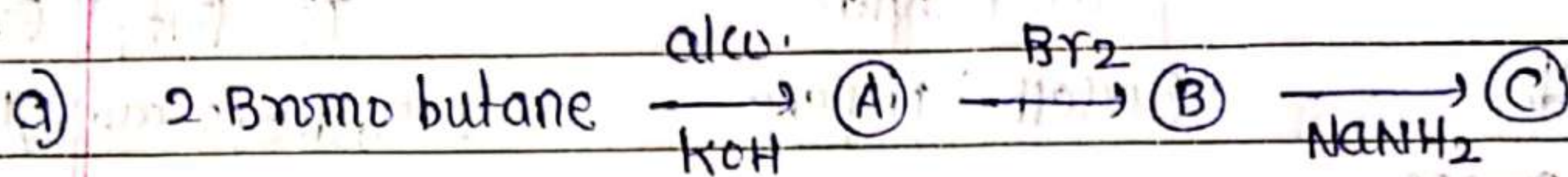
2-chloro, 2-methyl propane

⑦

Text: Butyl alco.

2-methyl propan-2-ol.

II) Identify (A), (B) & (C)



Sec. Butyl Bromide

also:

But-2-ene

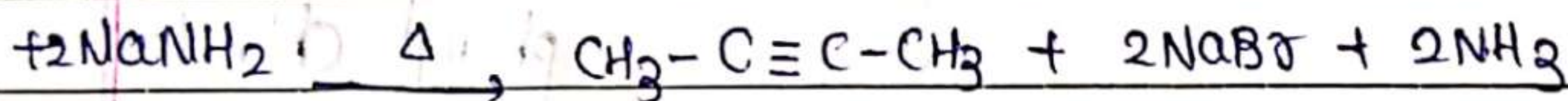
(Major Product)

2,3-Dibromobutane

2-Bromo Butane.

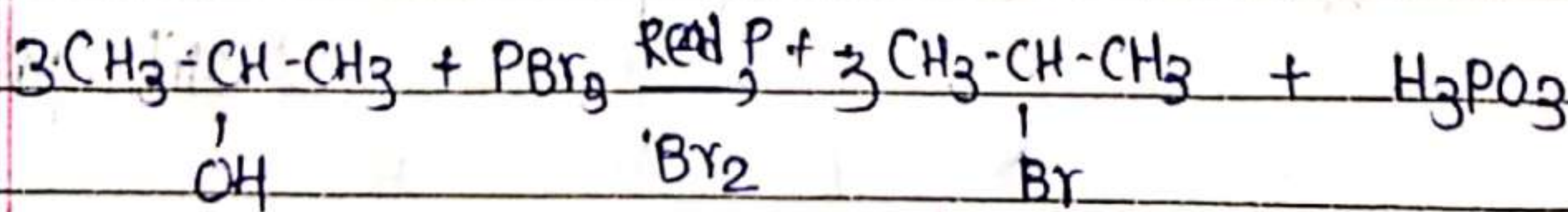
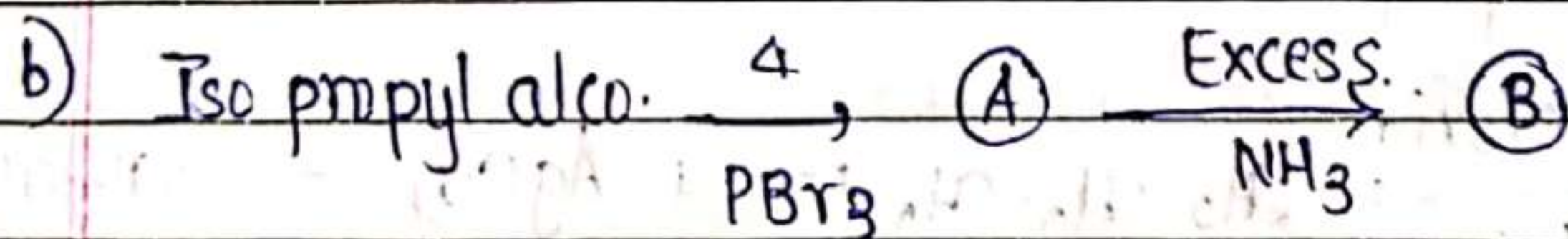
A

6

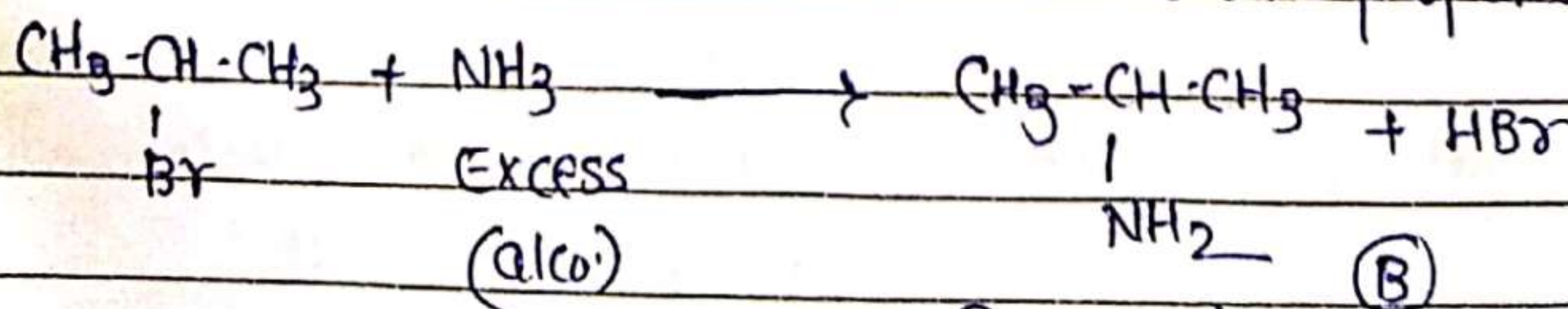


Sedamide

But-2-yne.



① Iso Propyl Bromide  
2-Bromo propane.



Isopropyl amine.

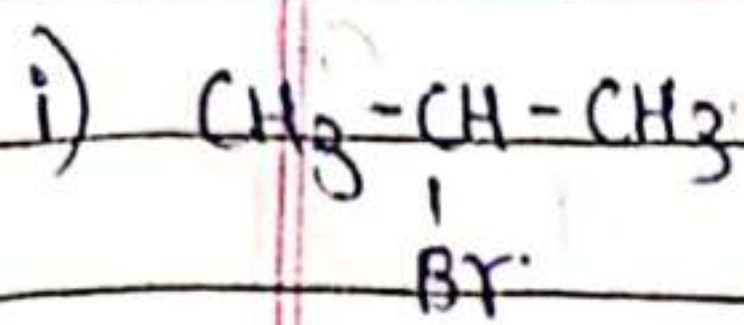
2-amino propane.

— Use your brain Powers ? (Page No. 212)

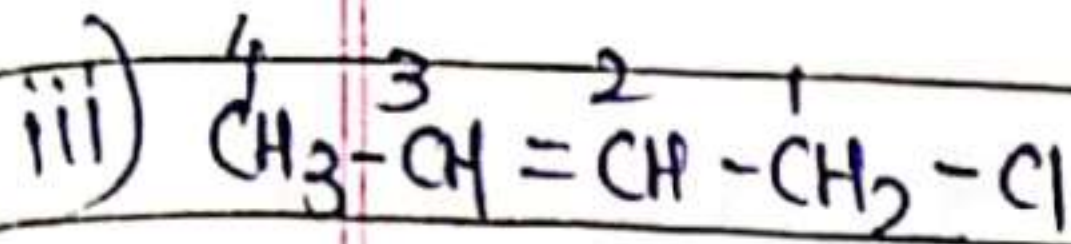
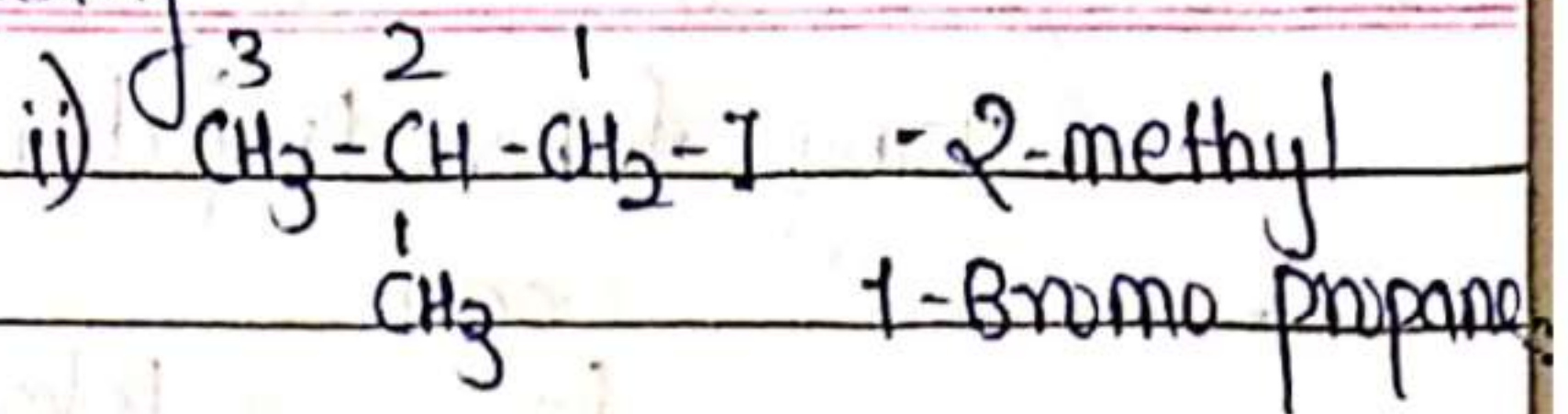
Page No.

Date

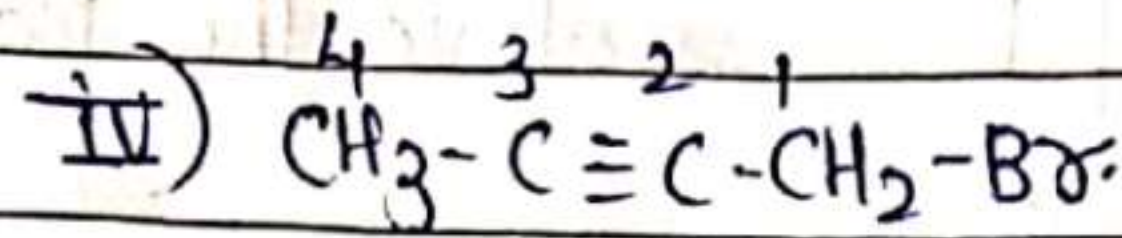
Q) write IUPAC Name of the following —



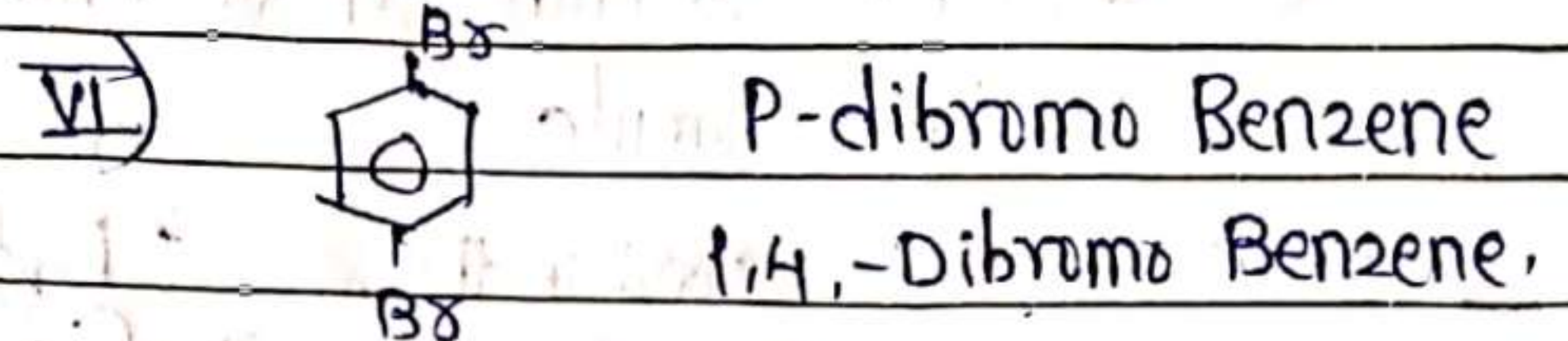
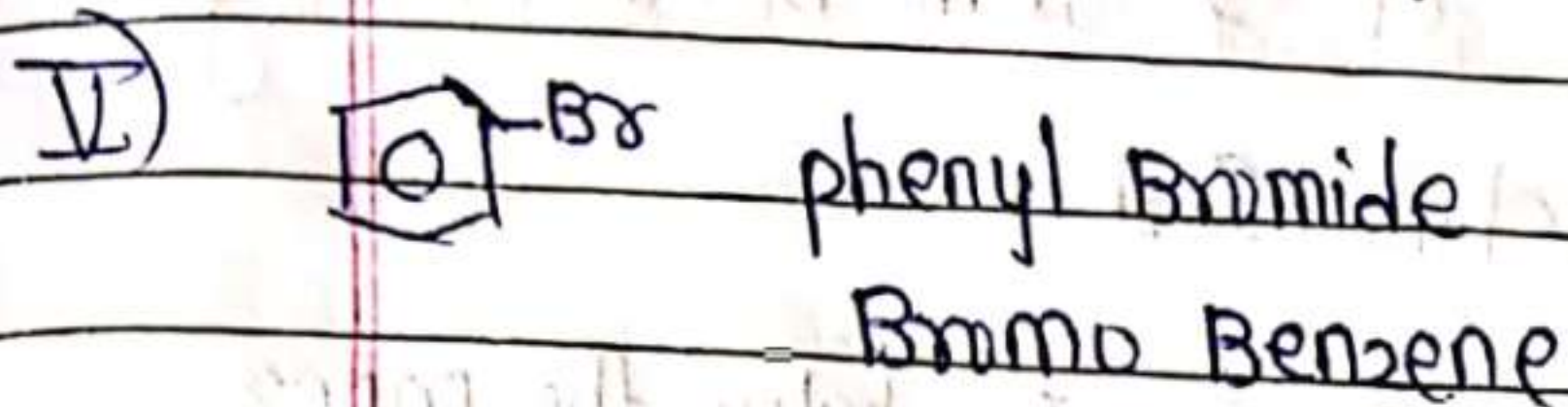
Iso propyl Bromide.  
2-Bromo propane



1-chloro But-2-ene

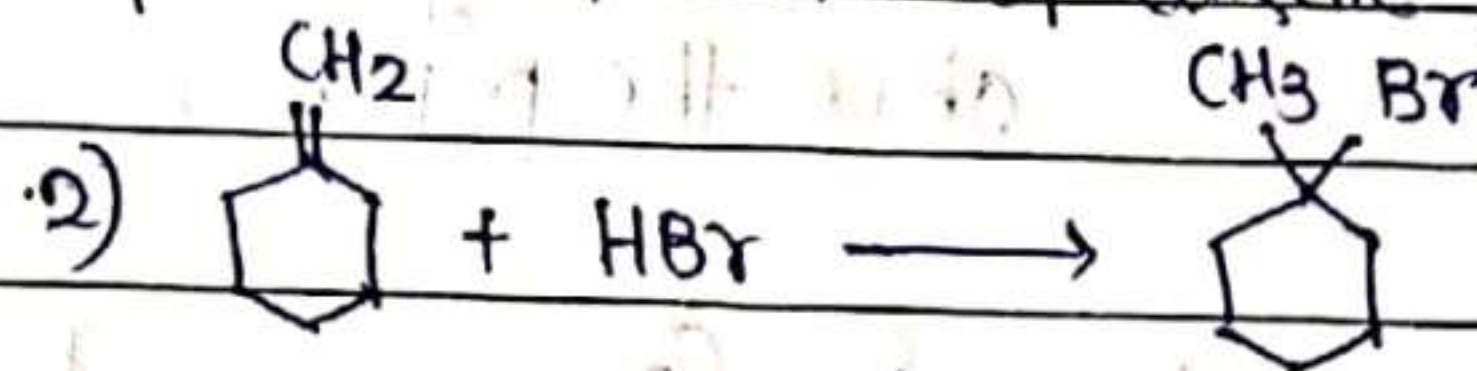
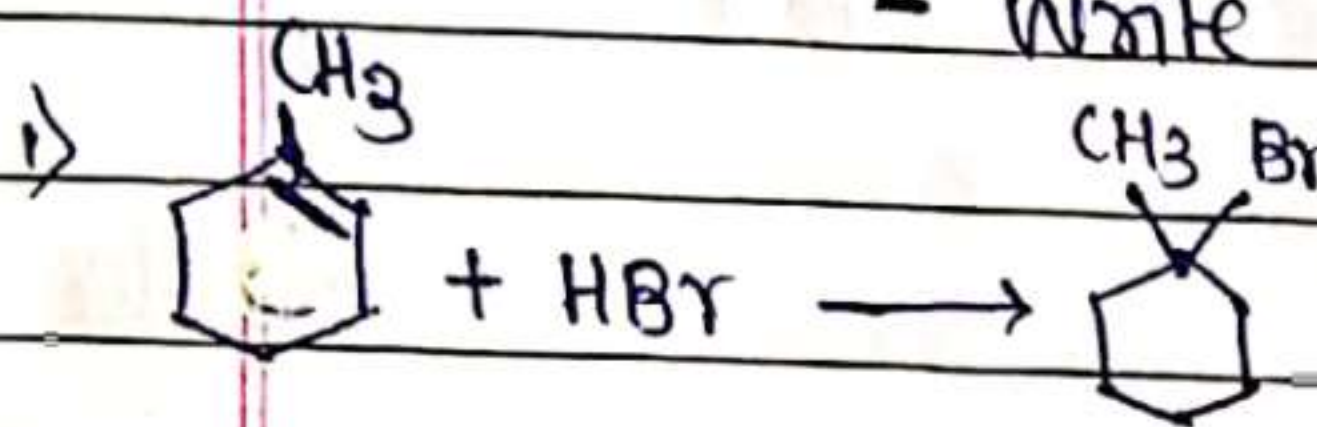


1-Bromo But-2-yne.



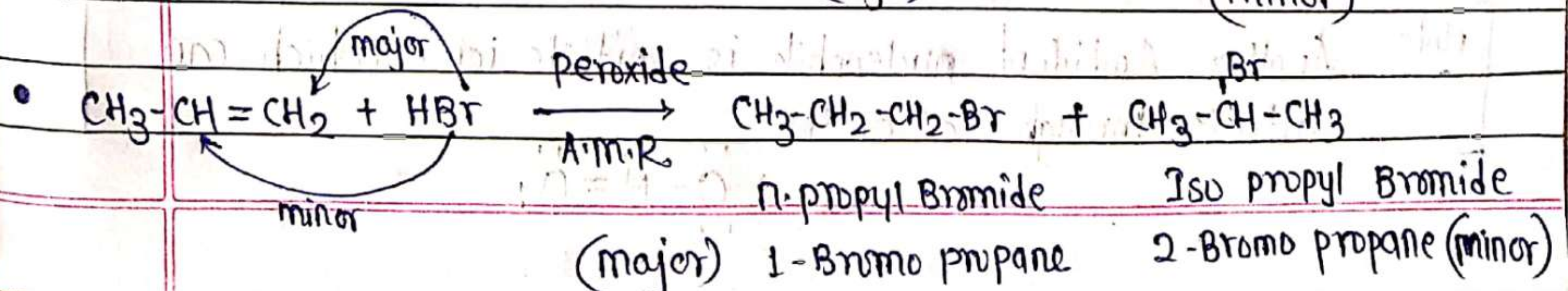
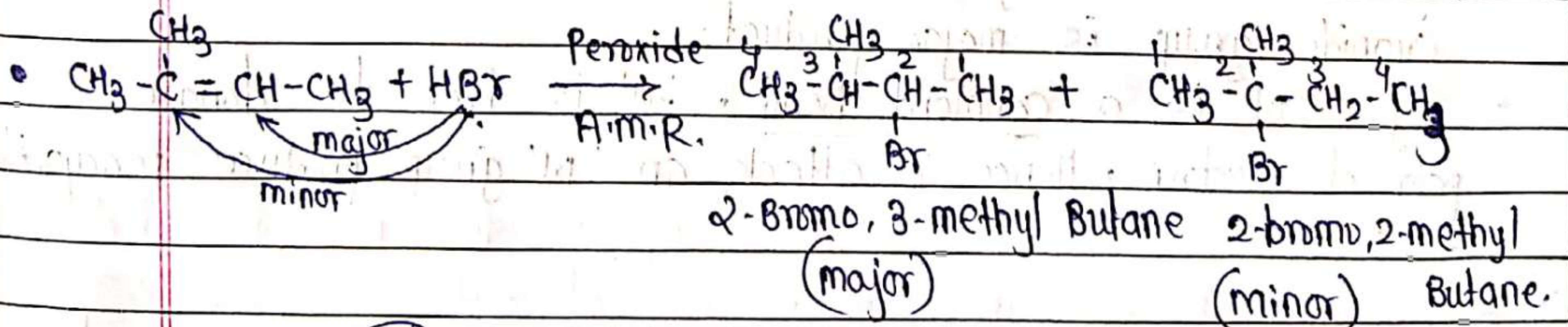
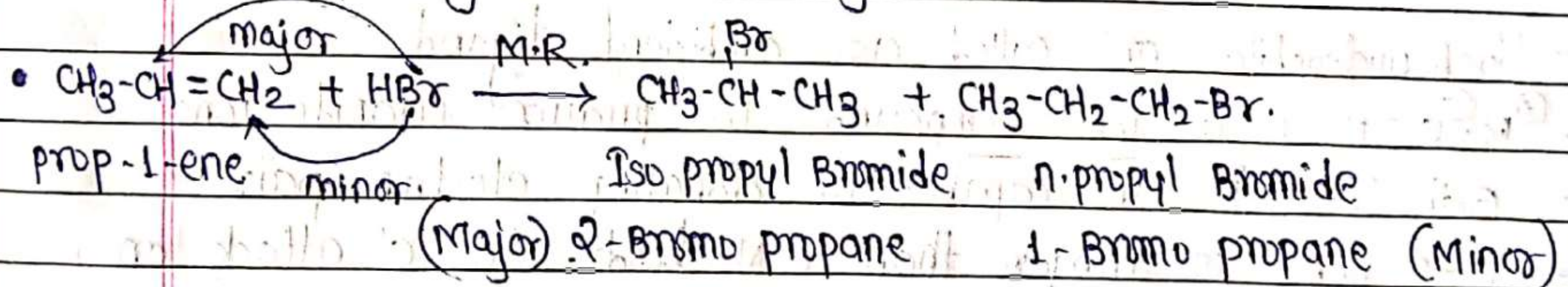
Problem - 10.1 - How will you obtained 1-Bromo, -1-methyl cyclohexane from alkene?

- Write the possible structure of alkene?

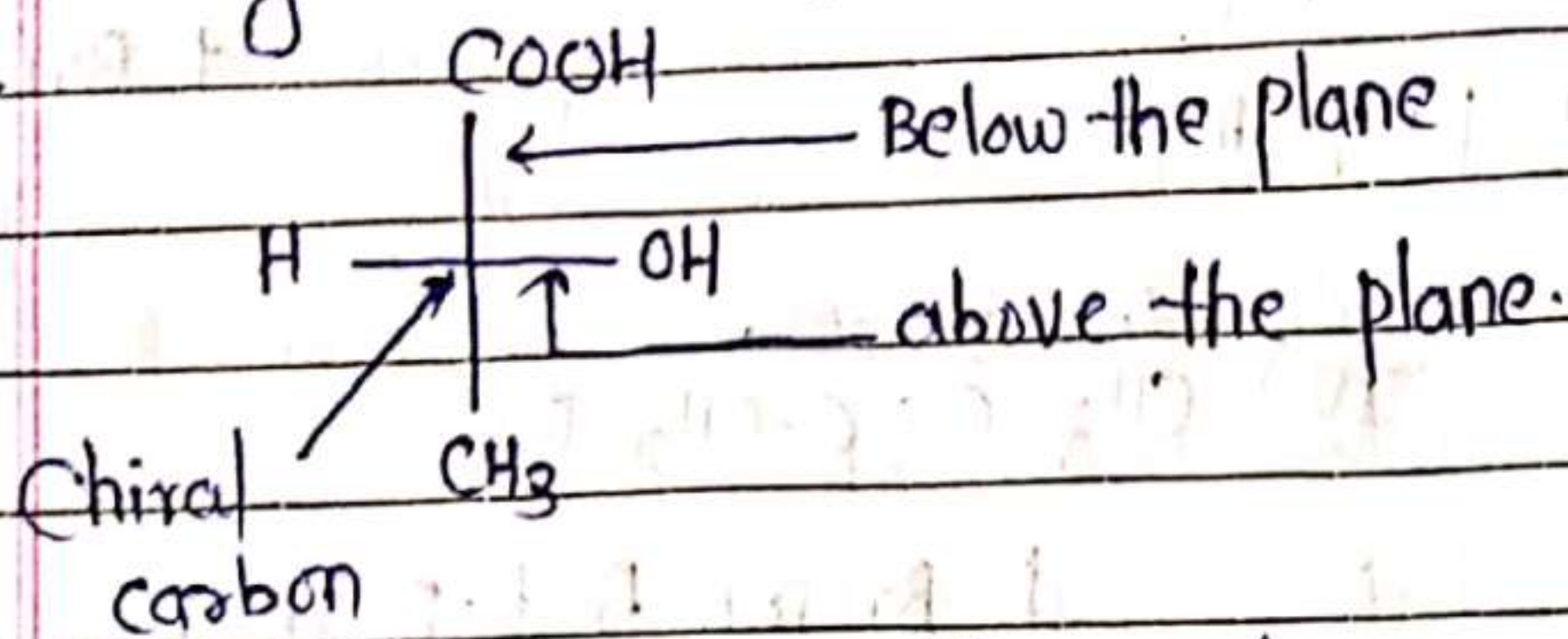


— Use your brain Power ? (Page No. 213)

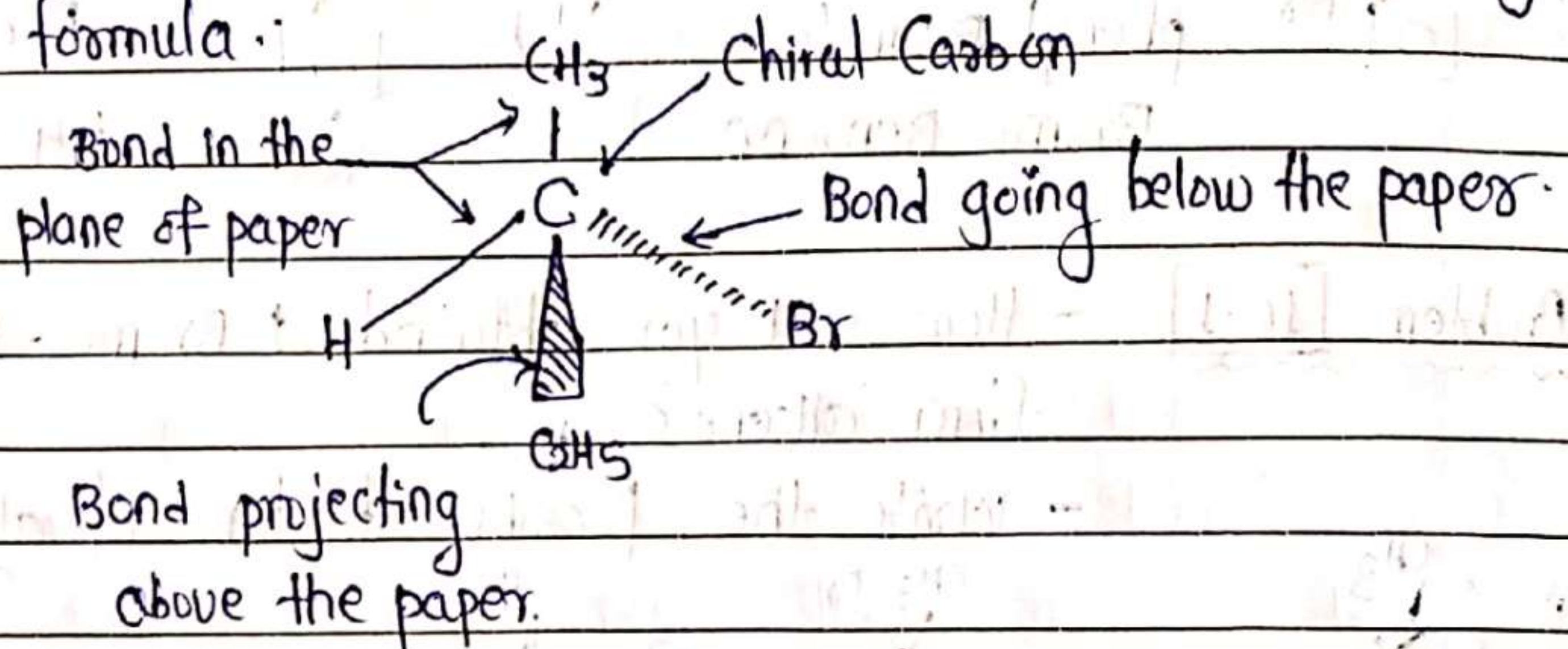
\* Rewrite the following reaction by filling the blanks —



1) Draw structures of enantiomers of lactic acid using fisher Projection formula. (cross formula.)

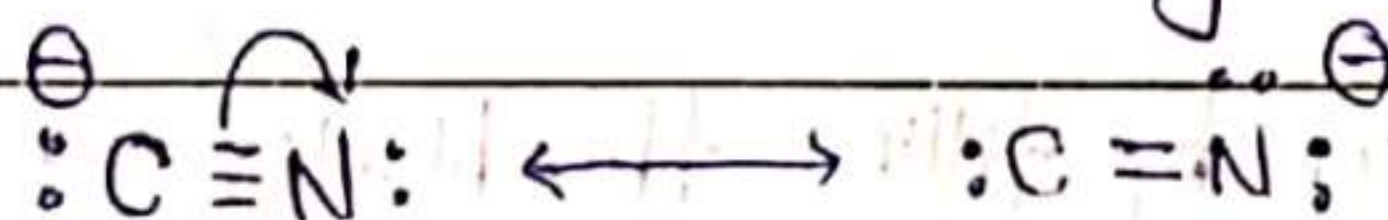


2) Draw structures of enantiomers of 2-Bromo butane using wedge formula.



- Do you know? [Page No. 220]

- Cyanide ion is capable to attacking through more than one atom.



- Such nucleophiles are called as ambident ligand.

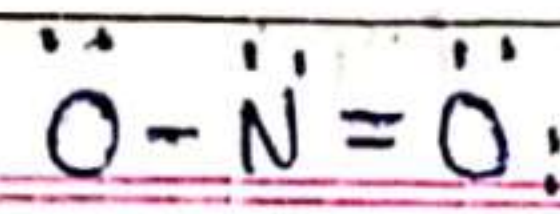
-  $\text{K}^+\text{C}\equiv\text{N}^-$  is a ionic compound to produce cyanide ions.

- Both 'C' & 'N' are capable to donating electron pair.

- C-C bond is stronger than C-N bond. So 'C' attack on cyanide group is major product.

-  $\text{Ag}-\text{C}\equiv\text{N}$  is a covalent bond. 'N' is free to donate pair of electron. Hence 'C' attack on 'N' group produce isocyanide.

[Note- Another Ambident nucleophile is nitrite ion. which can attack through 'O' or 'N']

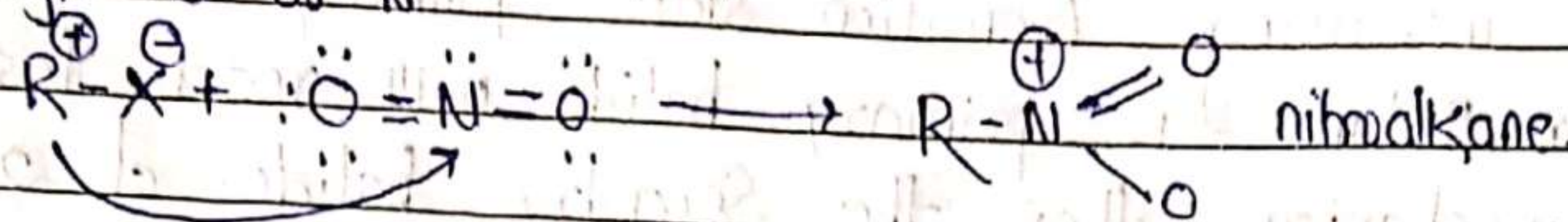


Can you tell?

[Page No. 220]

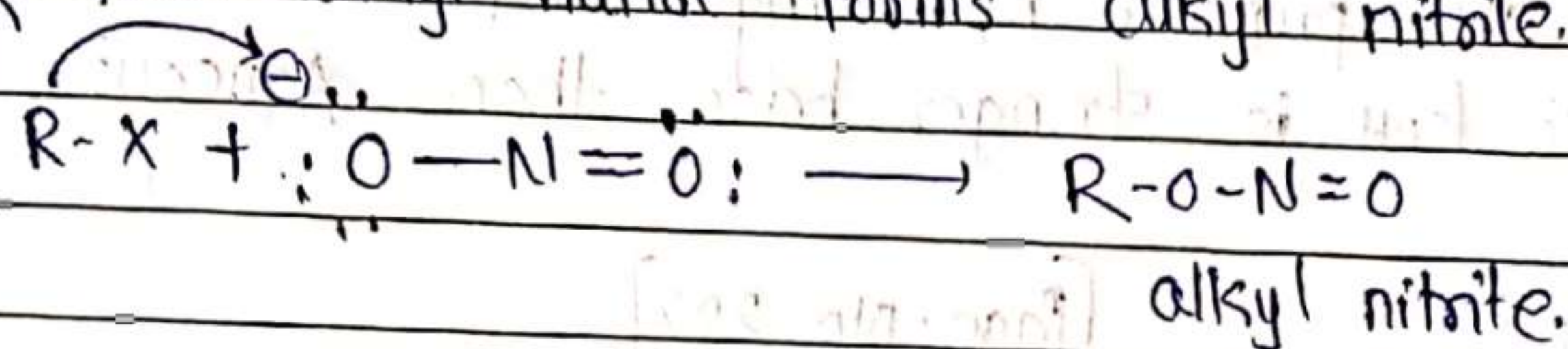
Alkyl halide when treated with alcoholic solution of Silver nitrite gives nitroalkane. Whereas with Sodium nitrite or Potassium nitrite gives alkyl nitrites. Explain?

→ Nitrite ion is a ambident nucleophile which can attack through 'O' or 'N'.



- Both 'N' & 'O' are capable of donating electron pair. C-N bond stronger than N-O bond. So, 'C' attack from alkyl halide forms nitroalkane.

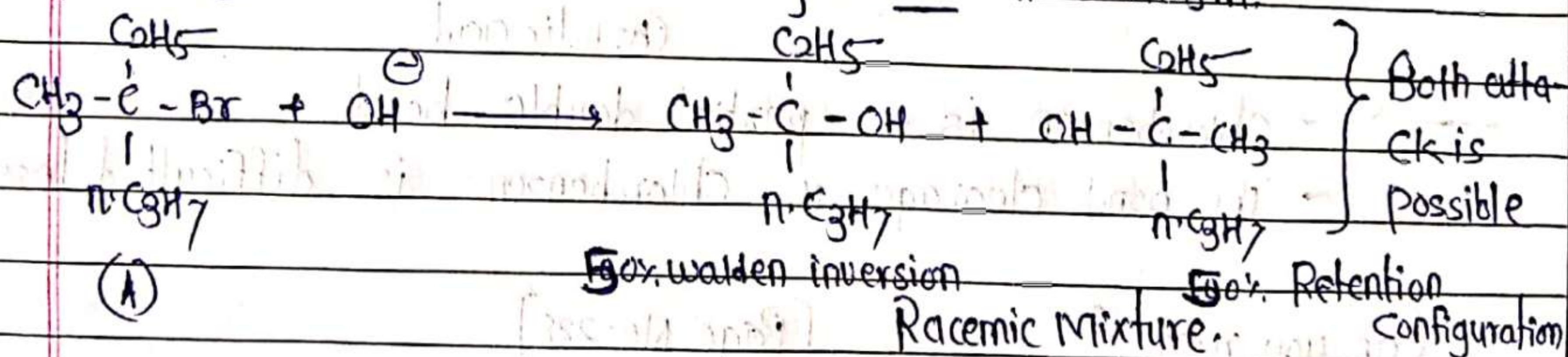
- However, Sodium/Potassium nitrite is an ionic compound oxygen is free to donate pair of electron. Hence 'O' atom attack from alkyl halide forms alkyl nitrite.



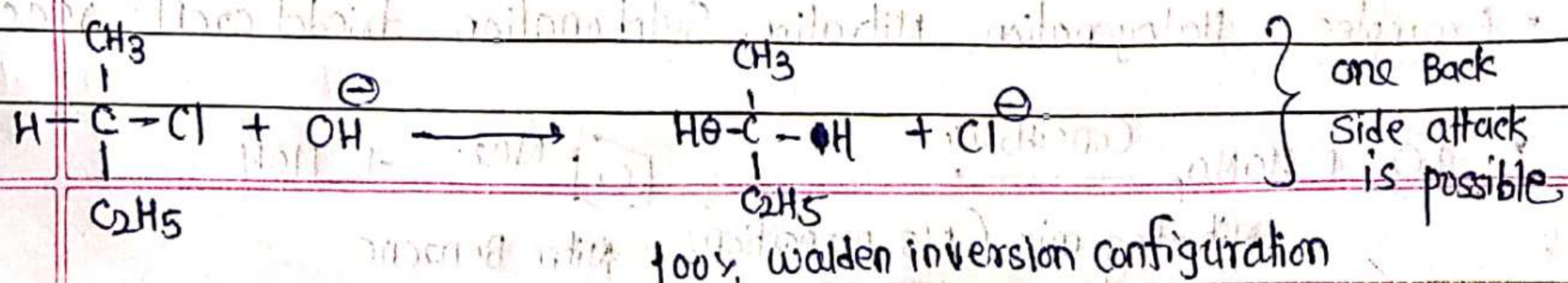
Use your brain power -

[Page No. 222]

• Draw the fisher projection formulae of two products obtained when Compound (A) reacts with  $OH^-$  by  $SN^1$  mechanism.



• Draw fisher projection formula of the product formed when Compound (B) reacts with  $OH^-$  by  $SN^2$  mechanism.



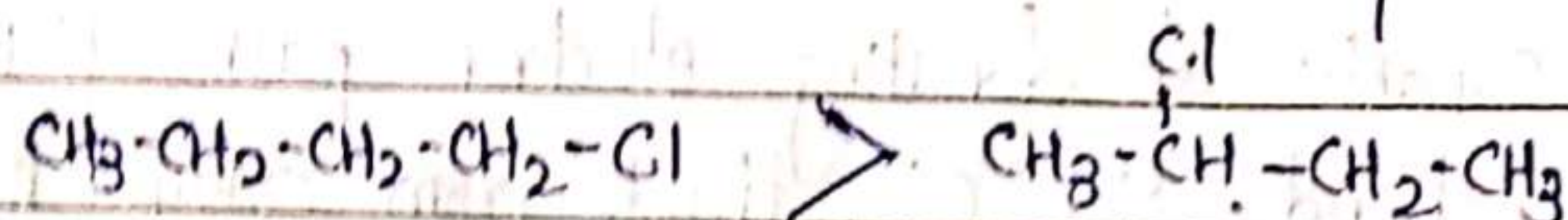
Q) Which of the following two compounds would react faster SN<sup>2</sup> mechanism? why?

→ In SN<sup>2</sup> mechanism pentacoordinate Transition state is involved. The order of reactivity SN<sup>2</sup>-mechanism is,

Primary > Secondary > Tertiary.

- Due to increasing Transition state primary to Tertiary halide.

- 1-chloro Butane is primary halide will react faster by SN<sup>2</sup>-mechanism, than the Secondary halide of 2-chloro Butane



Can you recall?

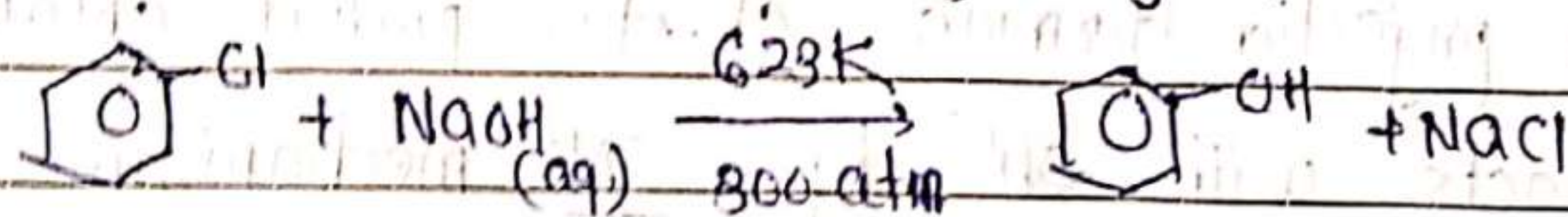
[Page No. 224]

- \* Alkene are prepared by using alcoholic KOH.
- \* Alcohol are prepared by using aqueous KOH.
- \* Alcoholic KOH is stronger base than Aqueous KOH.

Can you tell?

[Page No. 227]

- Conversion of chlorobenzene to phenol by aq. NaOH required at high temperature about 623K & high pressure. Explain.



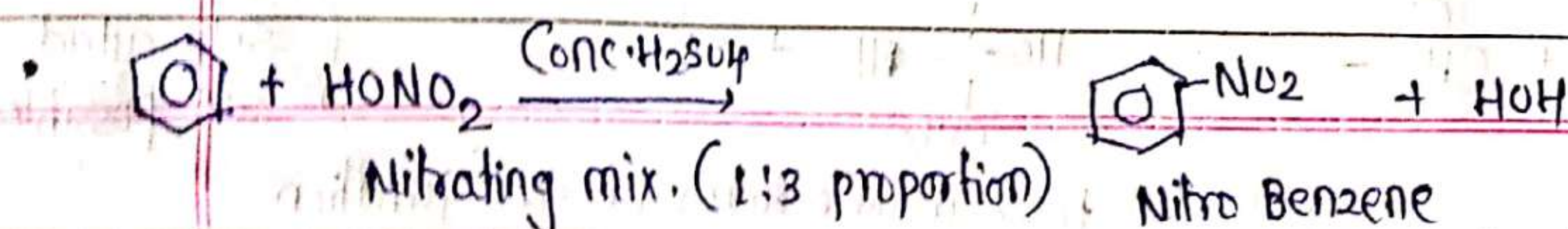
Carbolic acid.

- - Chlorobenzene is a partial double bond.
- The bond cleavage in chlorobenzene is difficult & less reactive.

Can you recall?

[Page No. 228]

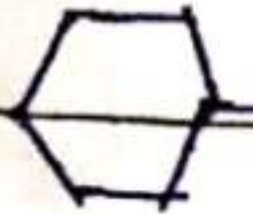
- Electrophile - It is a electron loving species. they have lack of e<sup>-</sup>. e<sup>-</sup> deficient compounds are electrophile.
- Examples - Halogenation, Nitration, Sulphonation, Friedel crafts reaction.



### Exercise -

Page No.

IV) which one compound from the following pairs would undergo  $S_N2$  faster from the ?

a) -CH<sub>2</sub>Cl is a primary halide.  $S_N2$  reaction faster than -Cl

b) Iodine is better leaving group than chloride.

CH<sub>3</sub>-CH<sub>2</sub>-CH<sub>2</sub>-I.  $S_N2$  reaction faster than CH<sub>3</sub>-CH<sub>2</sub>-CH<sub>2</sub>-Cl.