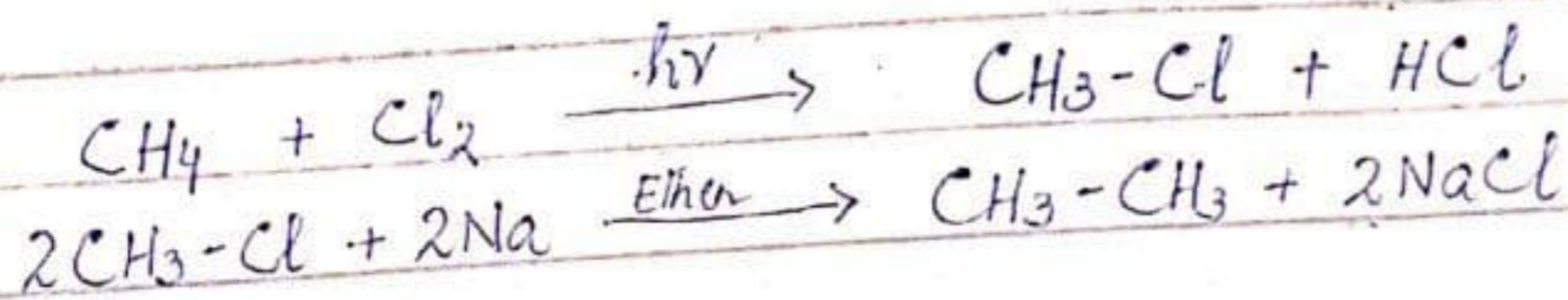
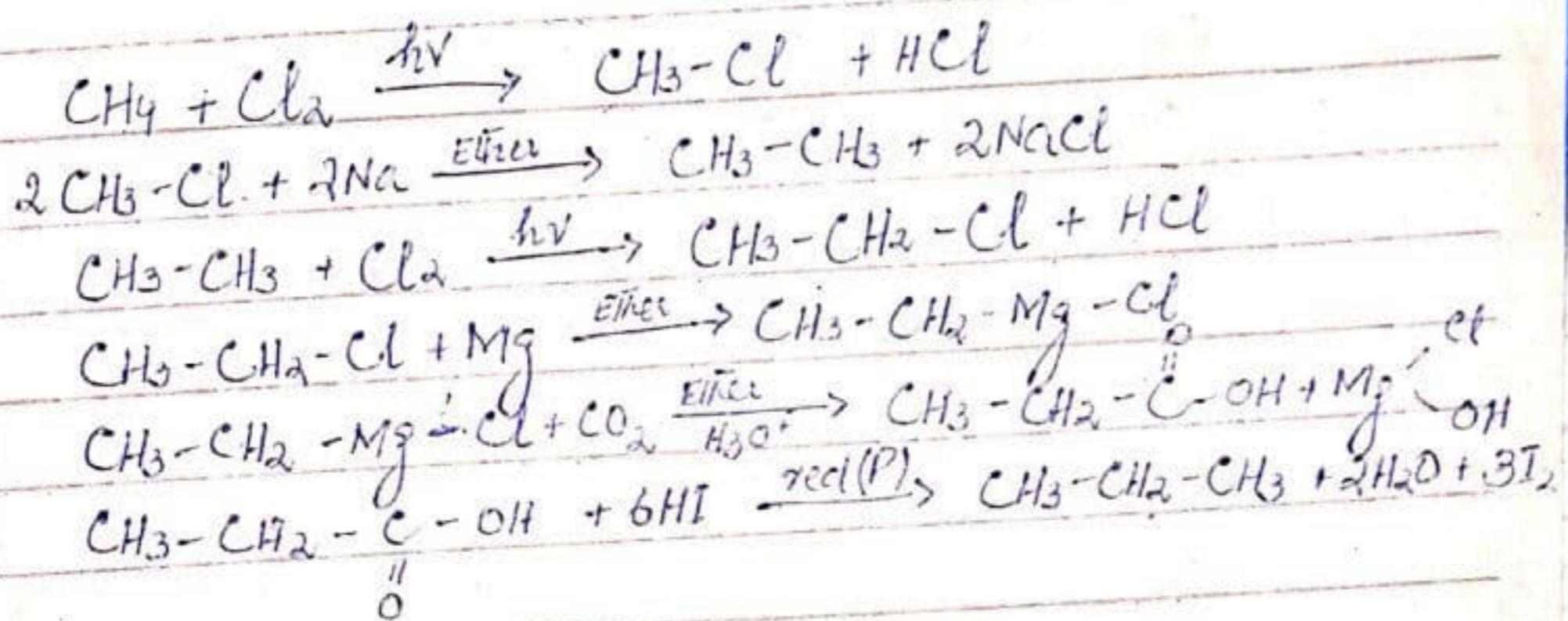


CONVERSIONS ①

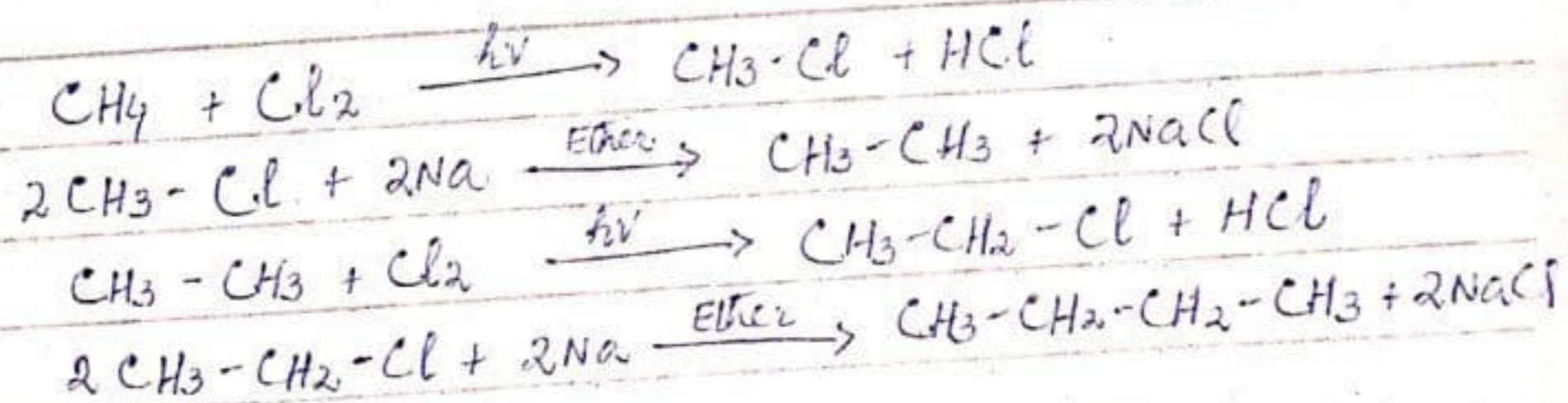
1 METHANE \longrightarrow ETHANE



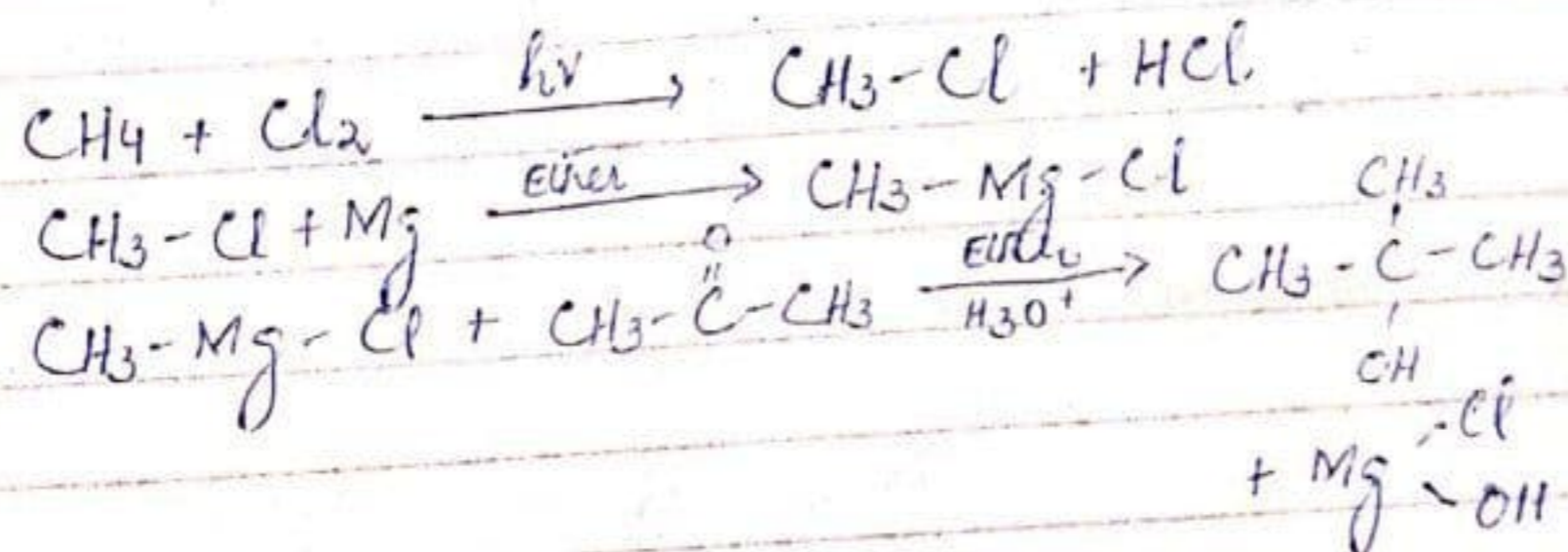
2 METHANE \longrightarrow PROPANE



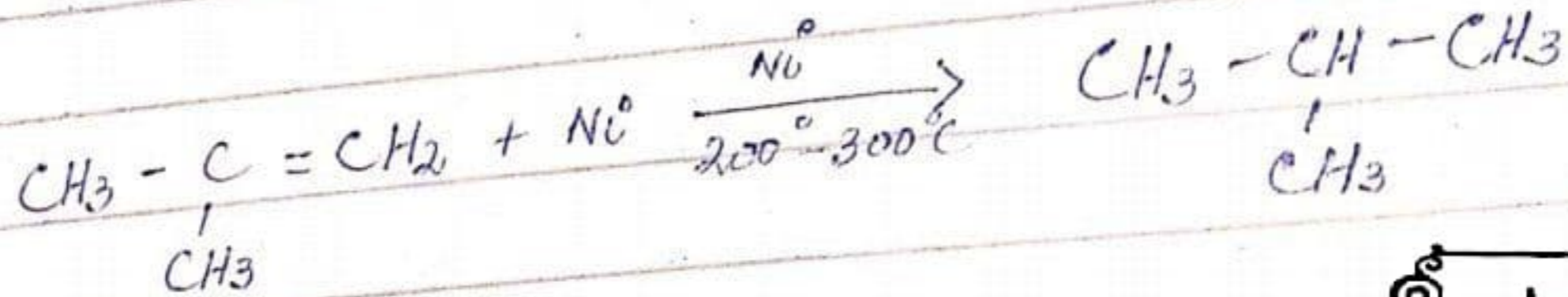
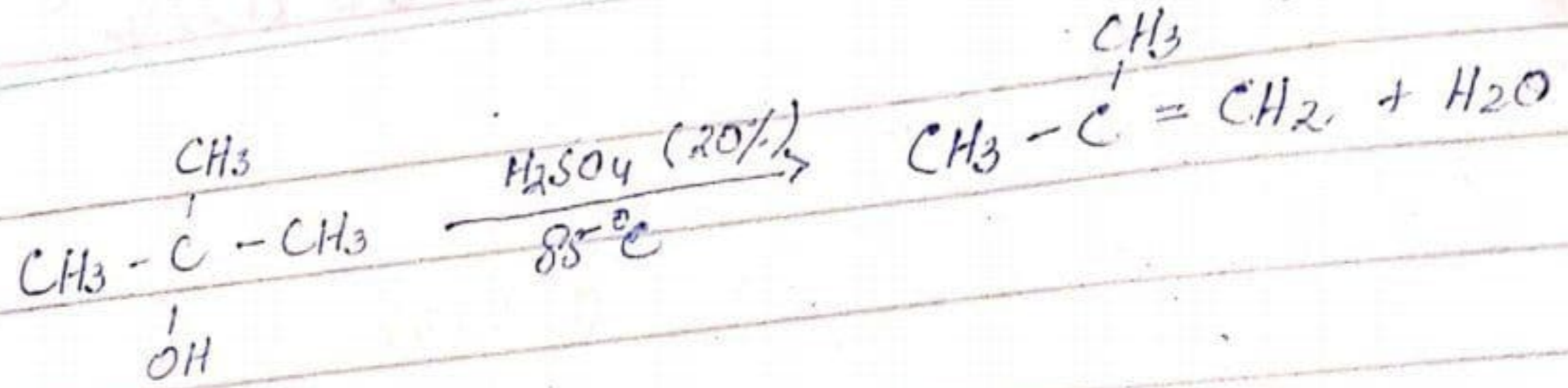
3 METHANE \longrightarrow n-BUTANE



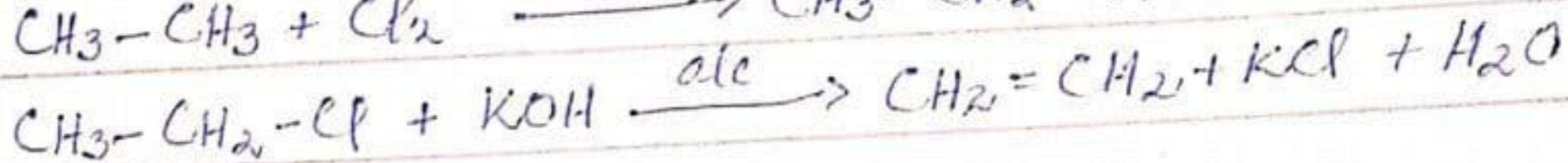
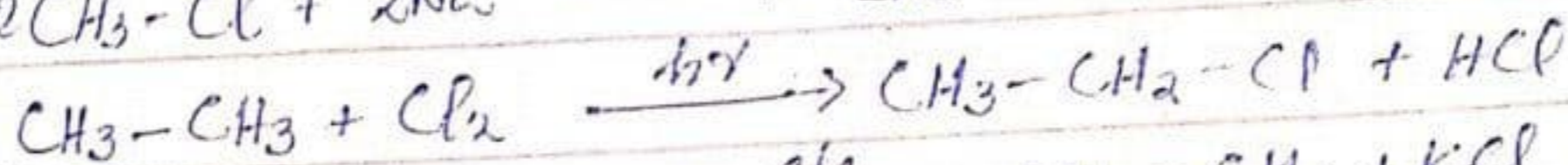
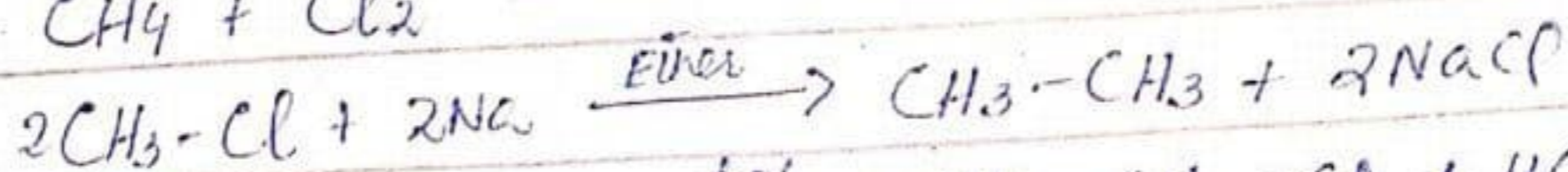
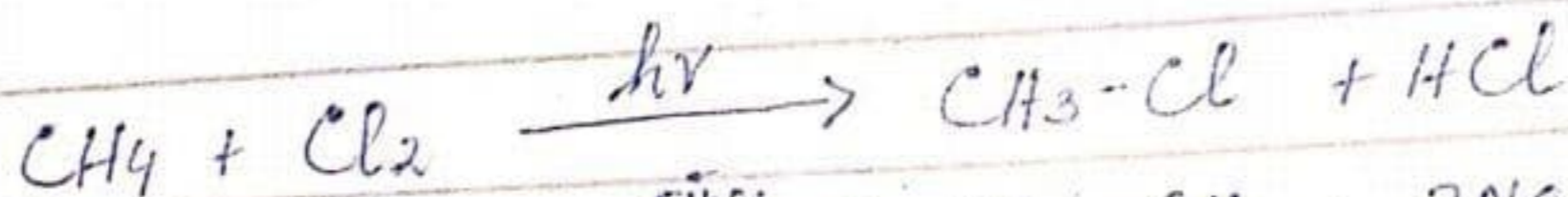
4 METHANE \longrightarrow ISO-BUTANE



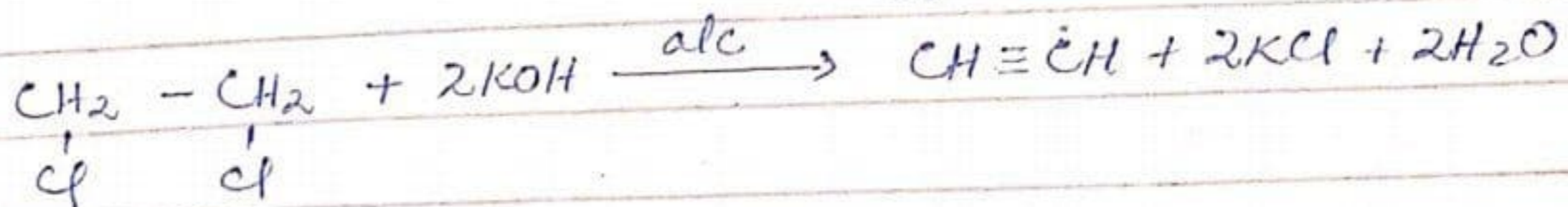
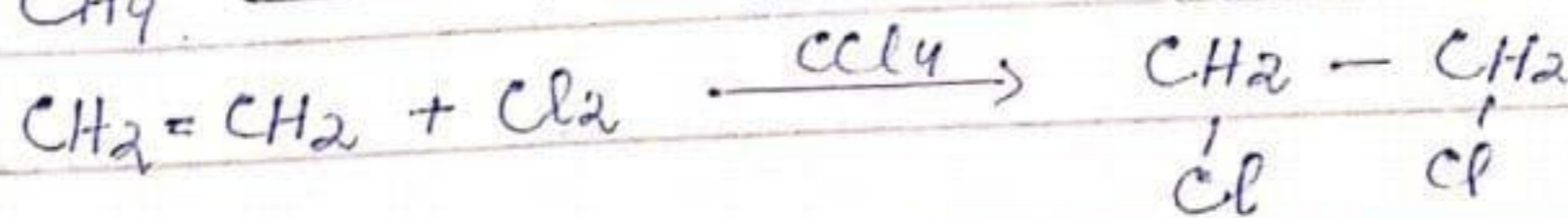
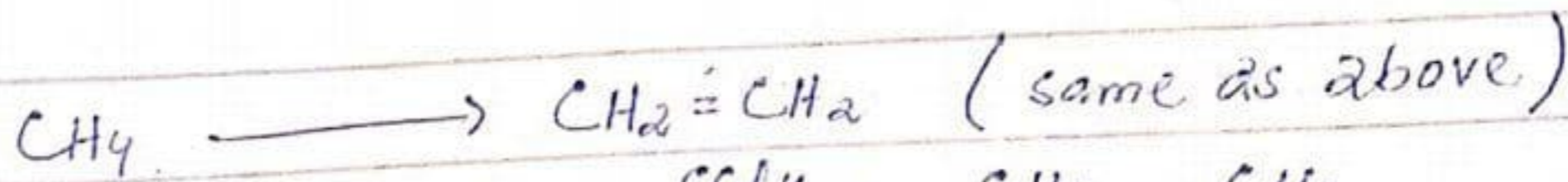
2



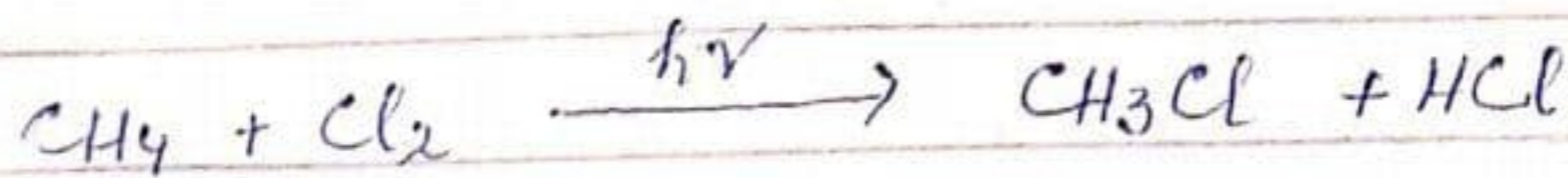
5 METHANE \longrightarrow ETHENE



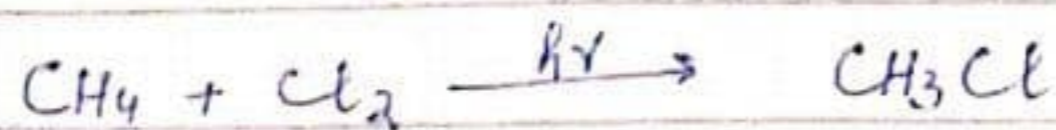
6 METHANE \longrightarrow ETHYNE

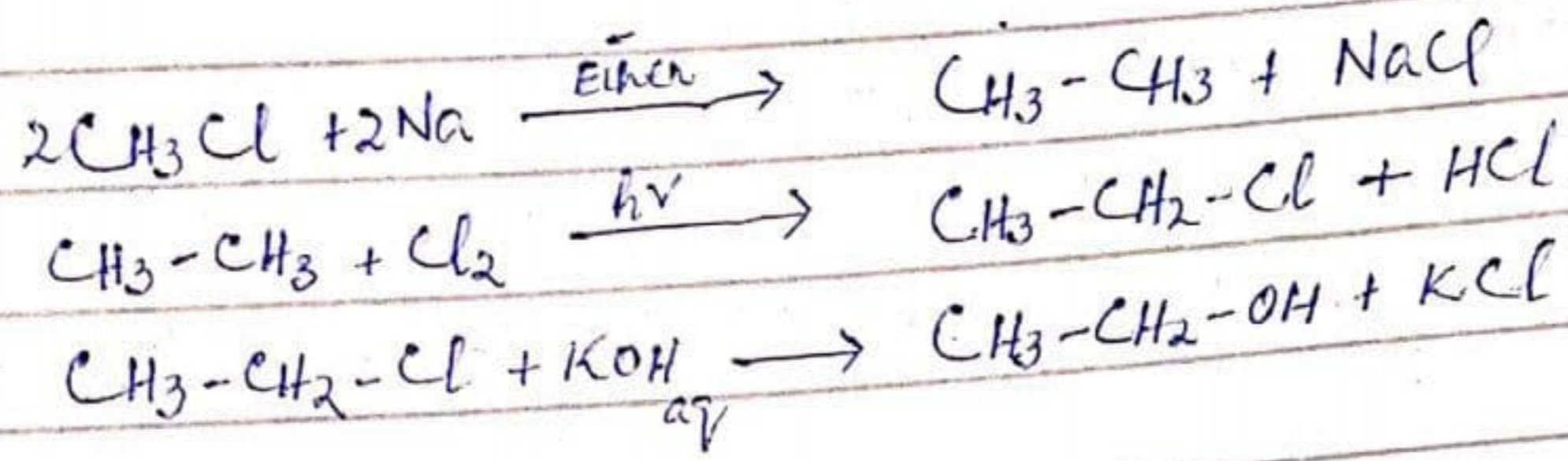


7 METHANE \longrightarrow METHYL ALCOHOL

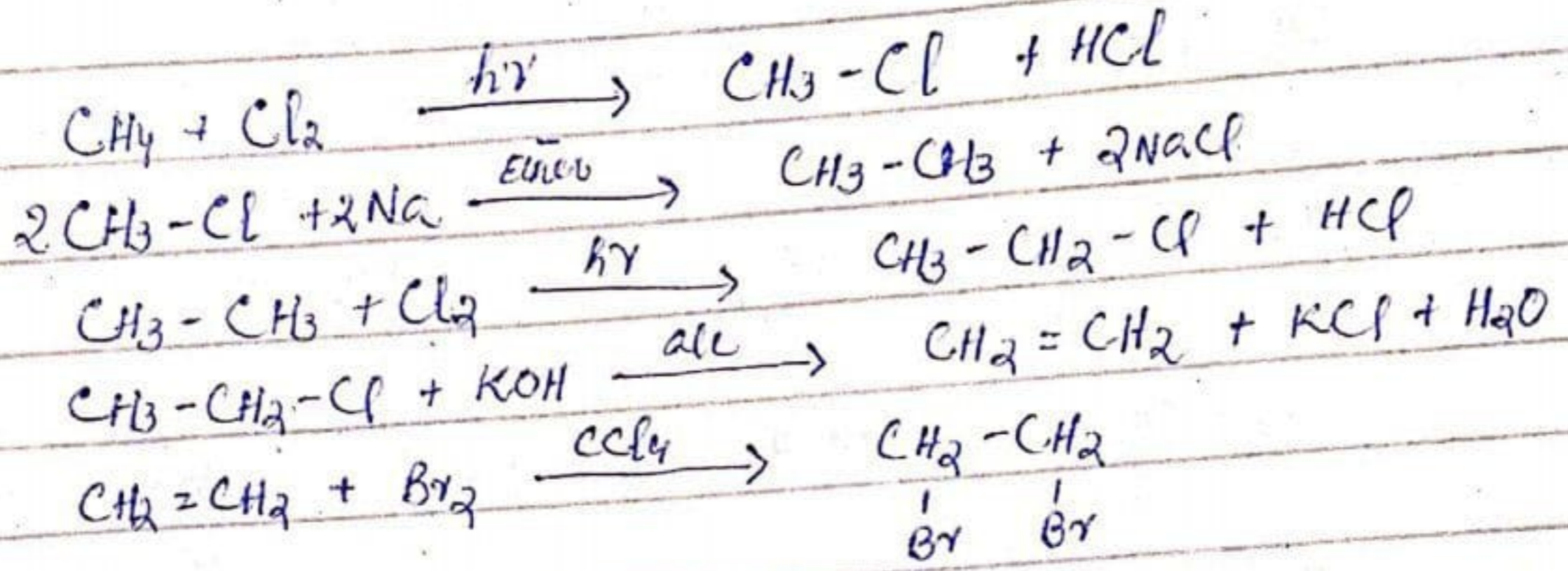


8 METHANE \longrightarrow ETHYL ALCOHOL

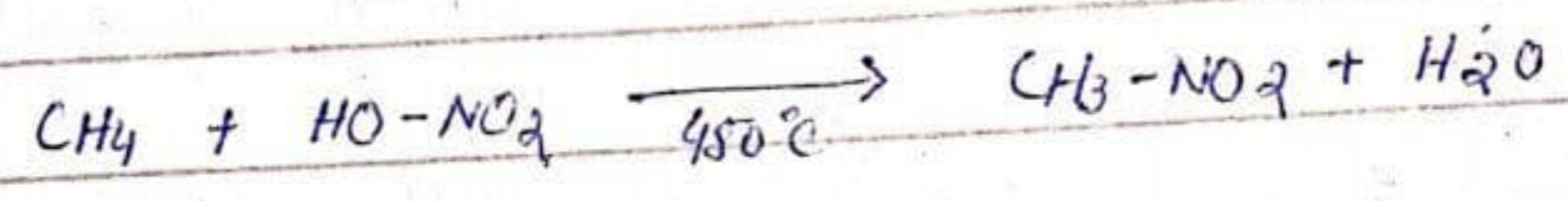




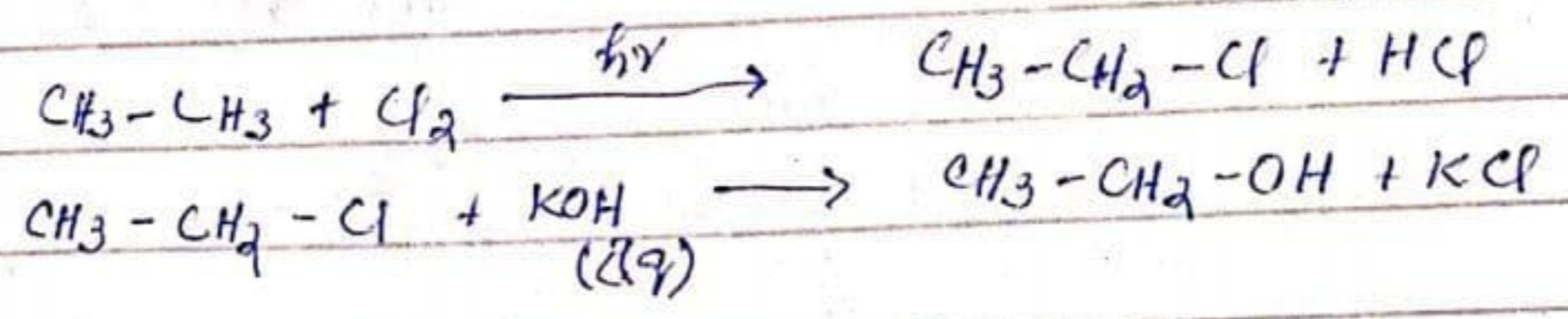
9 METHANE \longrightarrow 1,2-dibromoethane.



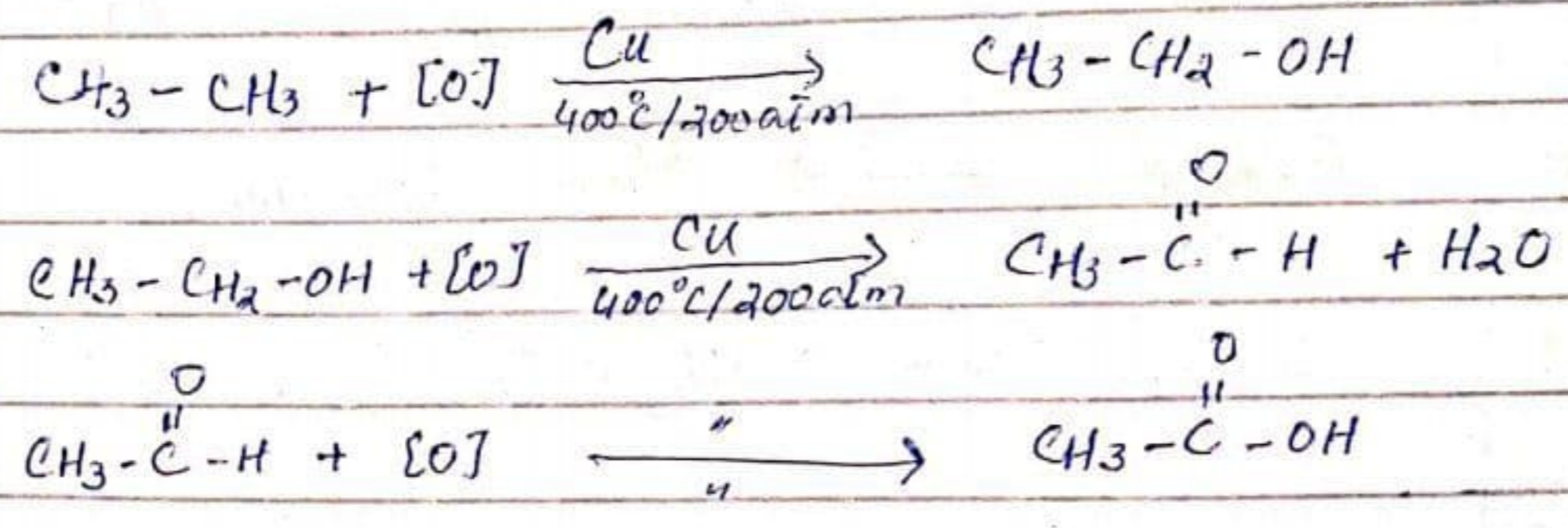
10 METHANE \longrightarrow NITROMETHANE

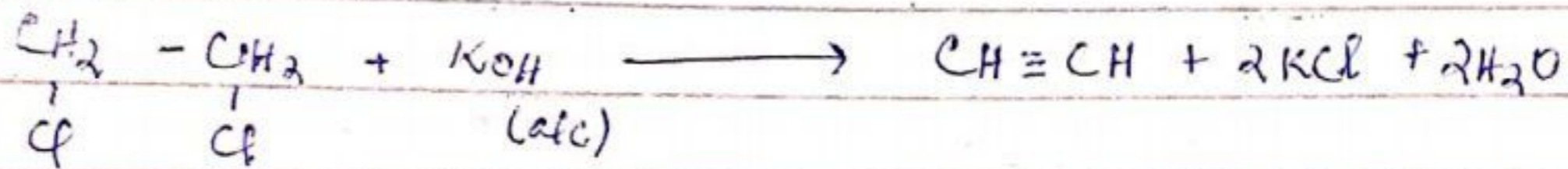
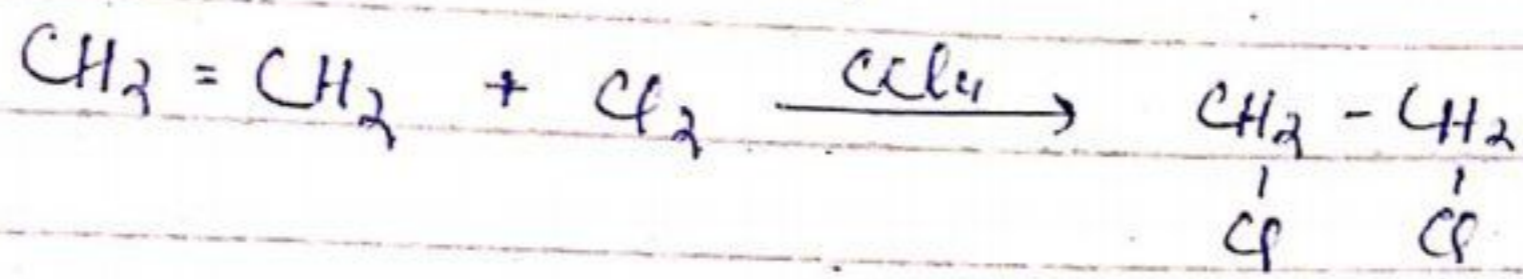
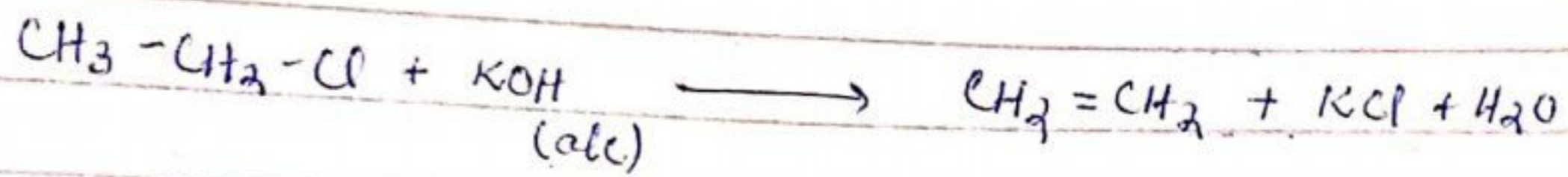


11 ETHANE \longrightarrow ETHYL ALCOHOL

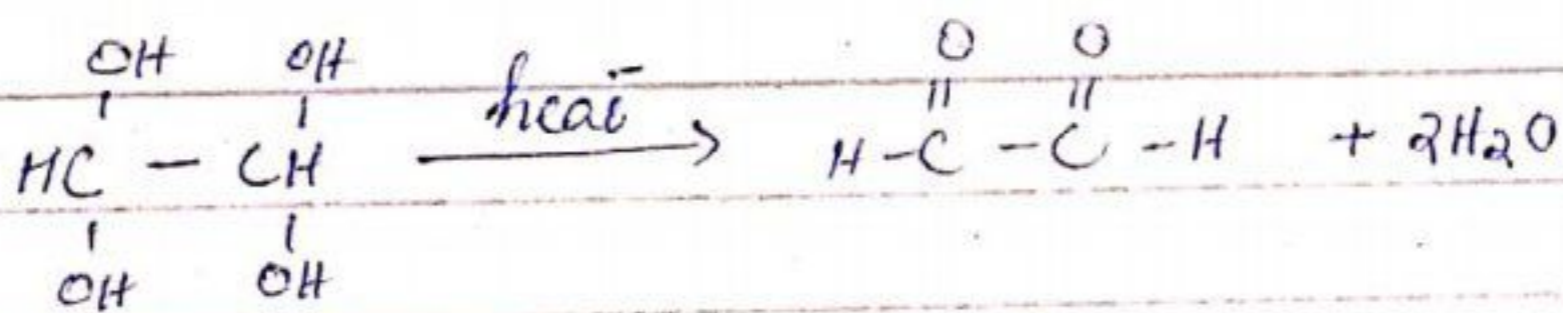
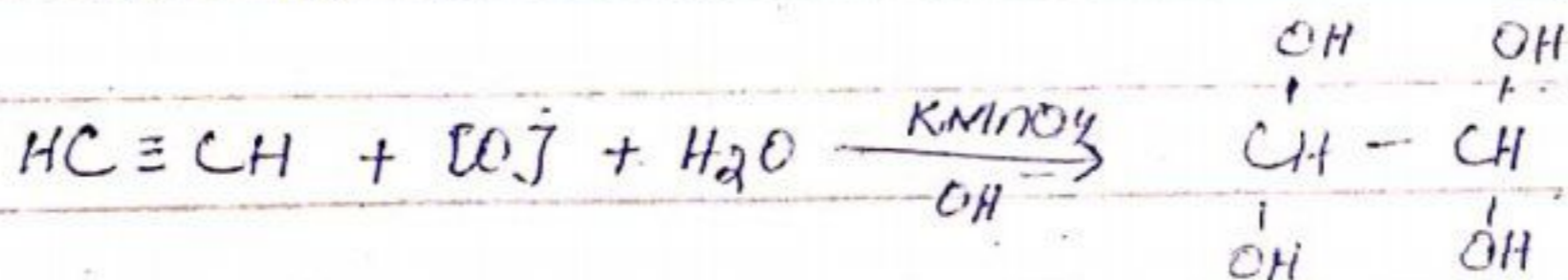
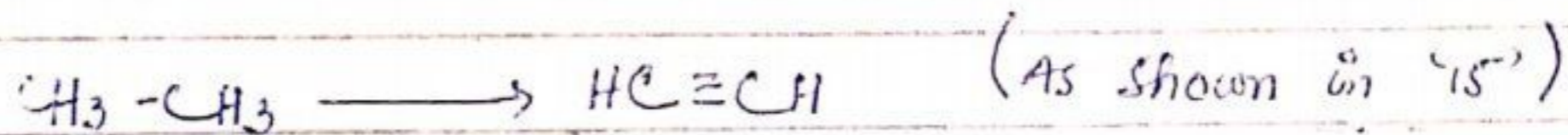


12 ETHANE \longrightarrow METHANE:

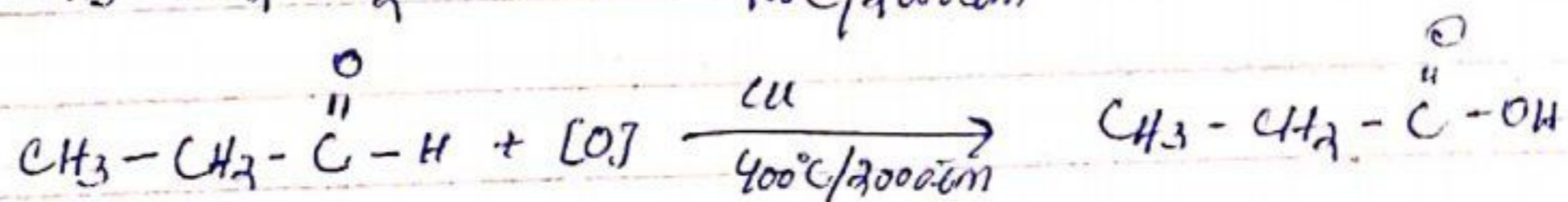
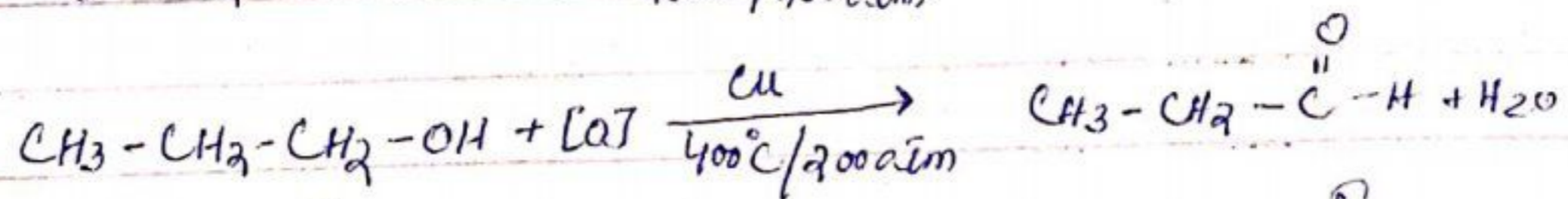
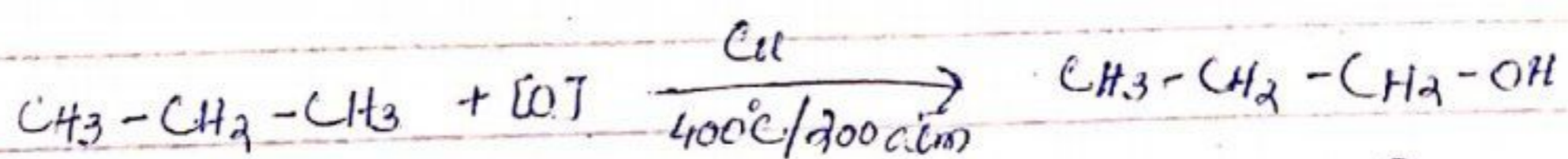




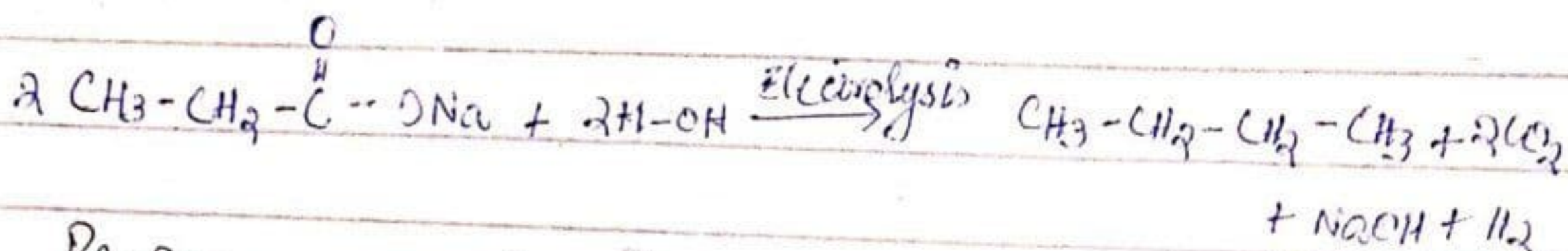
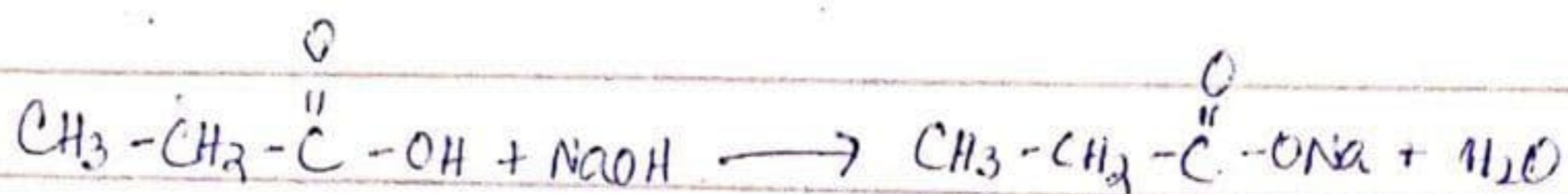
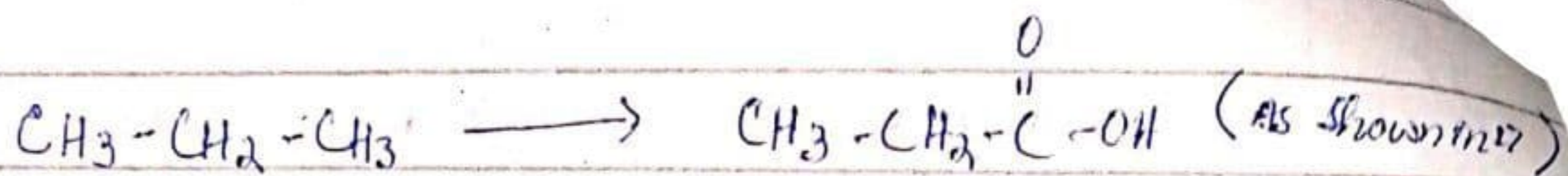
16 ETHANE \longrightarrow GLYOXAL



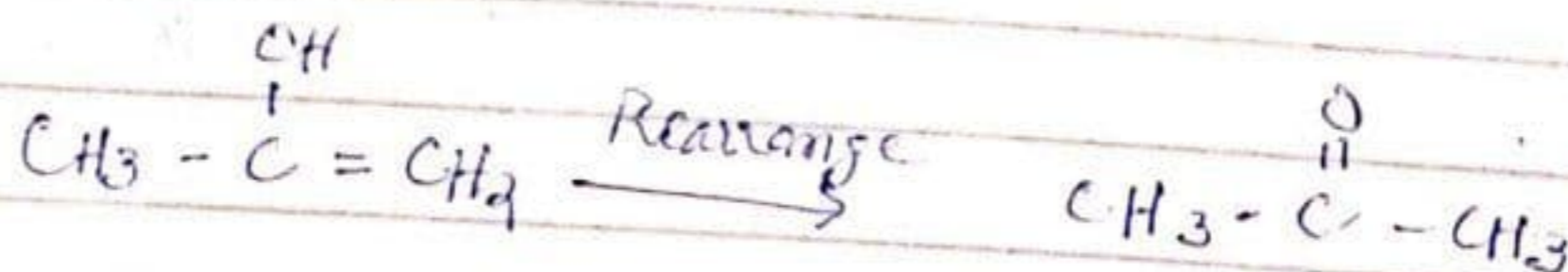
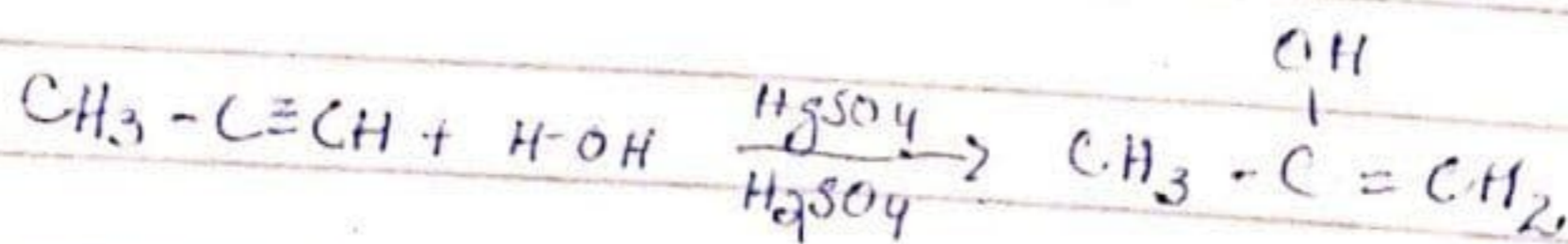
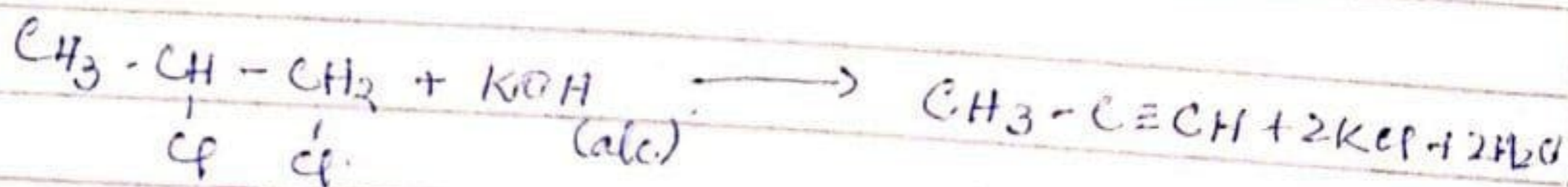
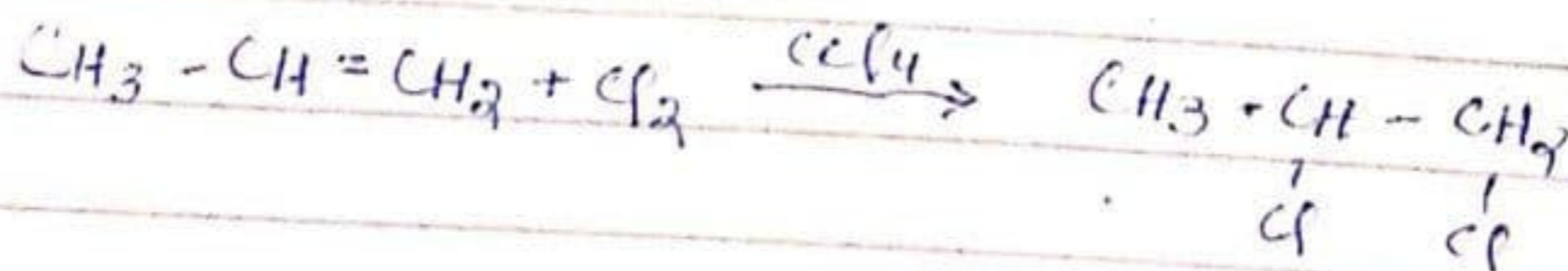
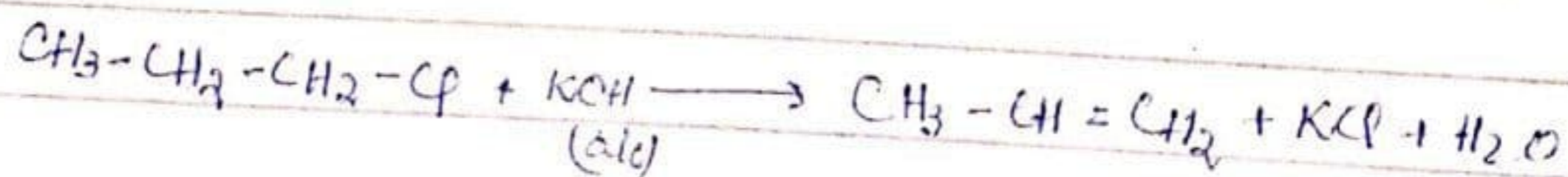
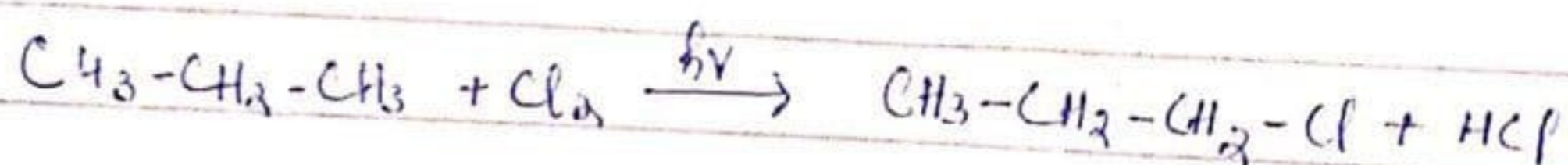
17 PROPANE \longrightarrow PROPANOIC ACID



18

PROPANE \longrightarrow n-butane

19

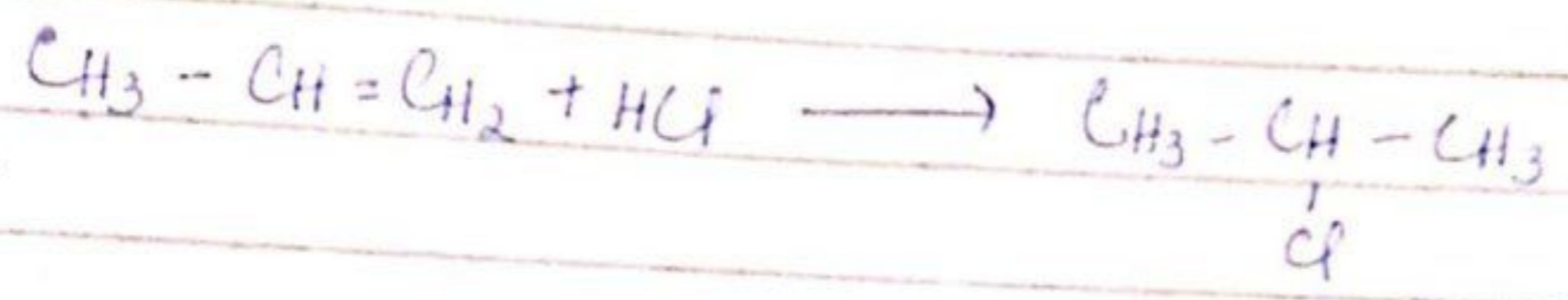
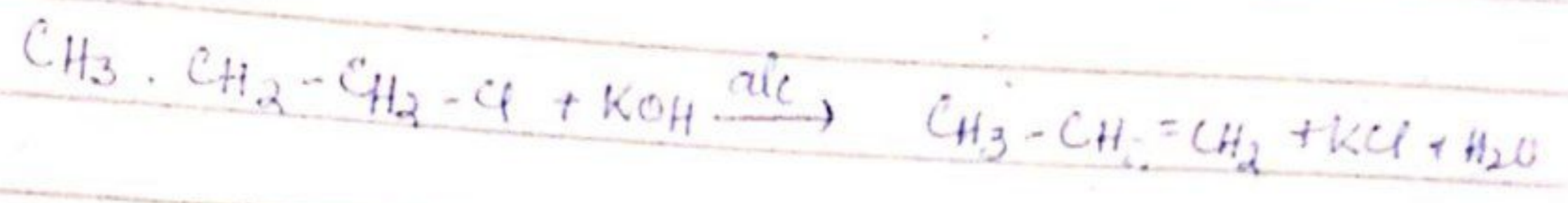
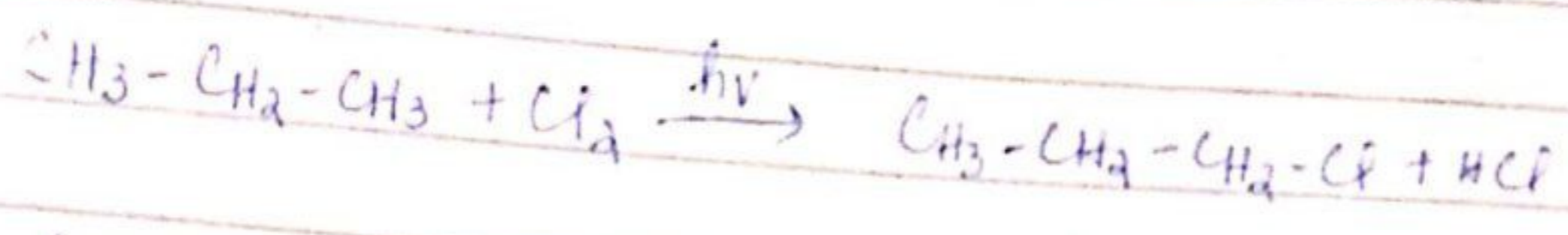
PROPANE \longrightarrow PROPANONE

20

PROPANE \longrightarrow PROPYNE

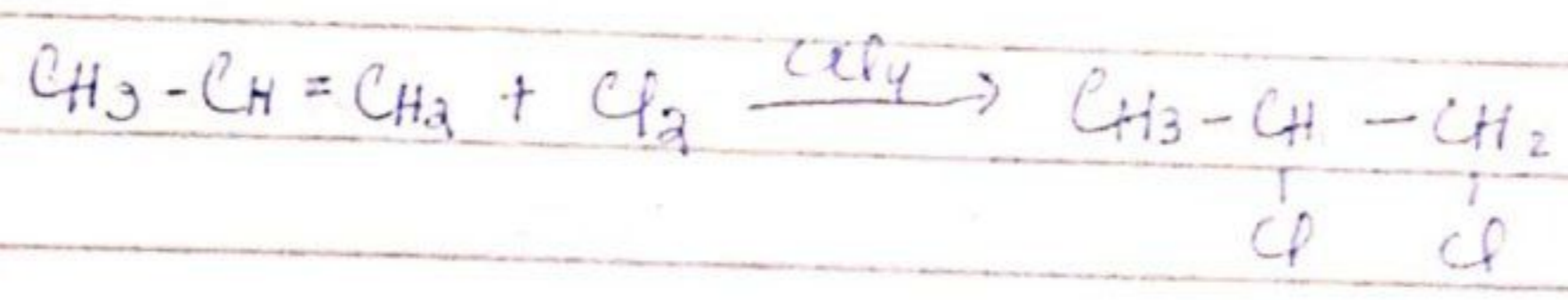
Propene $\xrightarrow{\text{halogenation}}$ then $\xrightarrow{\text{dehydrohalogenation}}$ Propene
Same process again \longrightarrow Propyne.

21 Propane \longrightarrow Iso-propyl

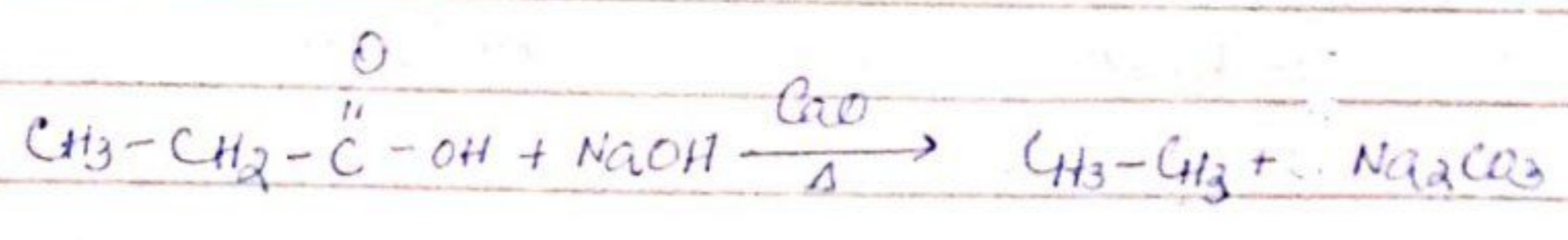
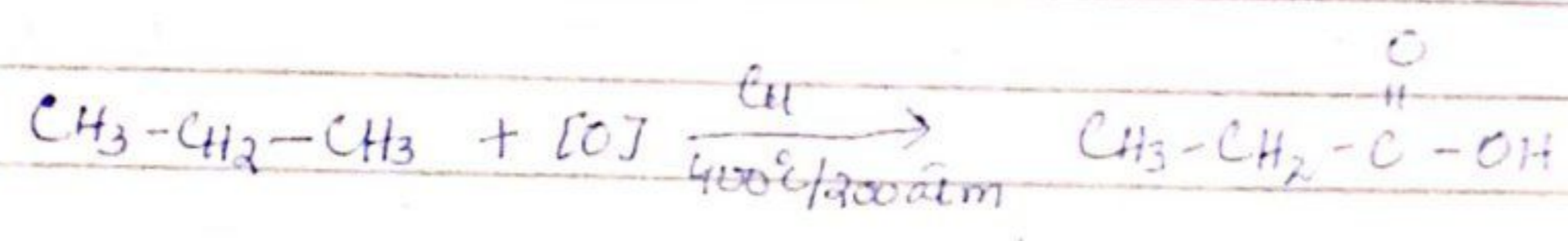


22 PROPANE \longrightarrow 1,2-dichloropropane

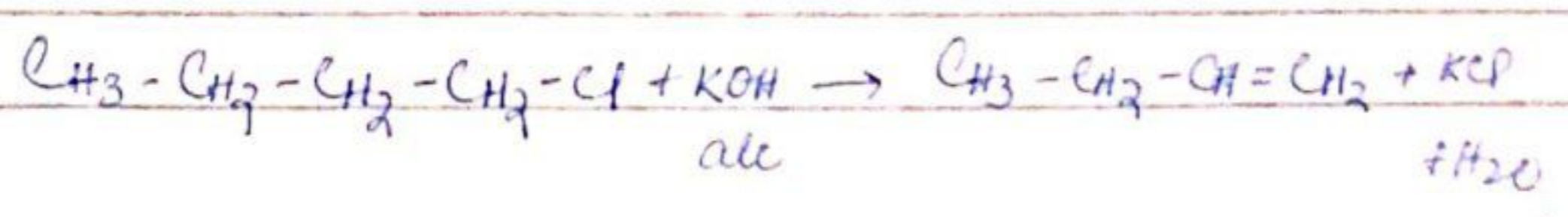
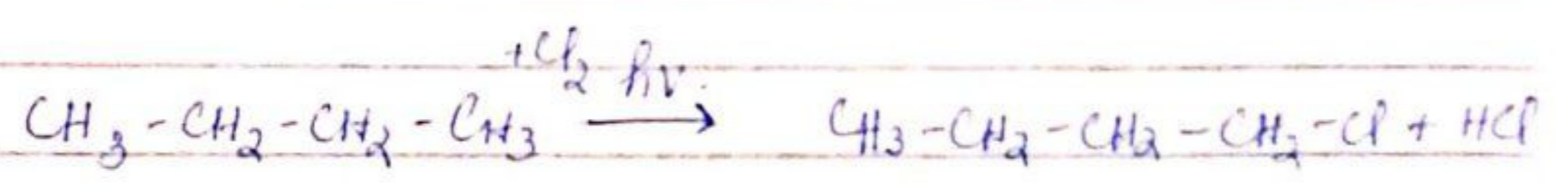
Propane \longrightarrow Propene



23 PROPANE \longrightarrow ETHANE

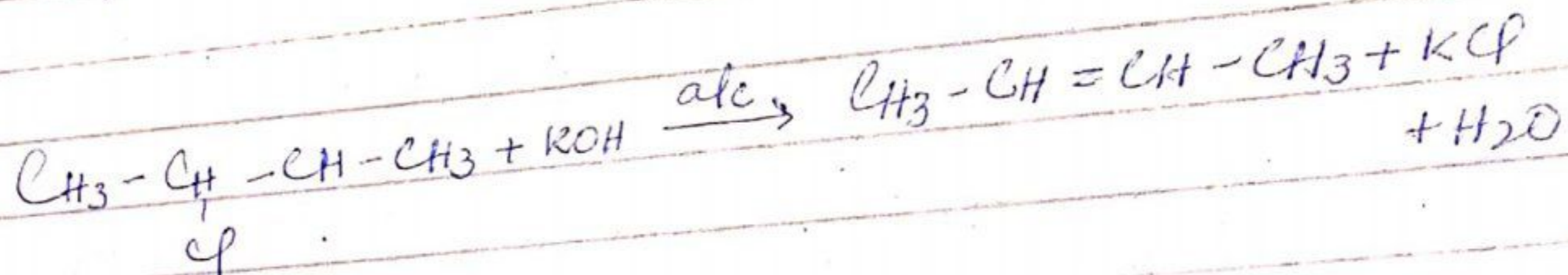
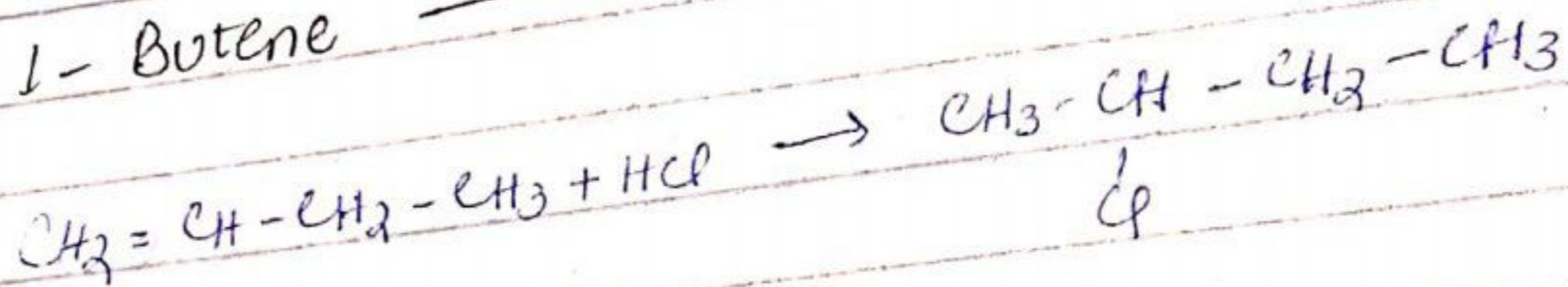


24 BUTANE \longrightarrow BUTENE

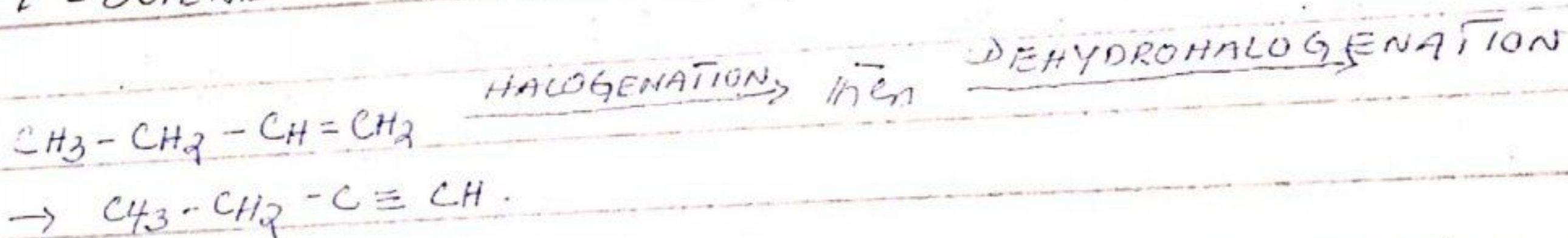


8

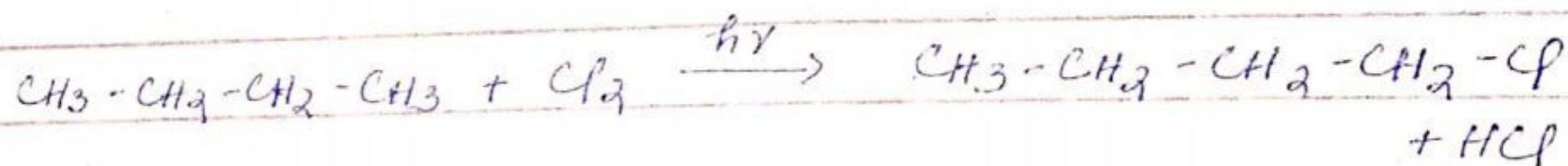
25 1-Butene \longrightarrow 2-Butene



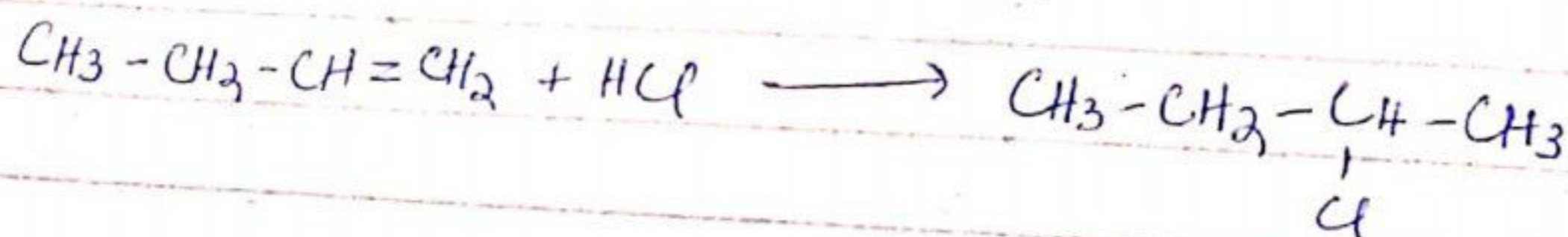
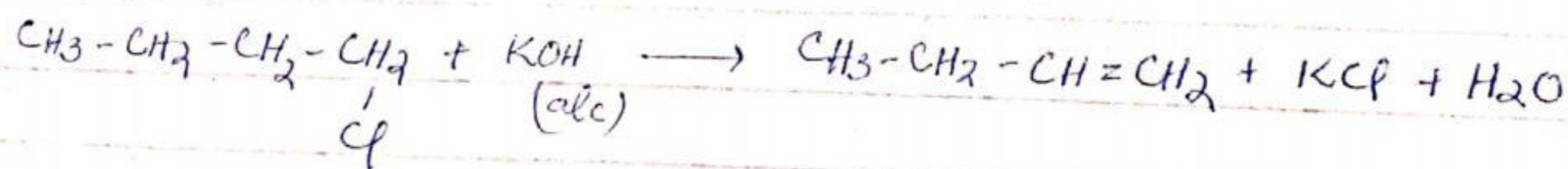
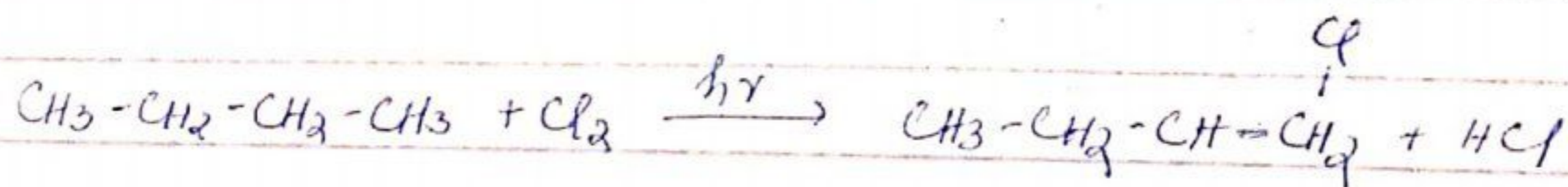
26 1-BUTENE \longrightarrow 1-BUTYNE

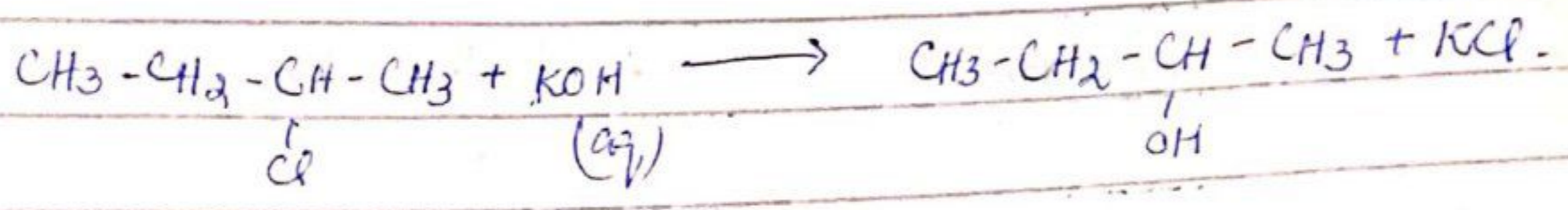


27 n-BUTANE \longrightarrow n-BUTYL ALCOHOL

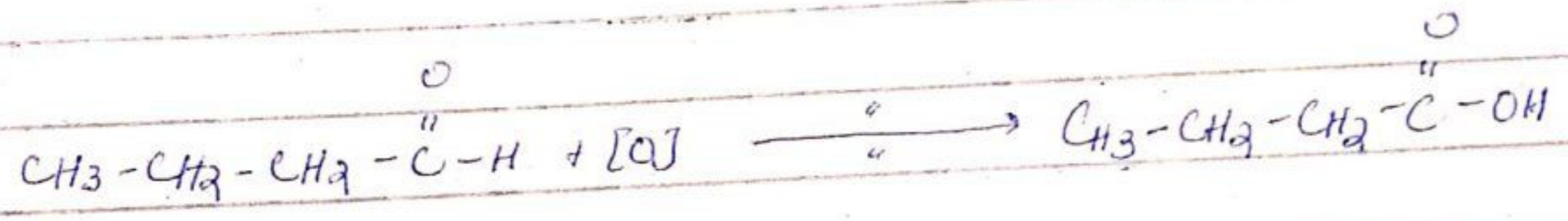
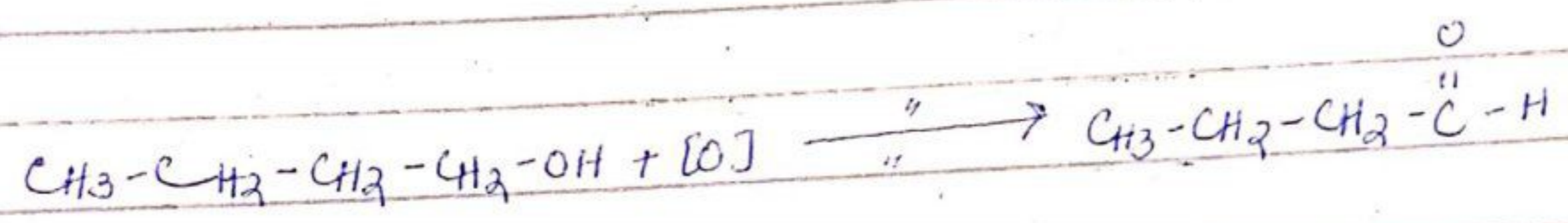
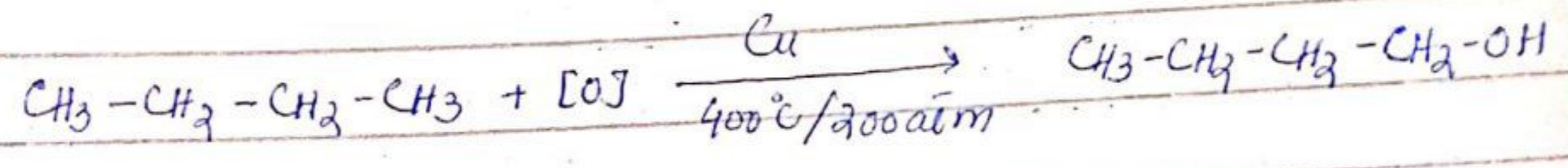


28 n-BUTANE \longrightarrow 2-BUTANOL





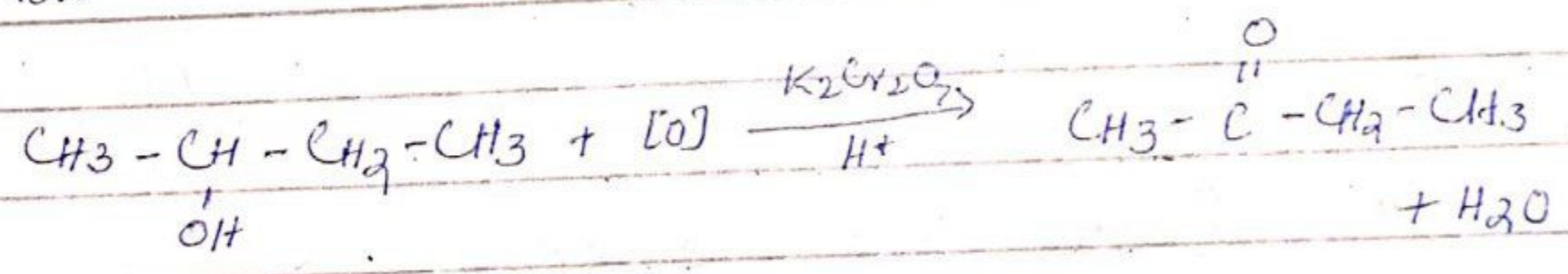
29 n-BUTANE → BUTYRIC ACID.



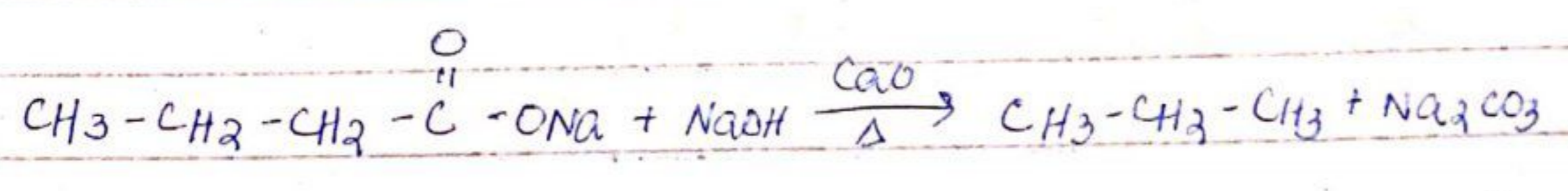
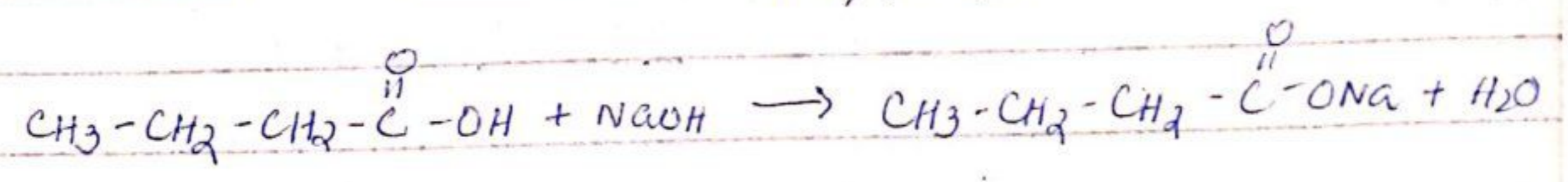
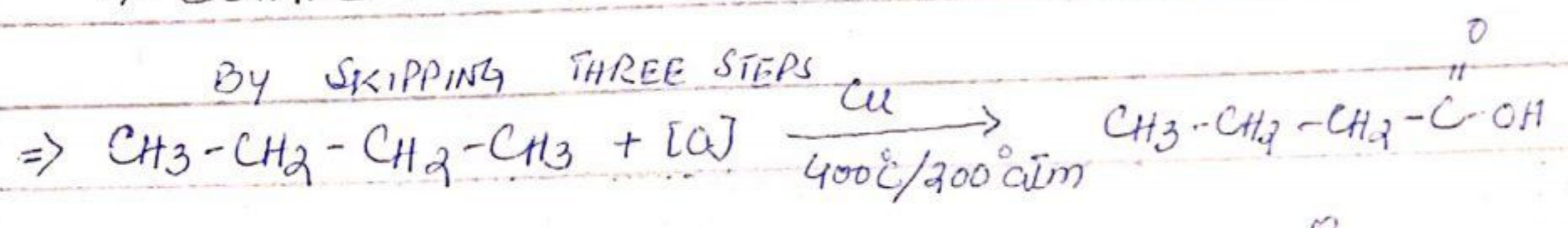
30 BUTANE → 2-BUTANONE

BUTANE → 2-BUTANOL (as shown in 28)

now

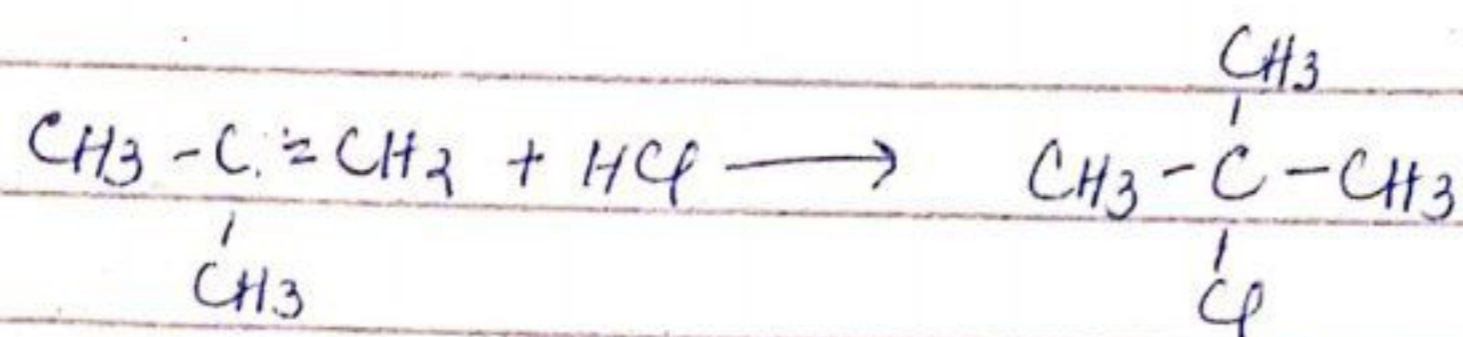
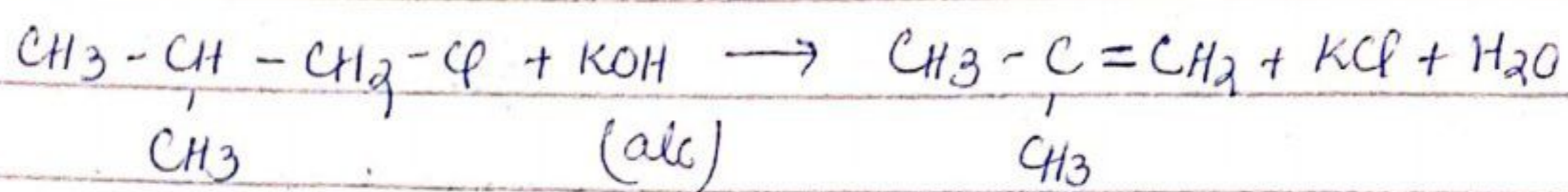
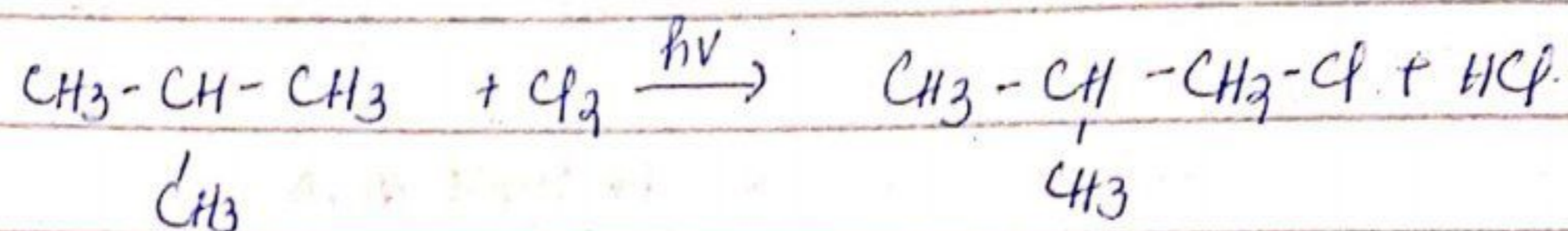


31 n-BUTANE → PROPANE:-

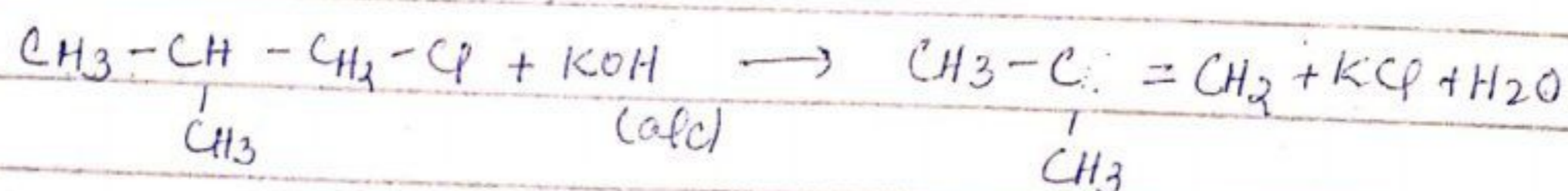
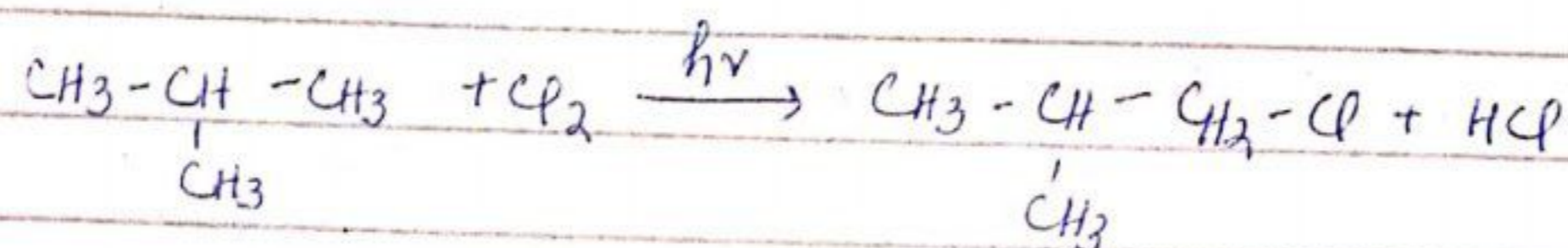


10

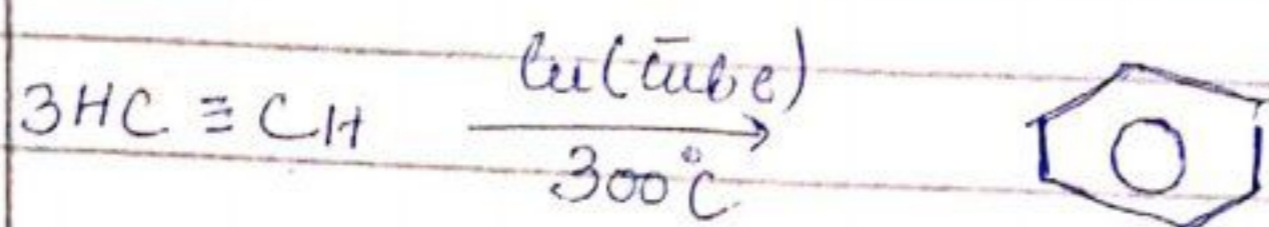
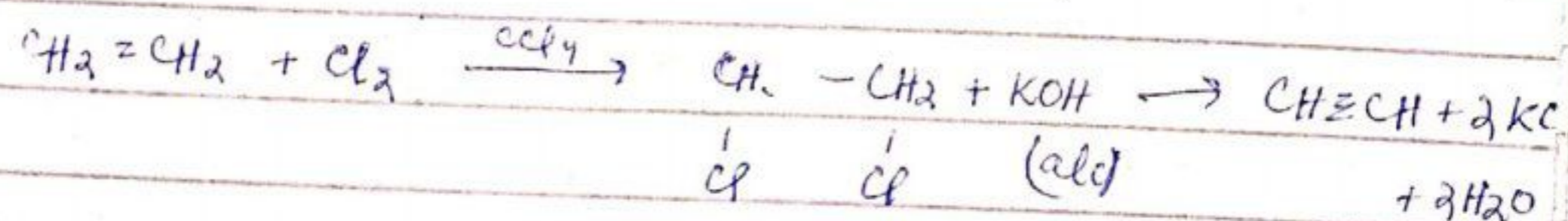
32 iso-butane \longrightarrow t-butyl chloride.



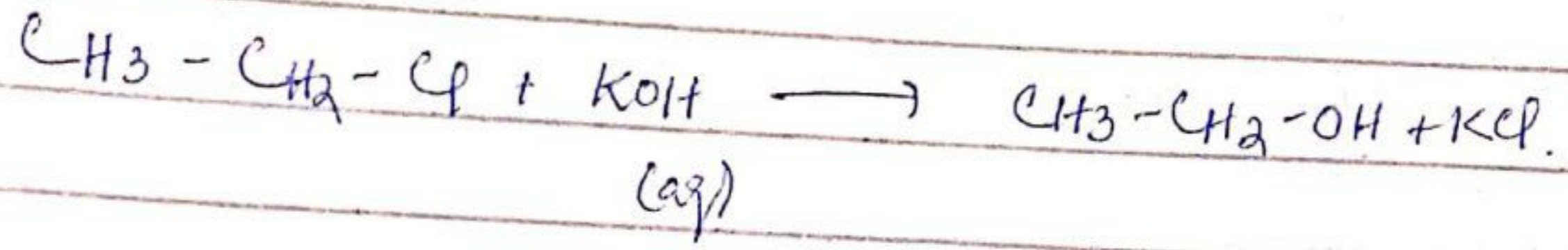
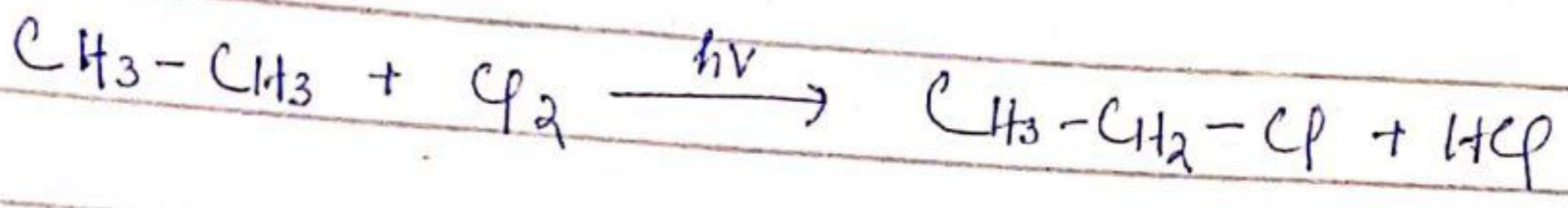
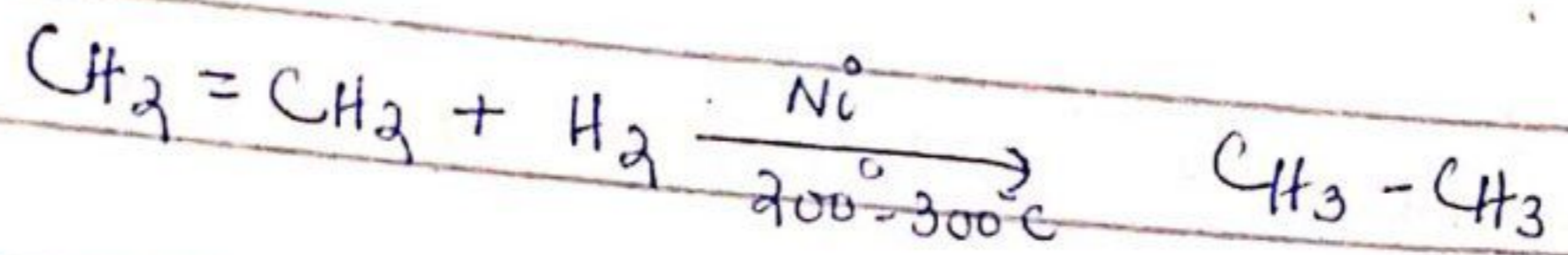
33 iso-butane \longrightarrow iso-butene.



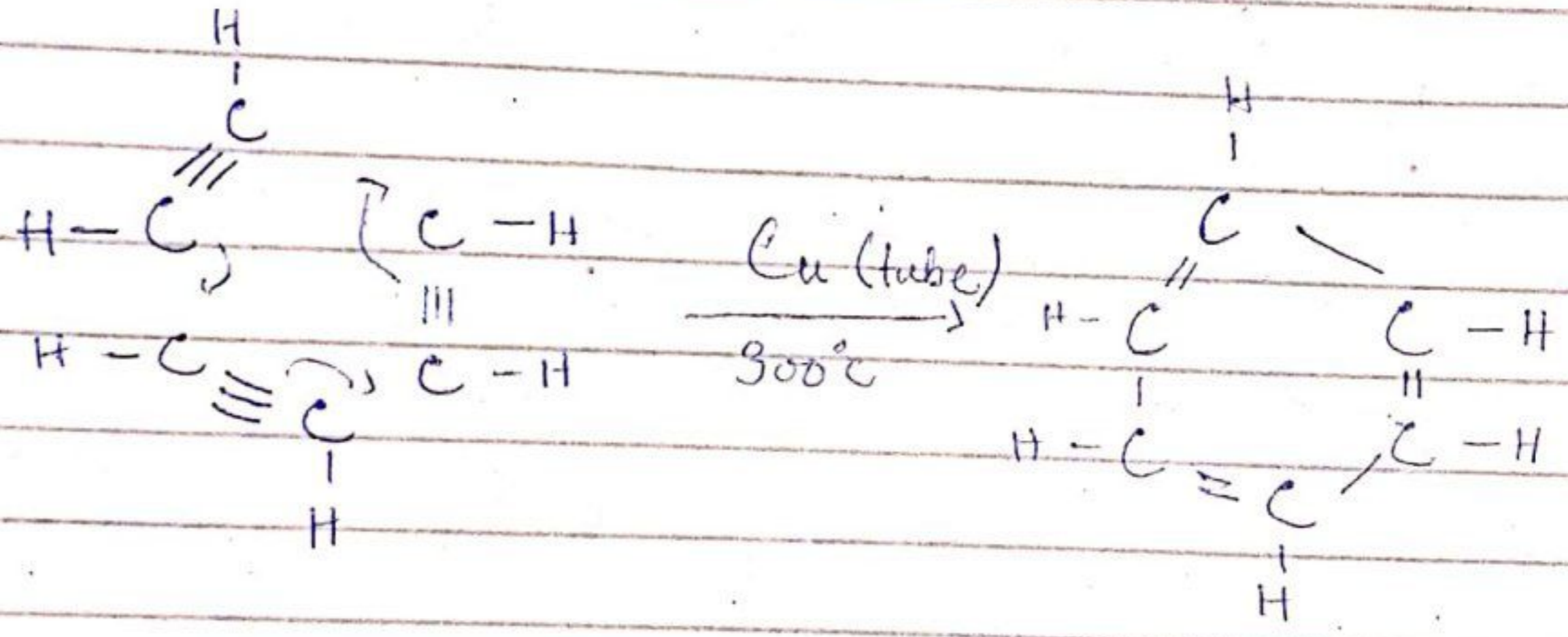
34 ETHENE \longrightarrow BENZENE



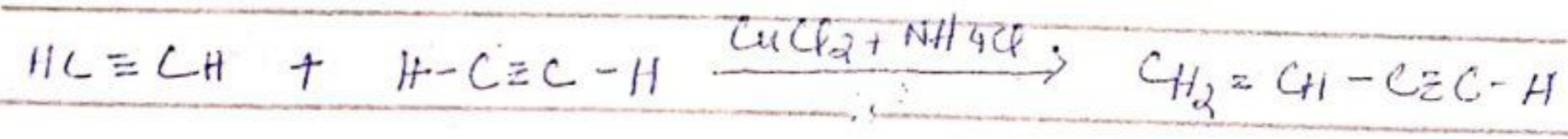
35 ETHENE \longrightarrow ETHYL ALCOHOL



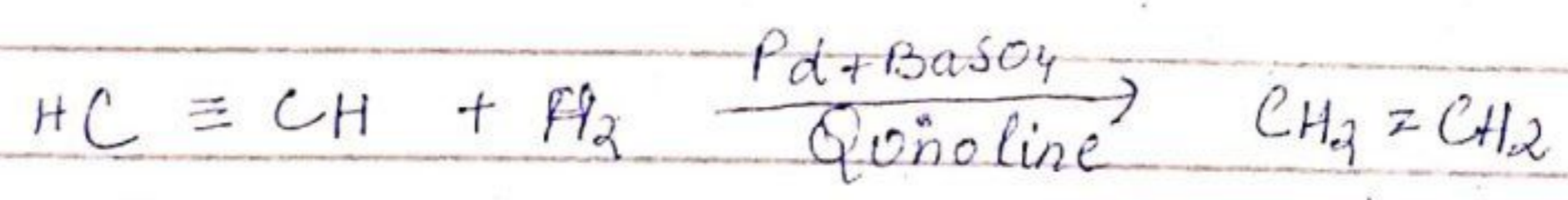
35 ACETYLENE \longrightarrow BENZENE



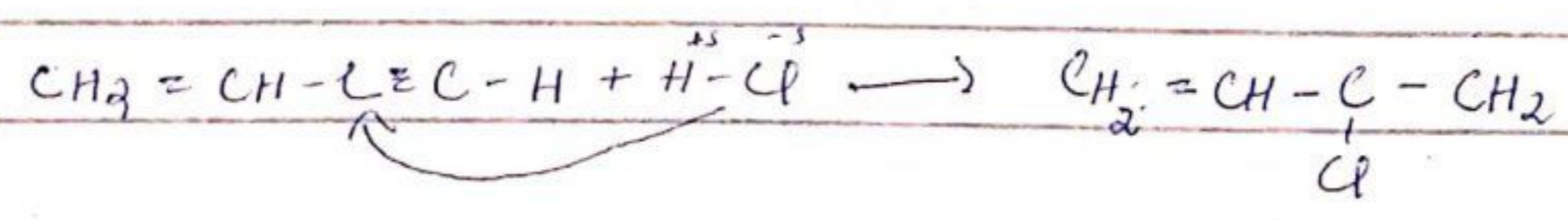
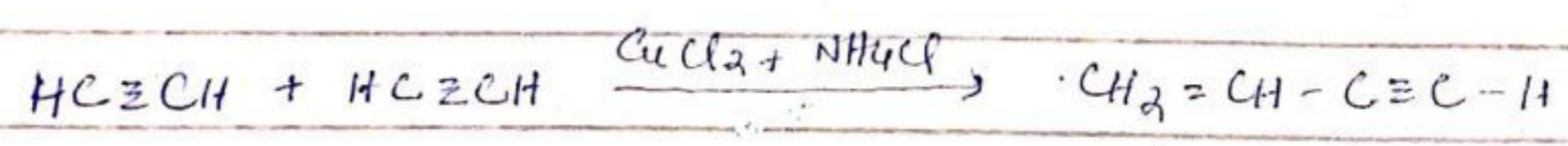
36 ACETYLENE \longrightarrow VINYL ACETYLENE



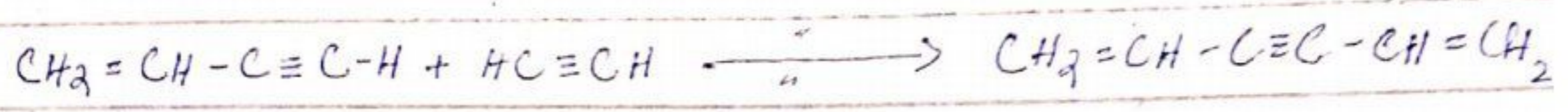
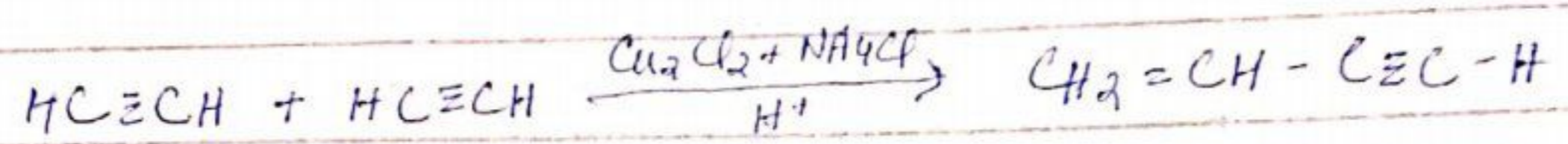
37 ACETYLENE \longrightarrow ETHENE



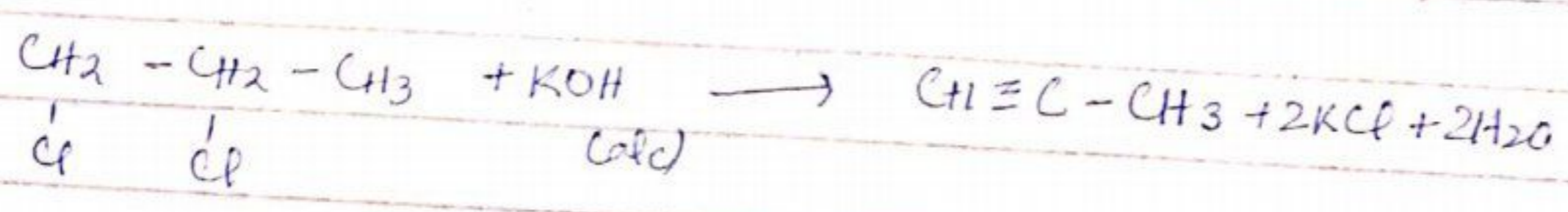
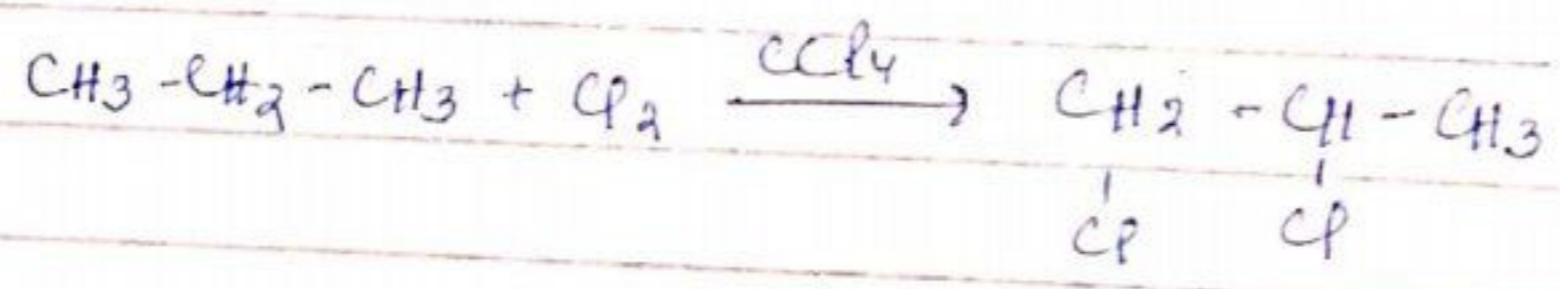
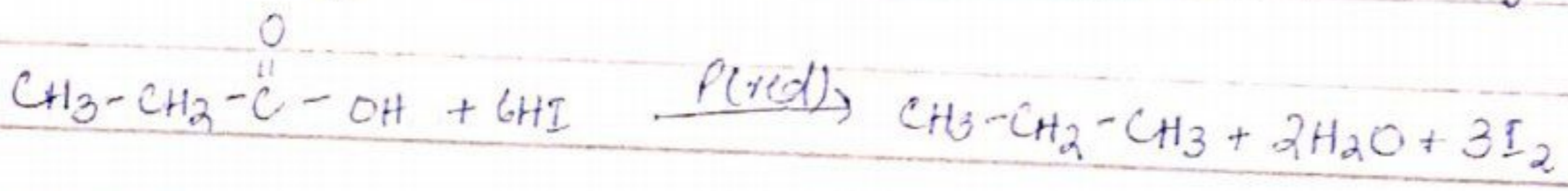
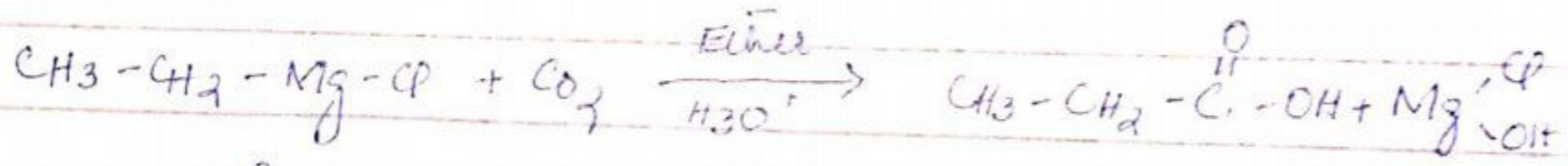
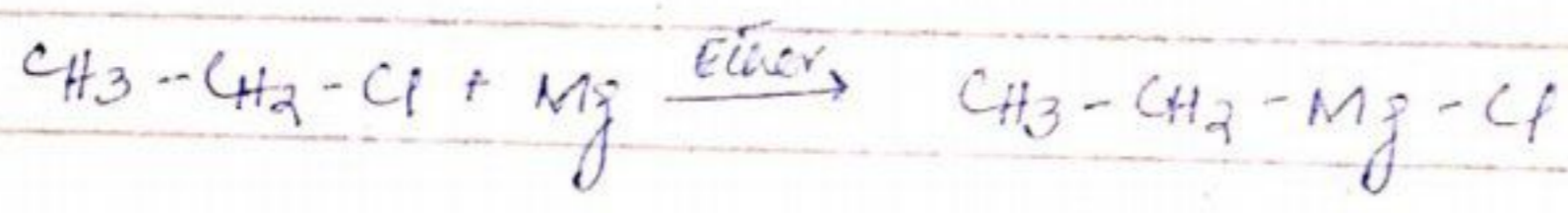
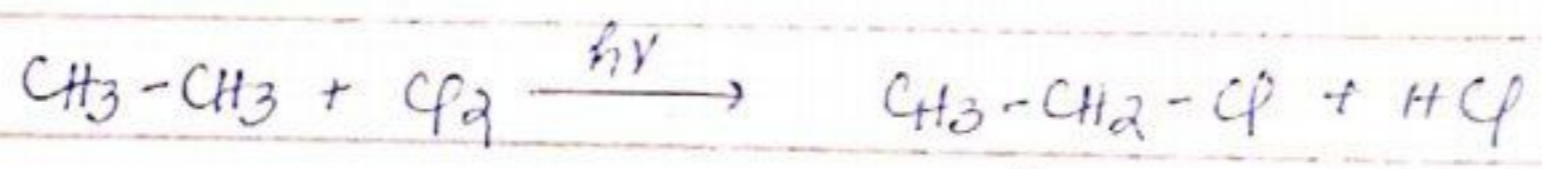
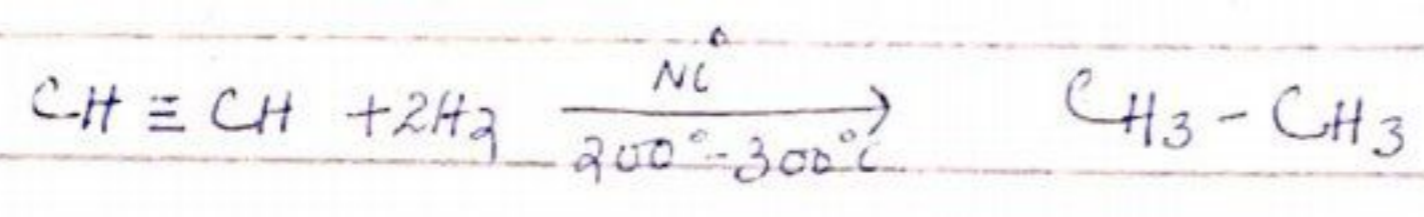
38 ACETYLENE \longrightarrow CHLOROPRENE (2-chloro-1,3-butadiene)



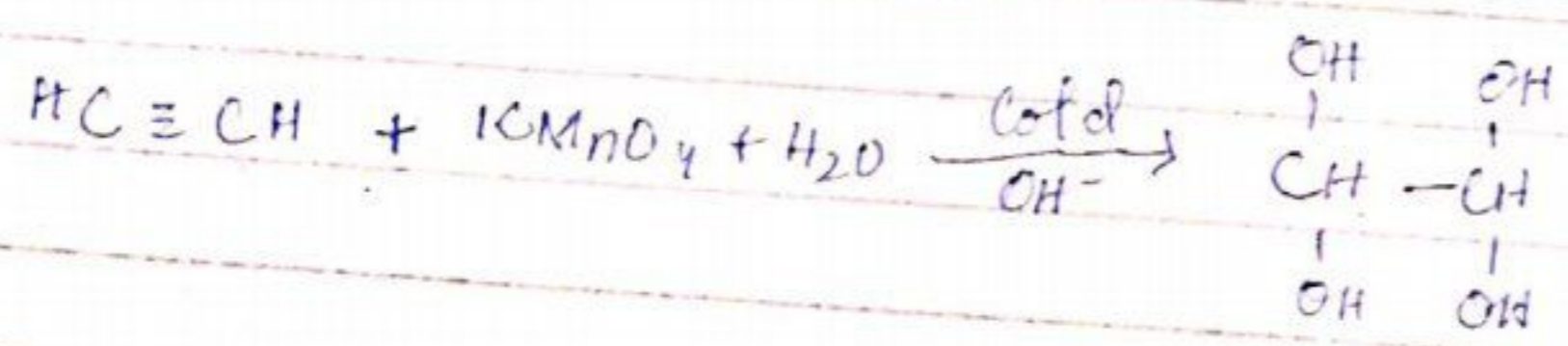
39 ACETYLENE → DIVINYL ACETYLENE

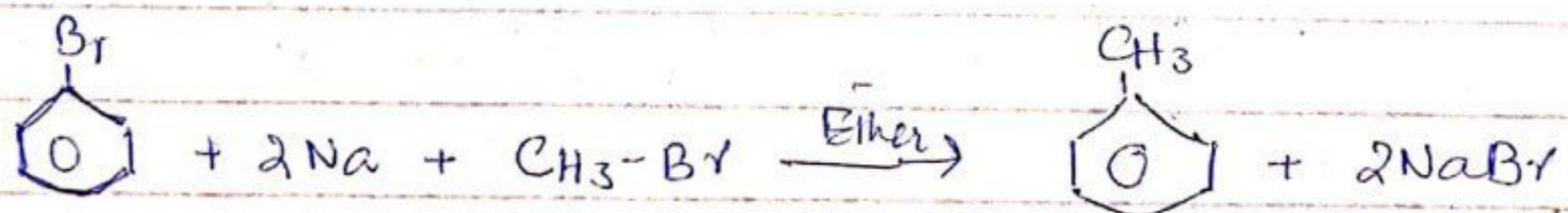
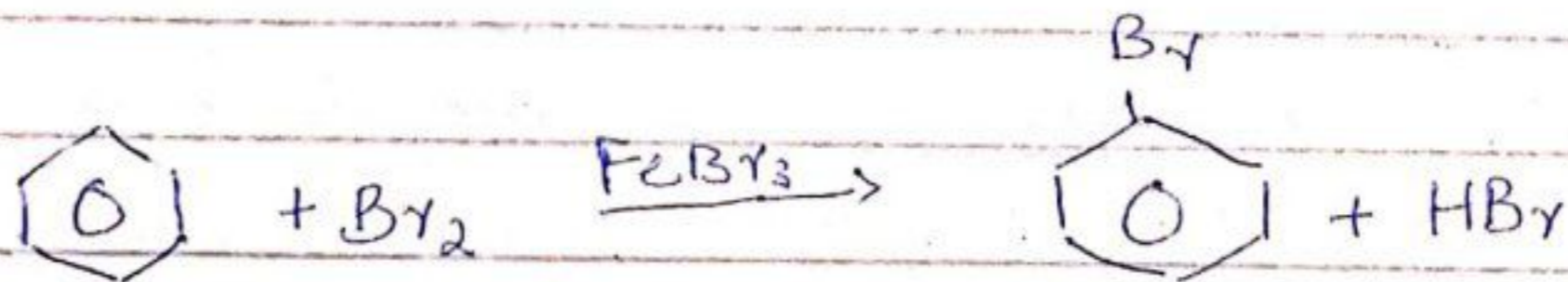
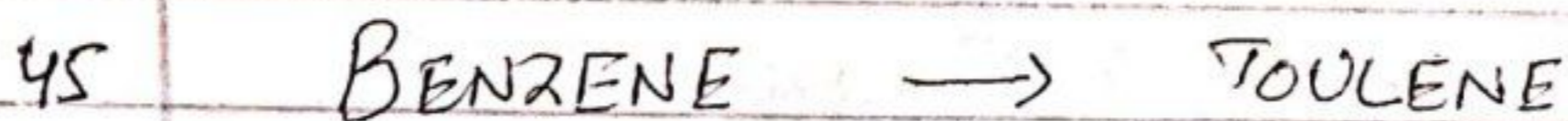
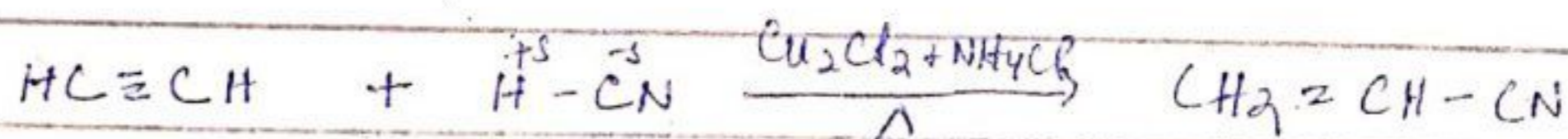
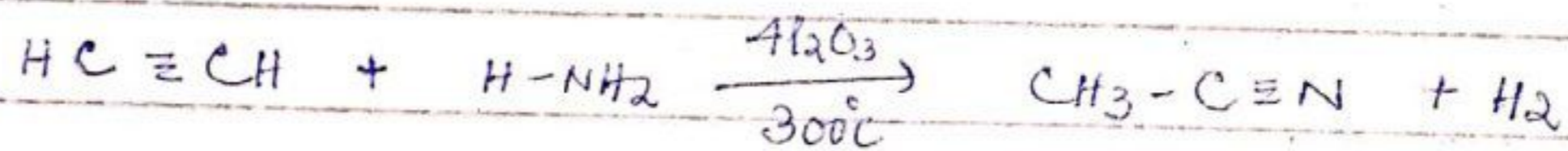
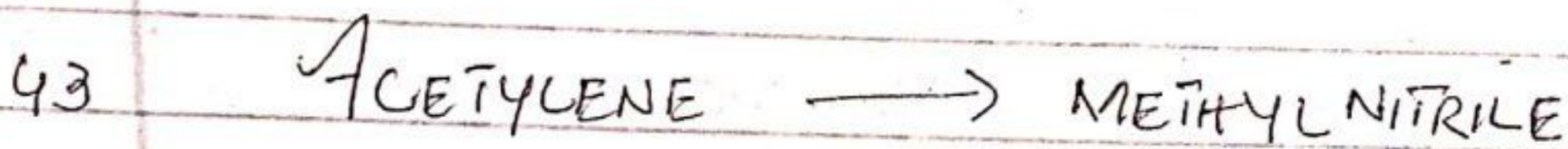
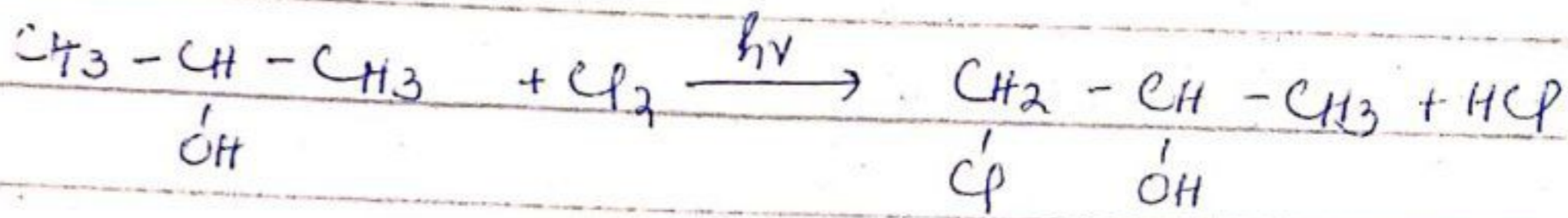
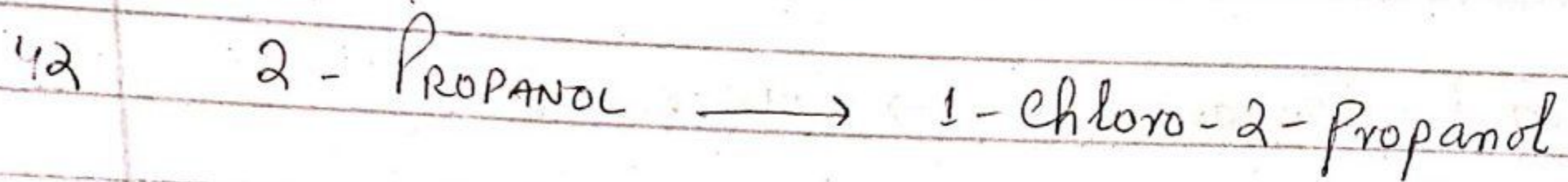
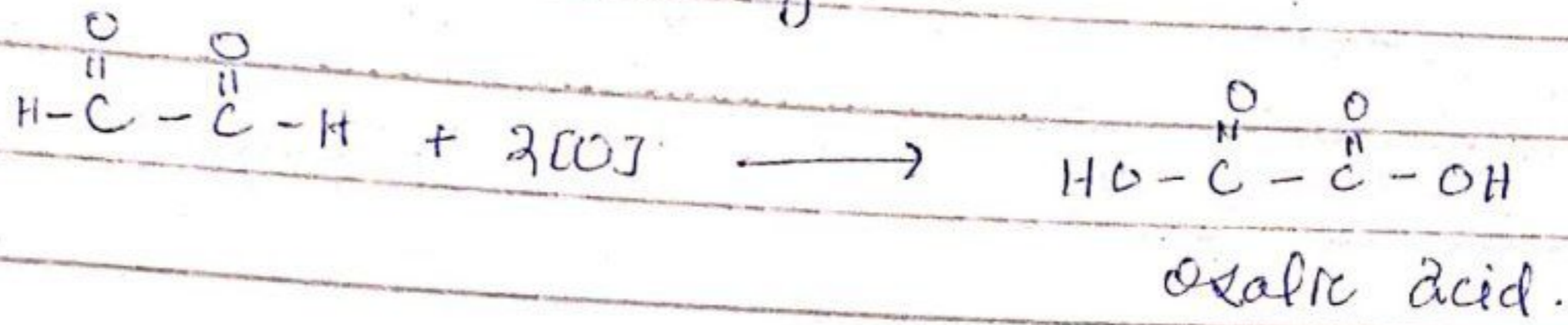
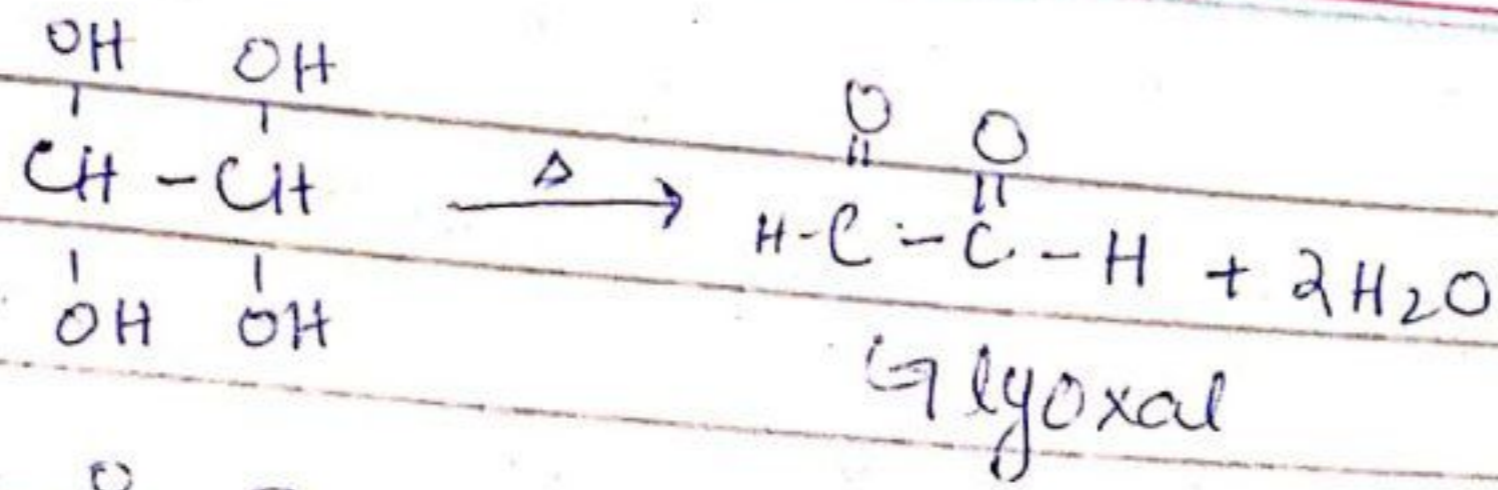


40 ETHYNE → PROPYNE

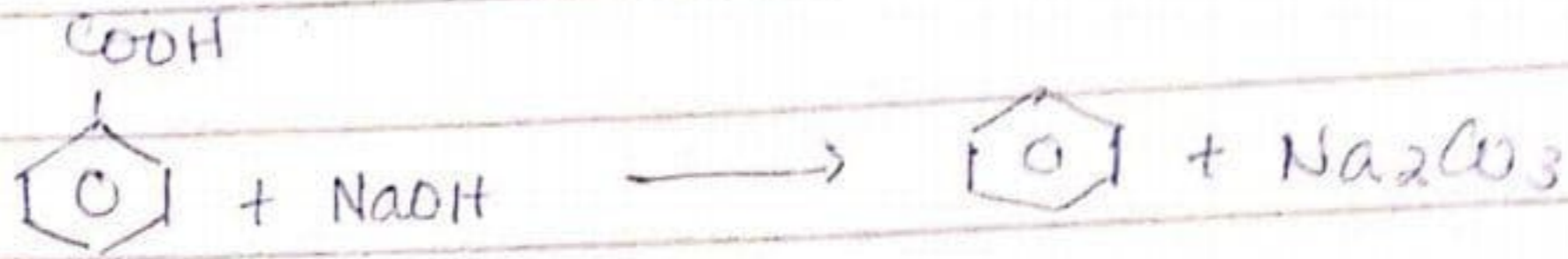
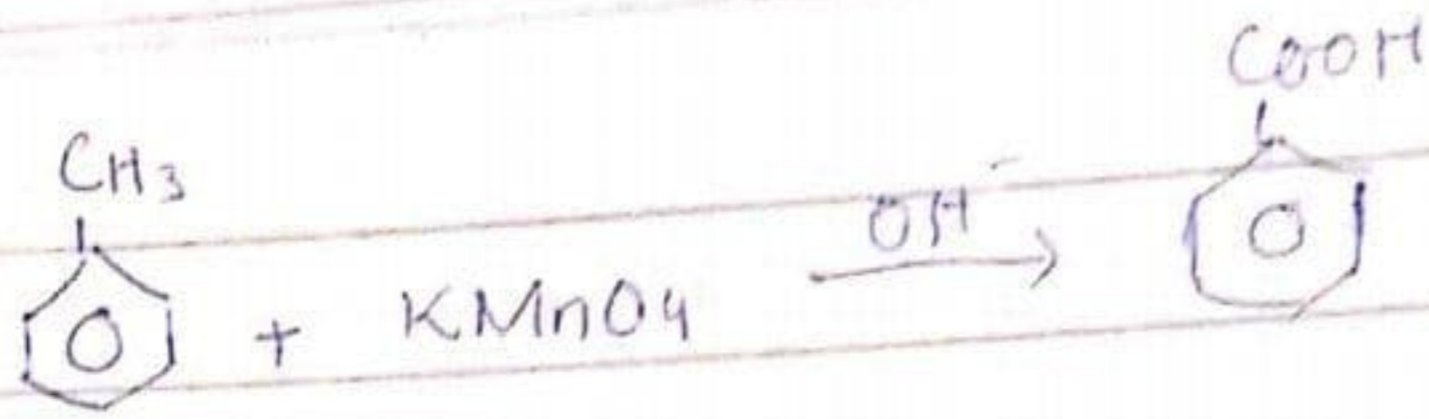


41 ETHYNE → OXALIC ACID

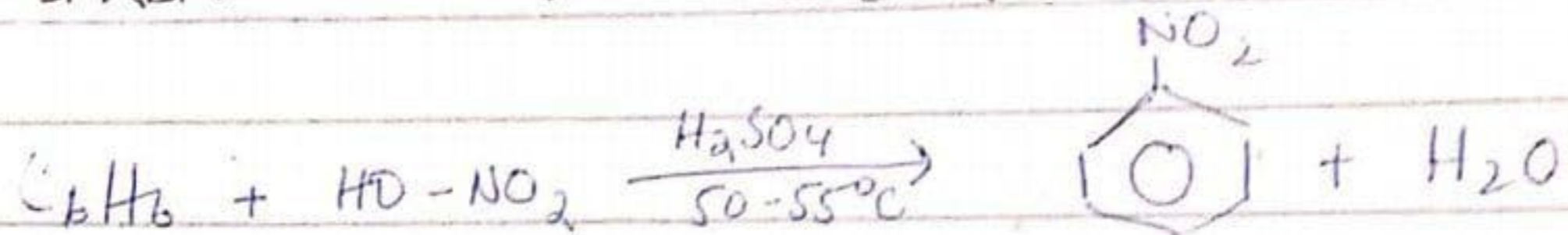




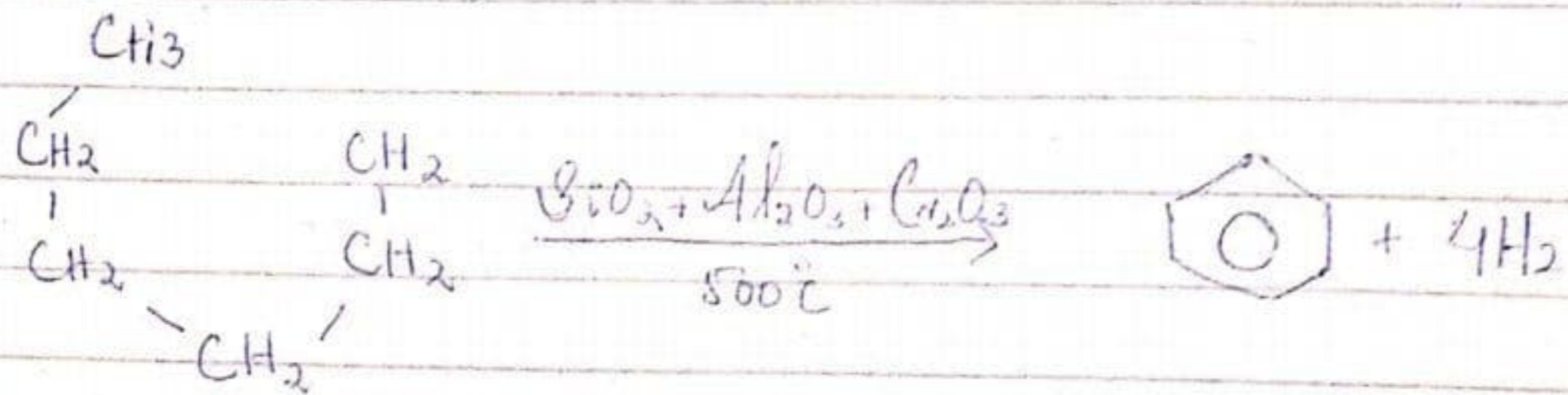
14



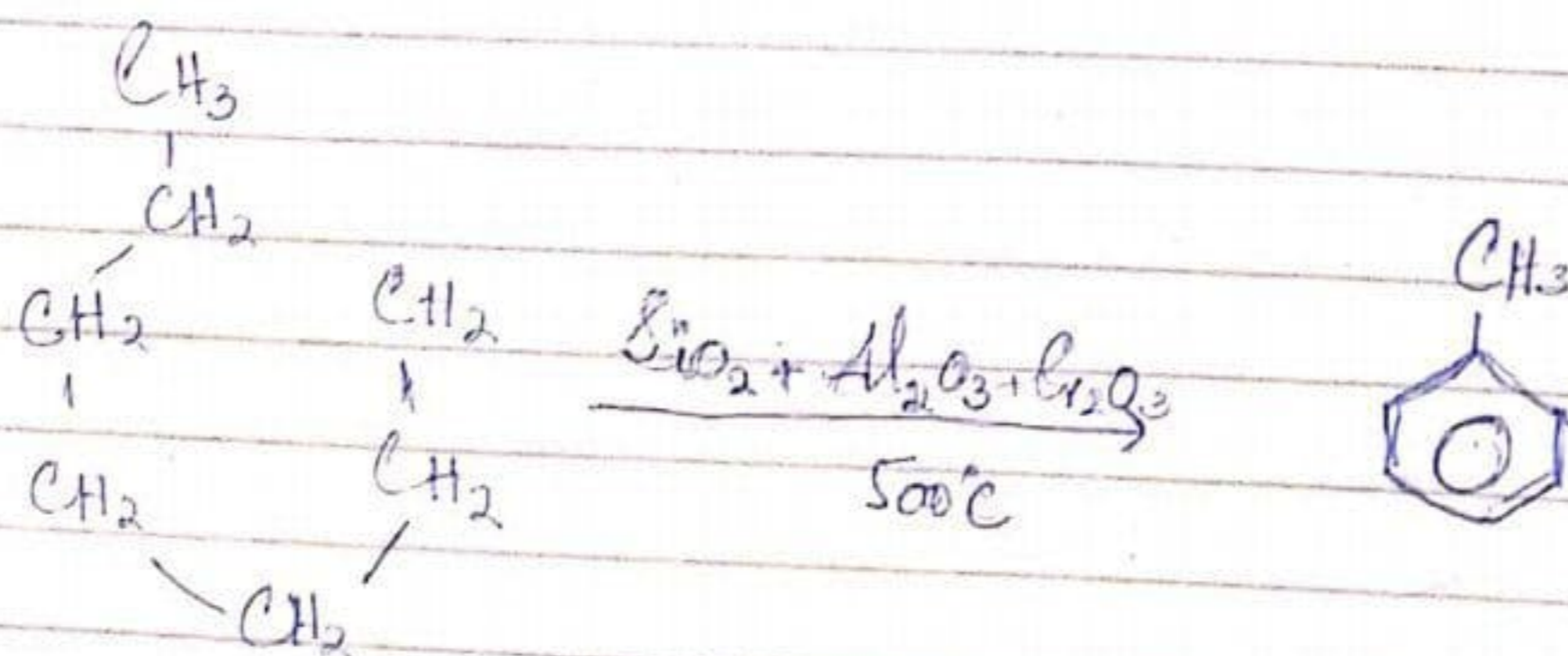
47 BENZENE \longrightarrow NITROBENZENE



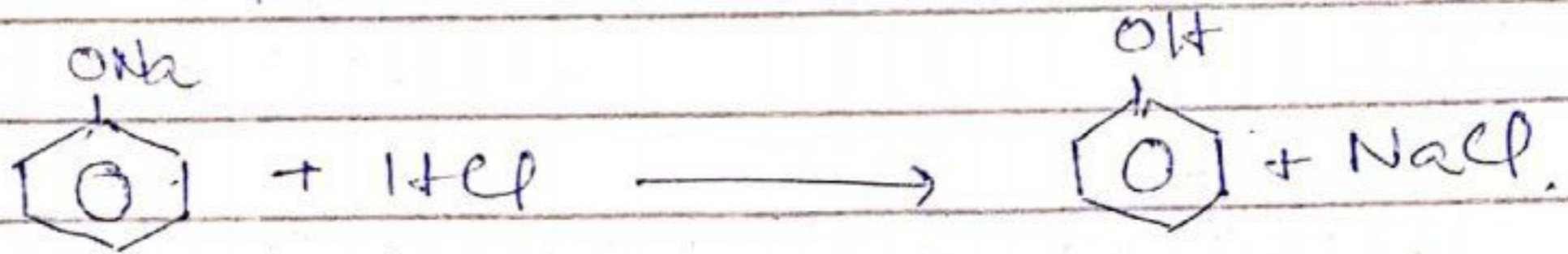
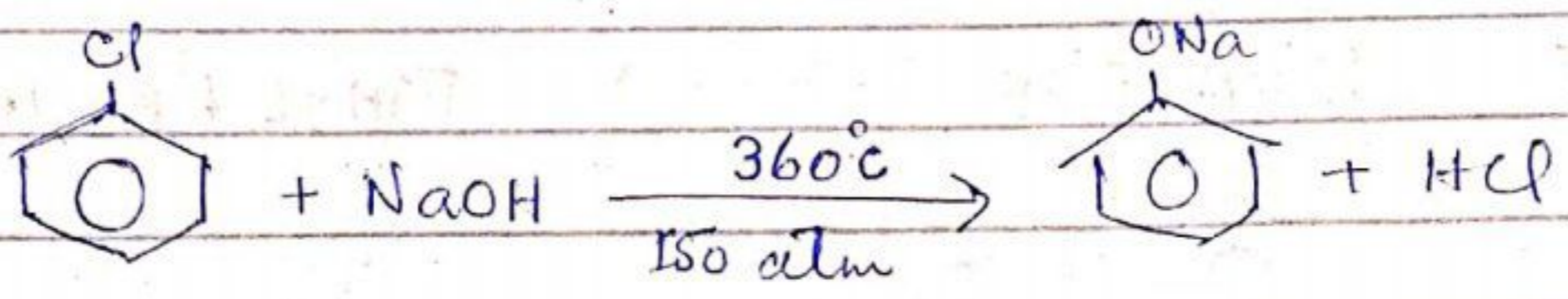
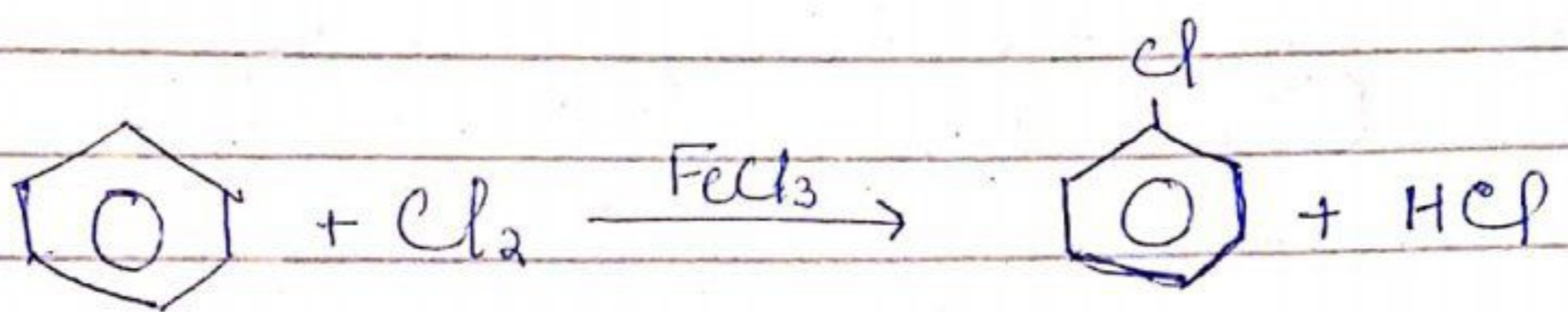
48 n-hexane \longrightarrow Benzene



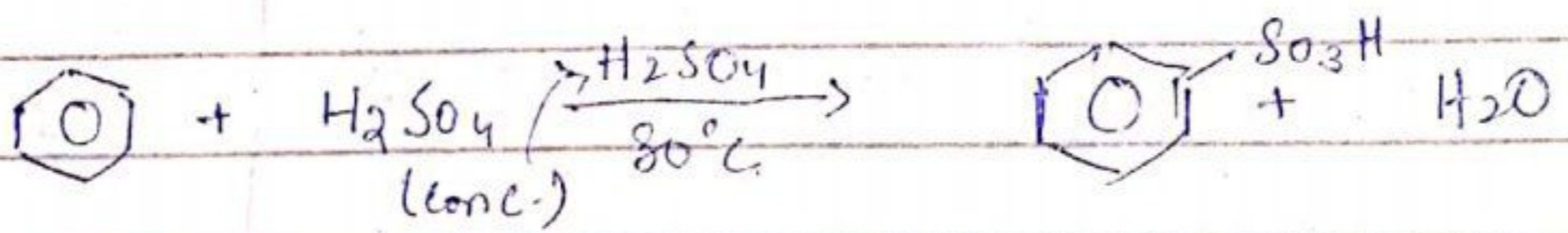
49 n-heptane \longrightarrow TOLUENE.



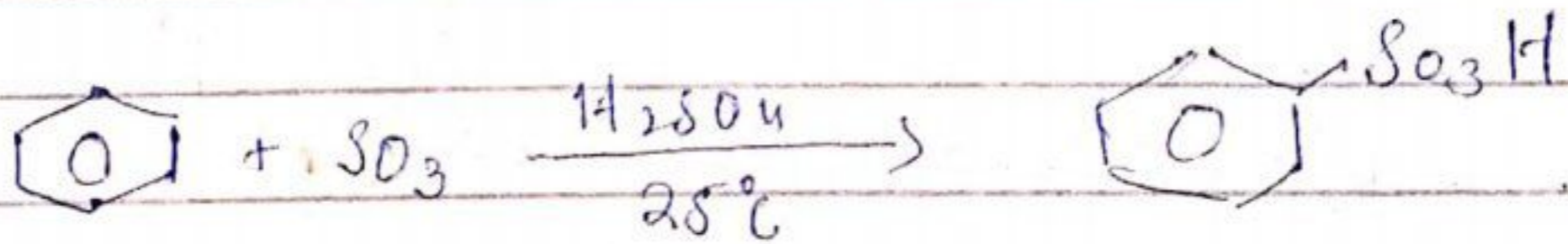
50 BENZENE → PHENOL



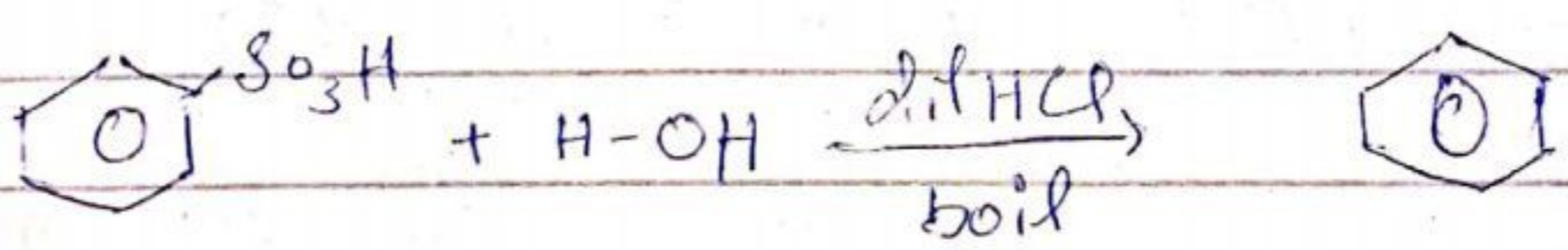
51 BENZENE → BENZENE SULPHONIC ACID



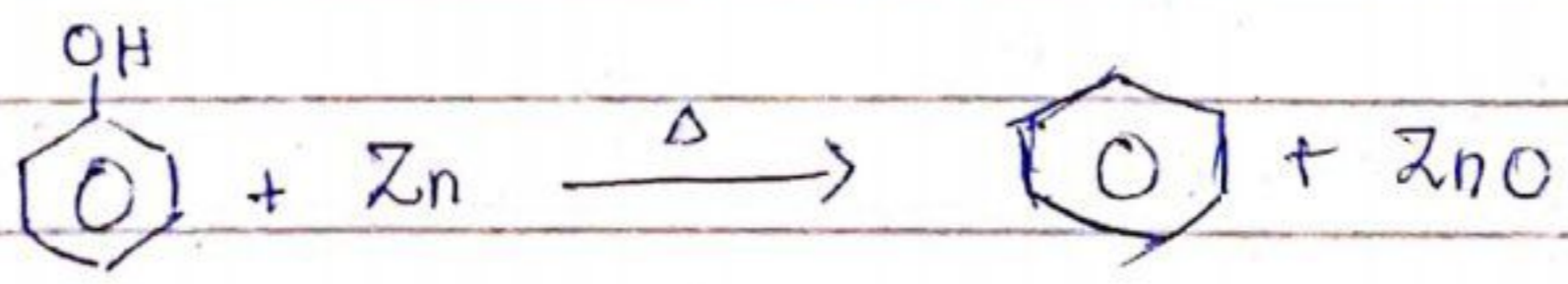
OR



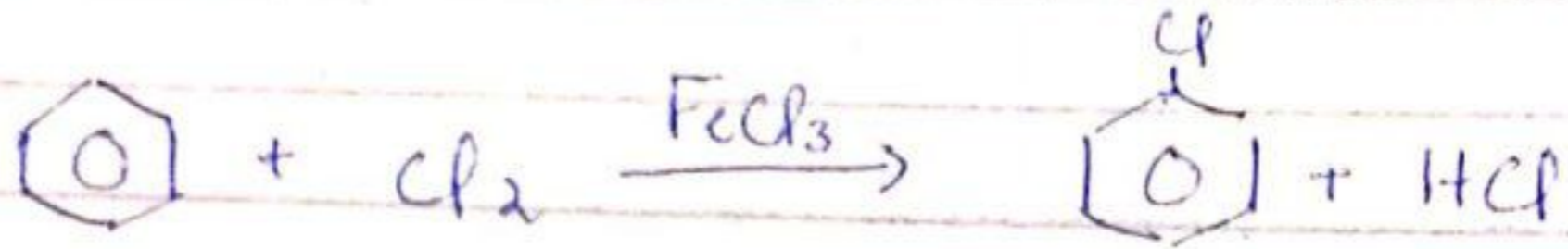
52 BENZENE SULPHONIC ACID → BENZENE



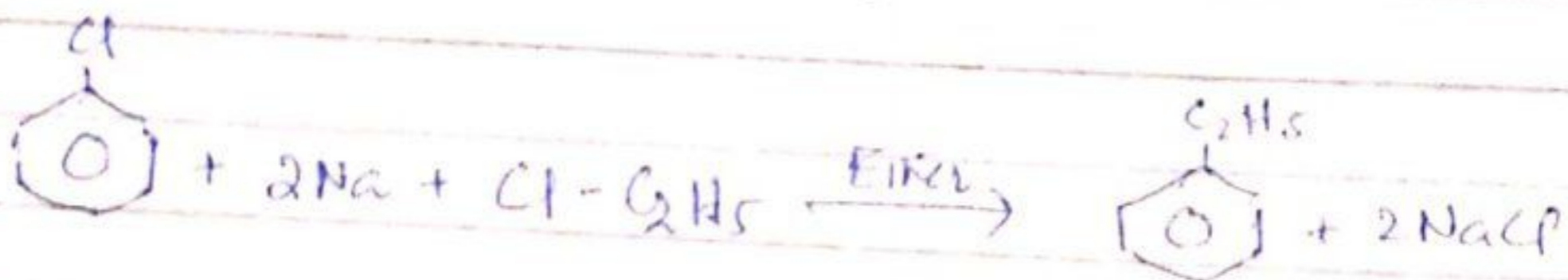
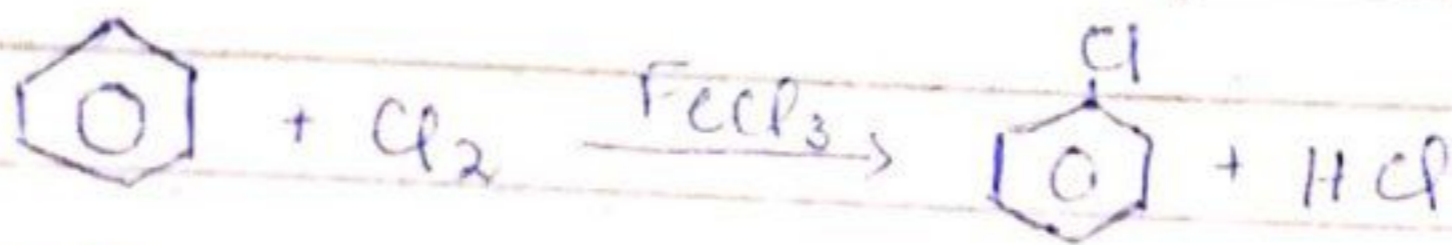
53 PHENOL → BENZENE



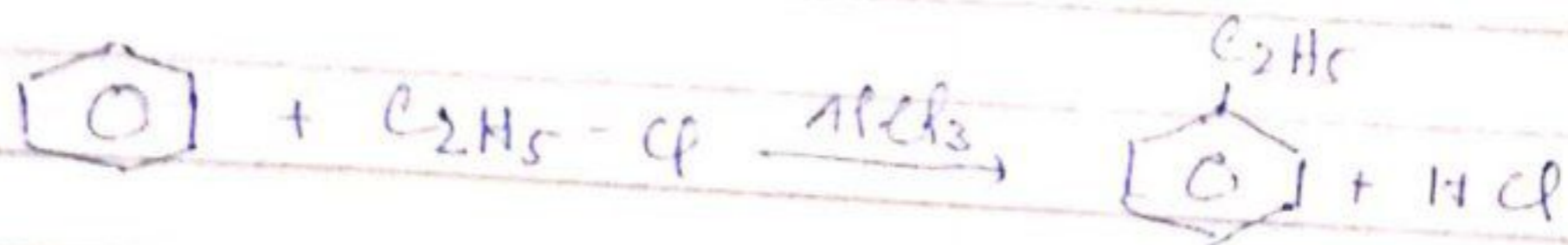
54 | BENZENE \longrightarrow CHLOROBENZENE.



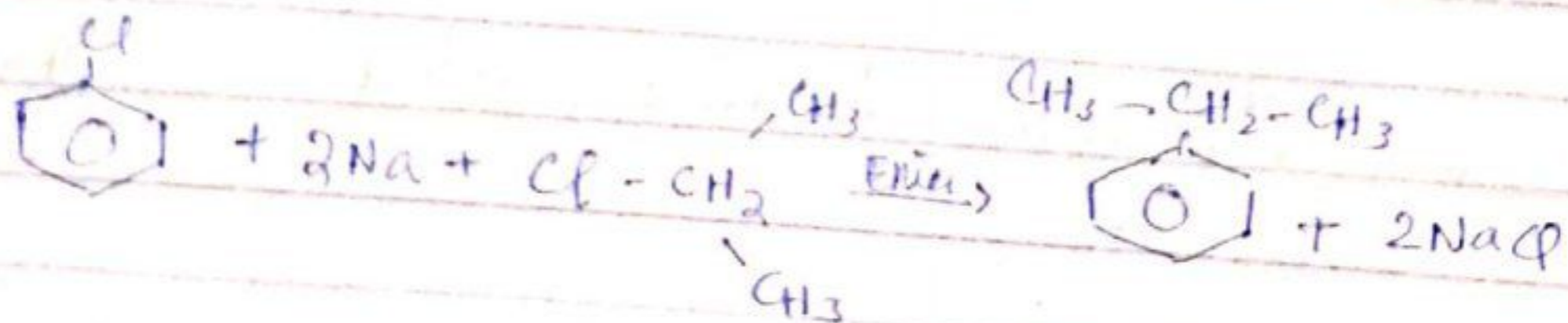
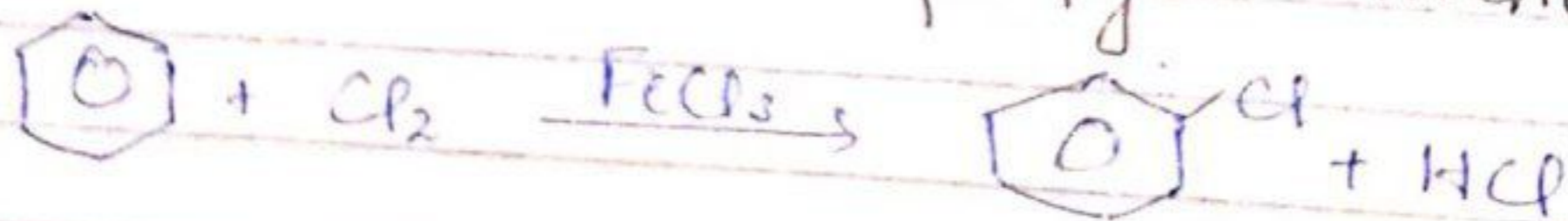
55 | BENZENE \longrightarrow ETHYL BENZENE



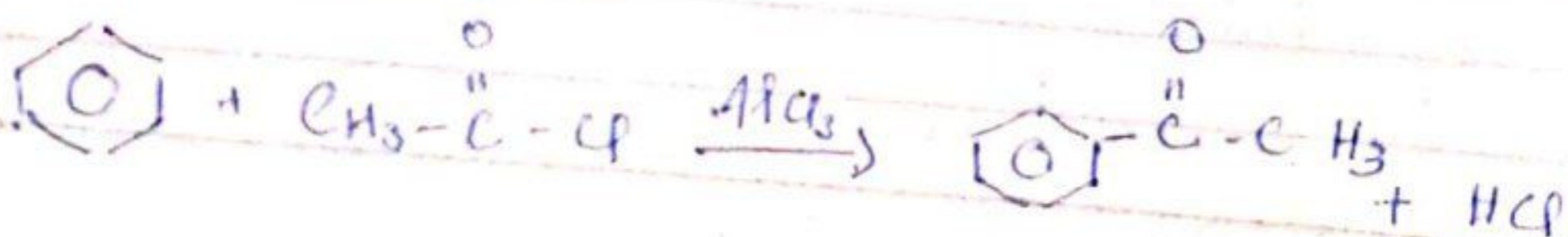
OR



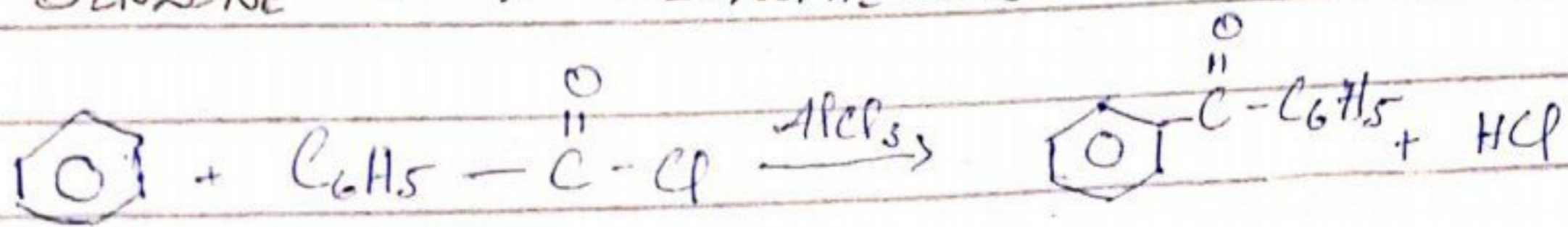
56 | BENZENE \longrightarrow Isopropyl benzene.



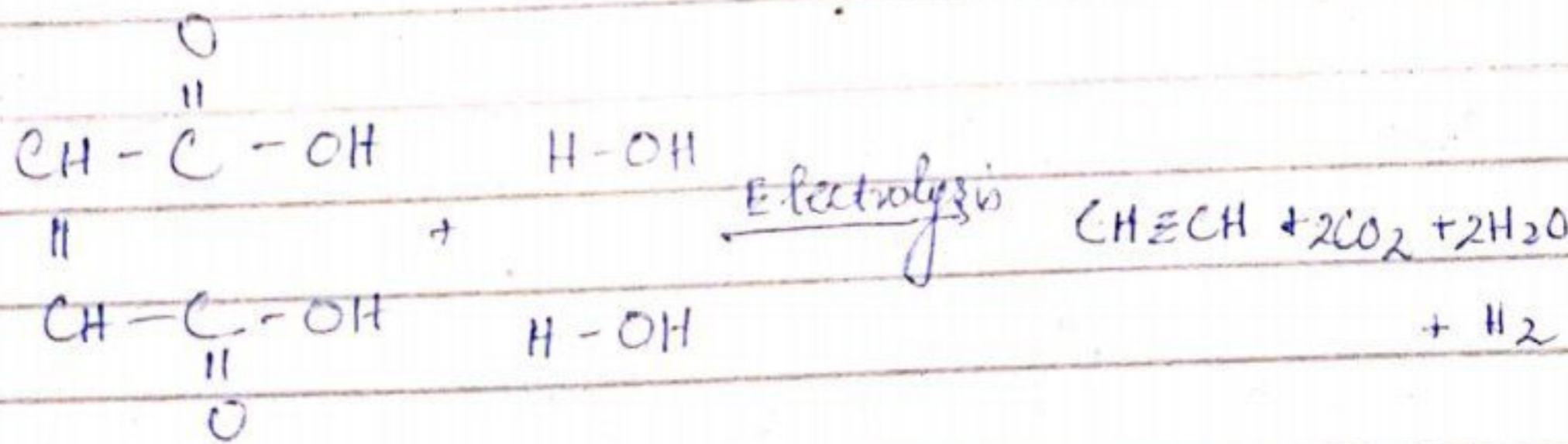
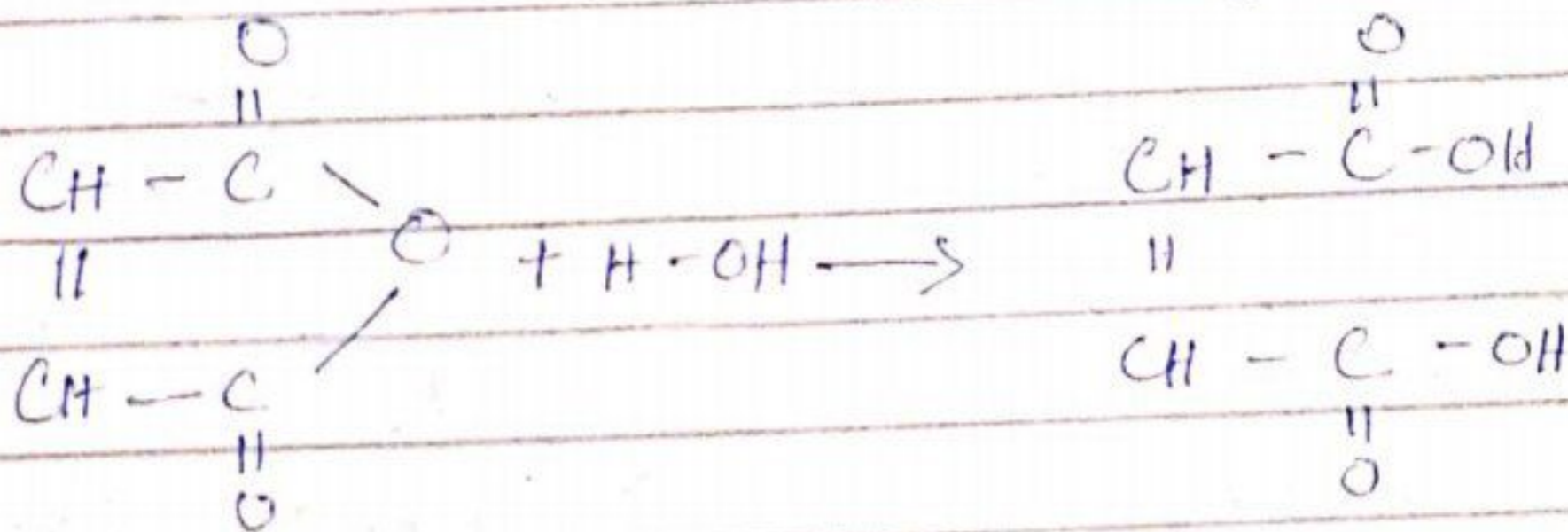
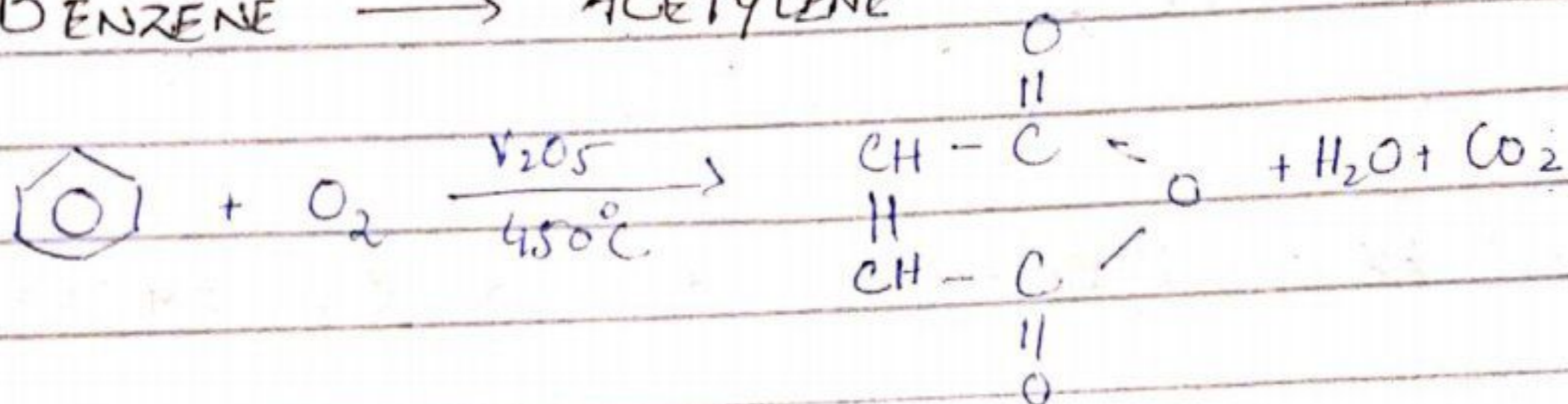
57 | BENZENE \longrightarrow ACETOPHENONE



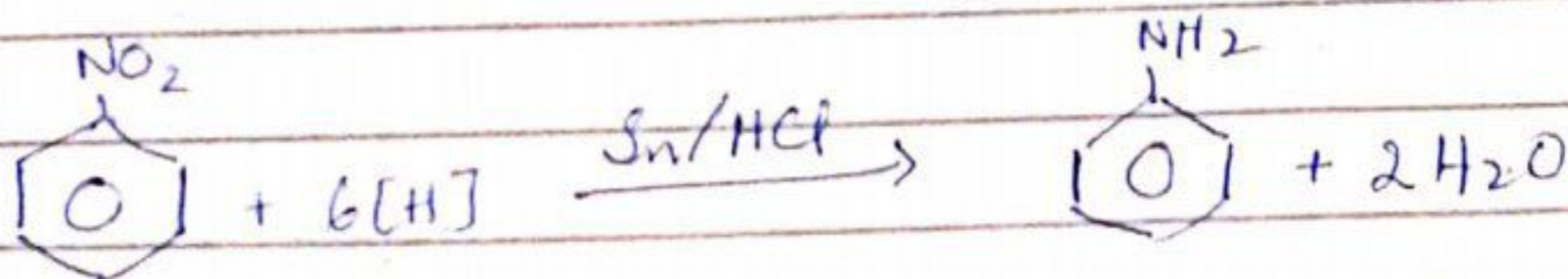
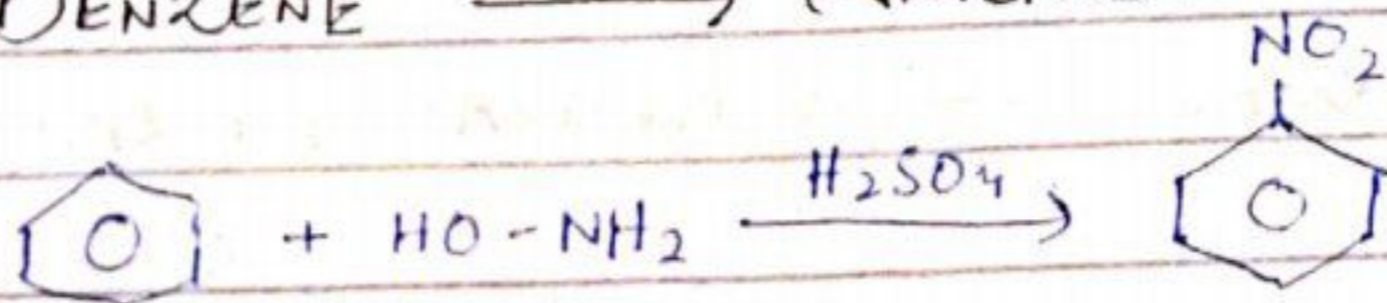
58 BENZENE → BENZOPHENONE.



59 BENZENE → ACETYLENE

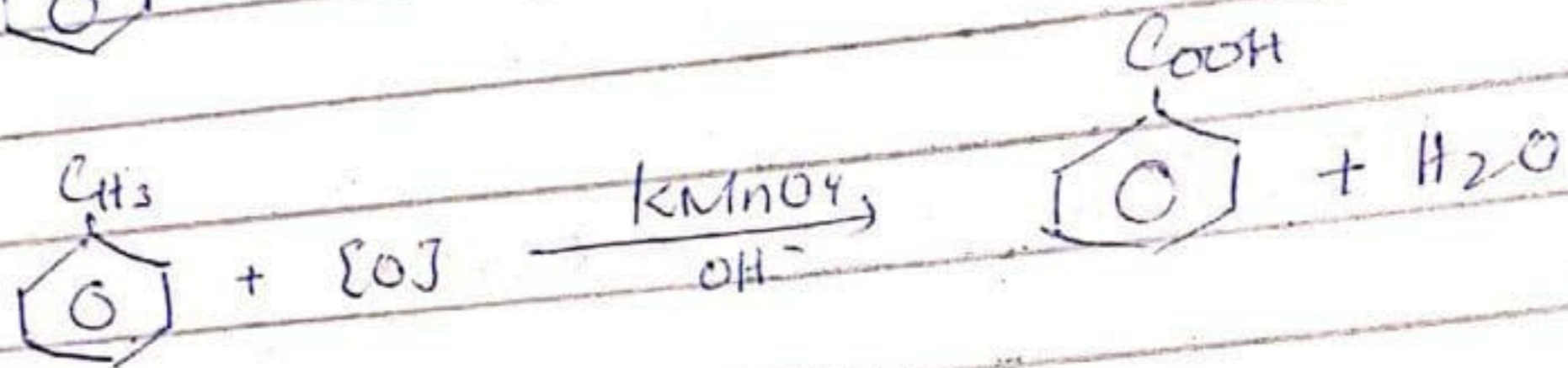
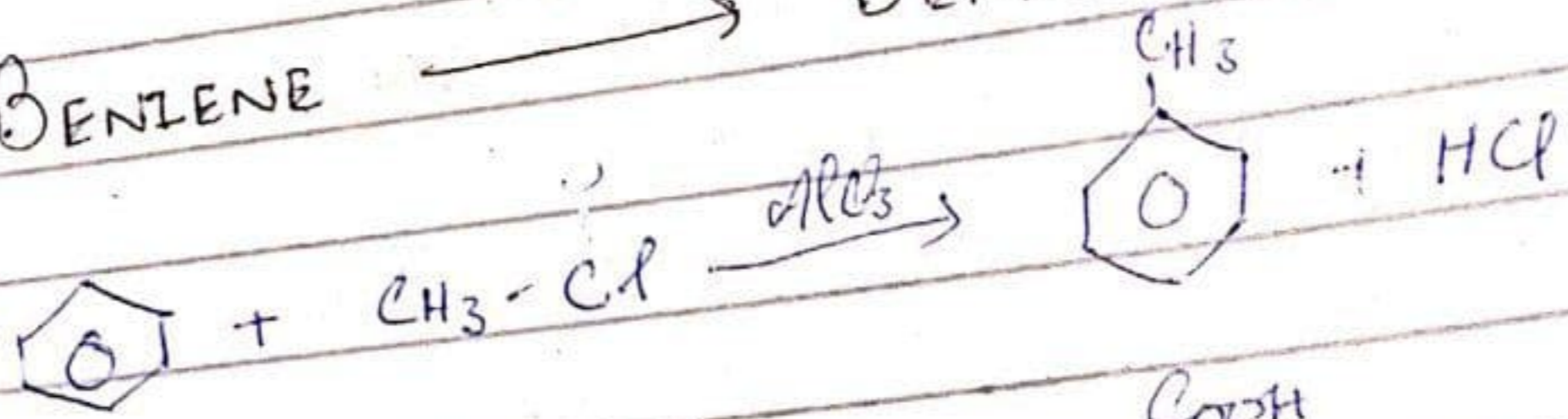


60 BENZENE → ANILINE

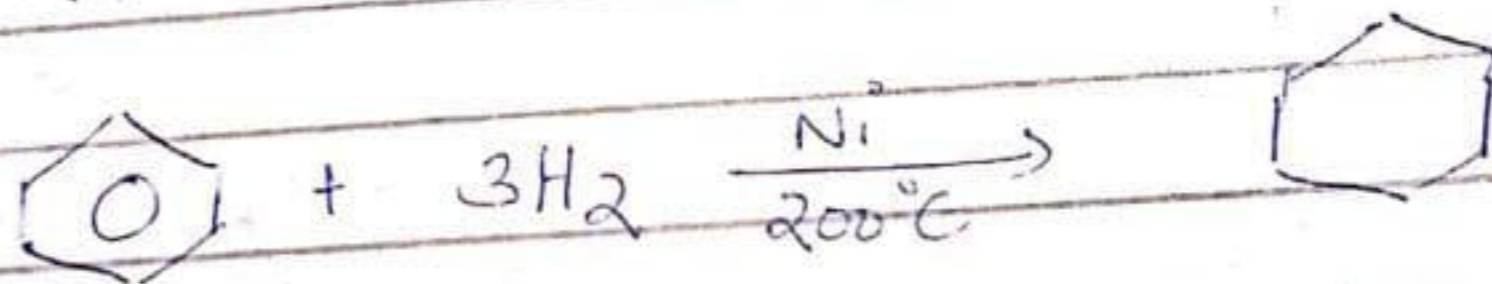


18

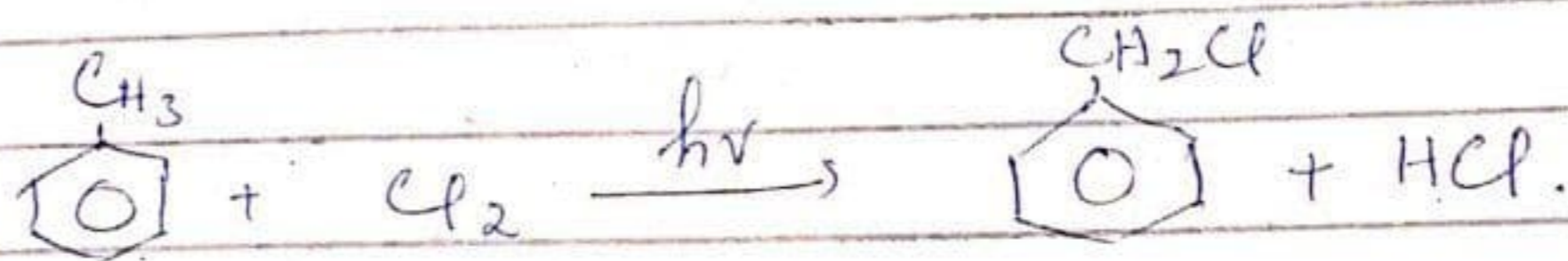
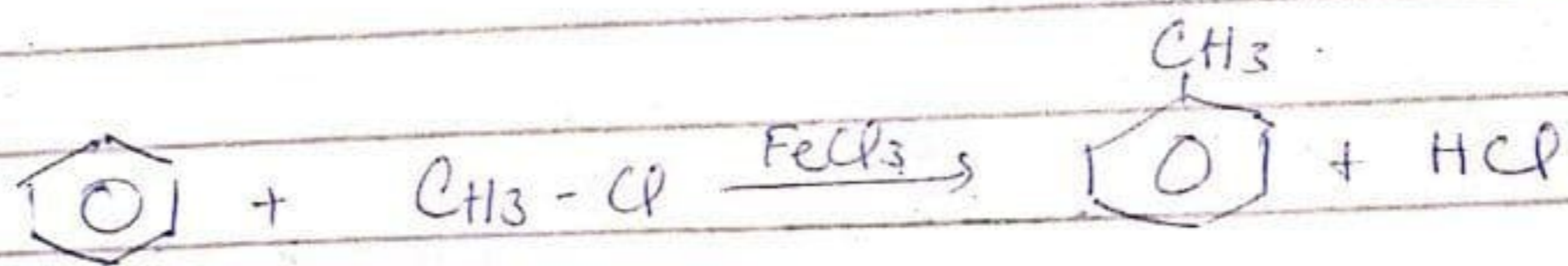
61 BENZENE \longrightarrow BENZOIC ACID.



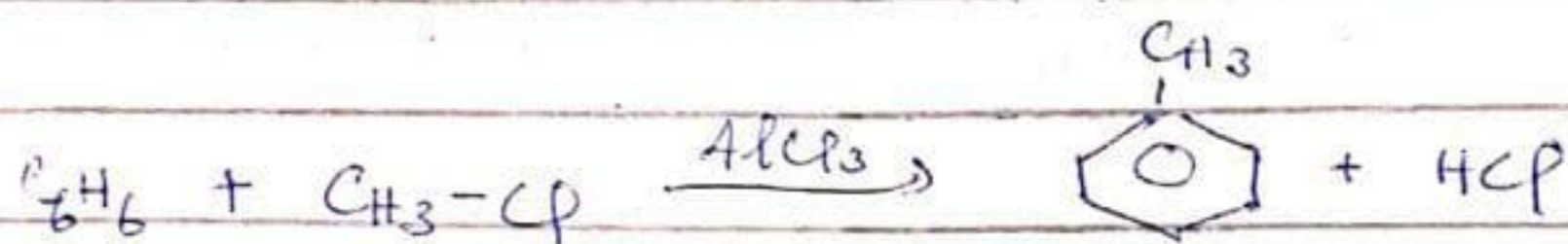
62 BENZENE \longrightarrow CYCLOHEXANE

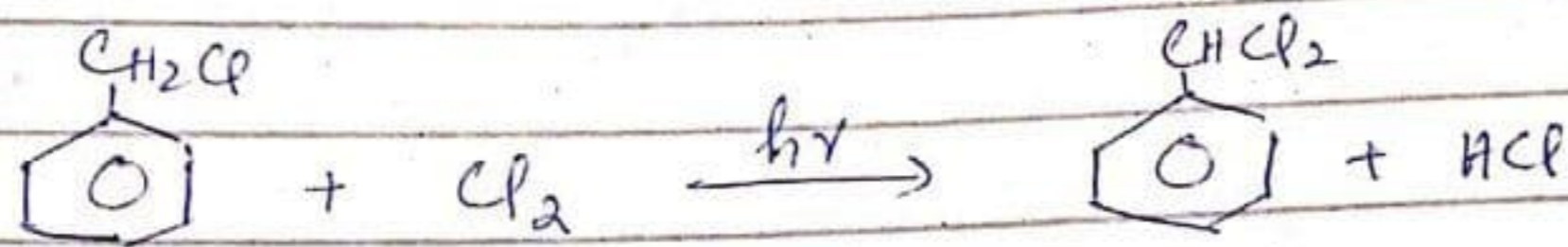
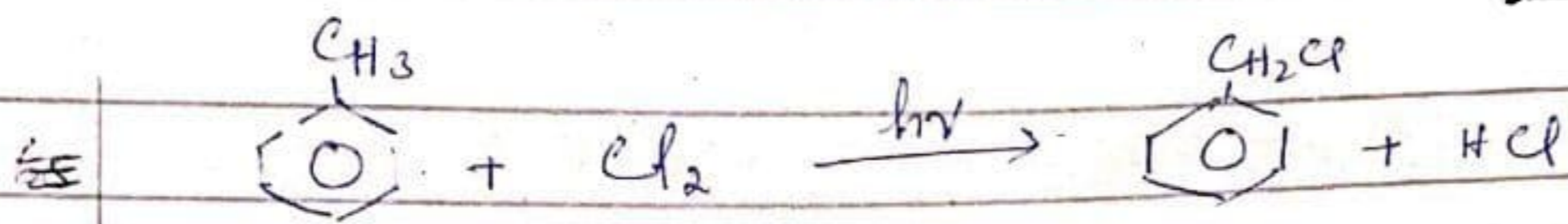


63 BENZENE \longrightarrow BENZYL CHLORIDE



64 BENZENE \longrightarrow BENZYL CHLORIDE





65 BENZENE \longrightarrow GLYOXAL

Benzene \longrightarrow Acetylene (see Conver: 59)

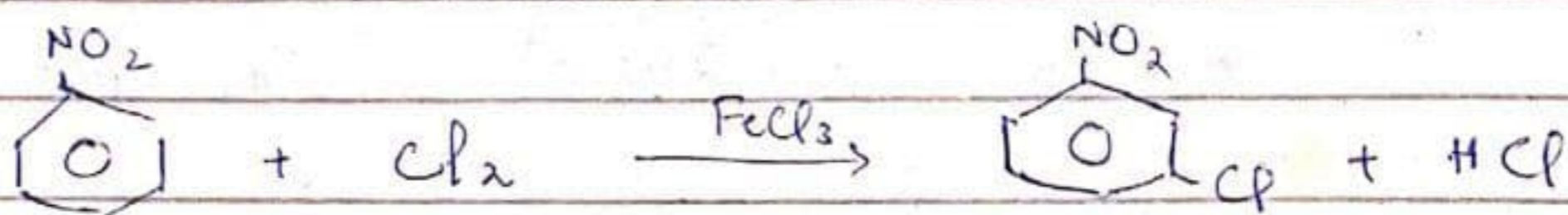
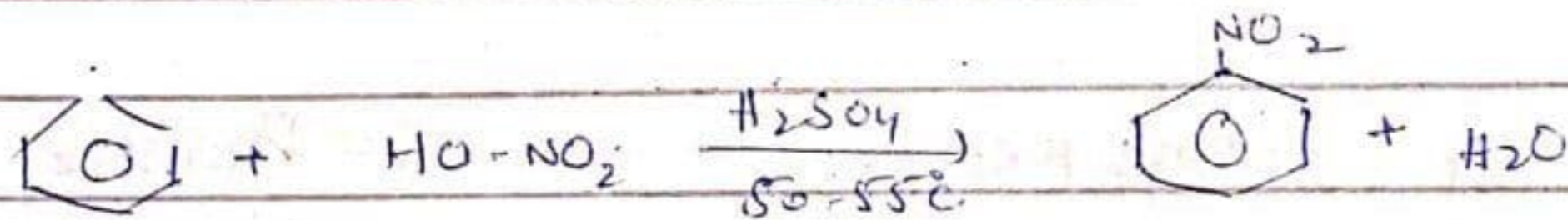
Acetylene \longrightarrow Glyoxal (see Conver: 41)

66 BENZENE \longrightarrow OXALIC ACID

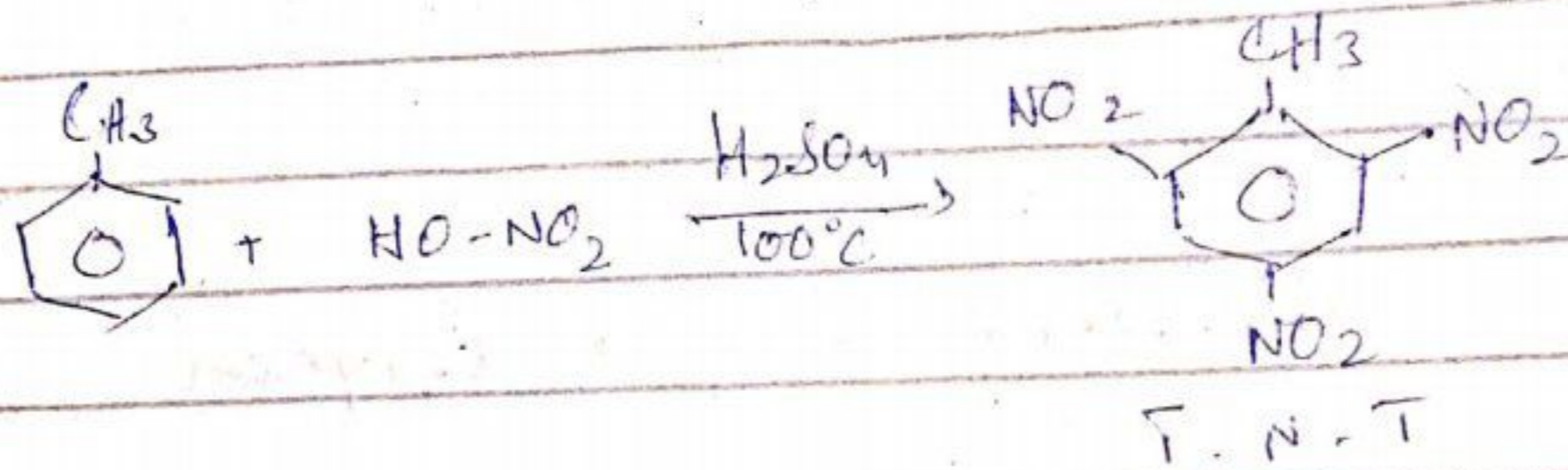
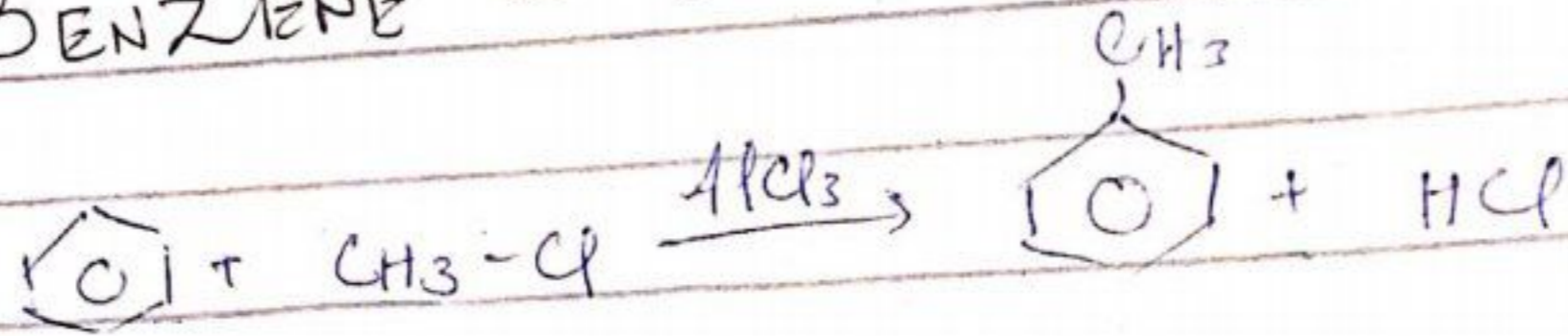
Benzene \longrightarrow Acetylene (see Conver: 59)

Acetylene \longrightarrow Oxalic Acid (see Conver: 41)

67 BENZENE \longrightarrow m-Chloro nitrobenzene.

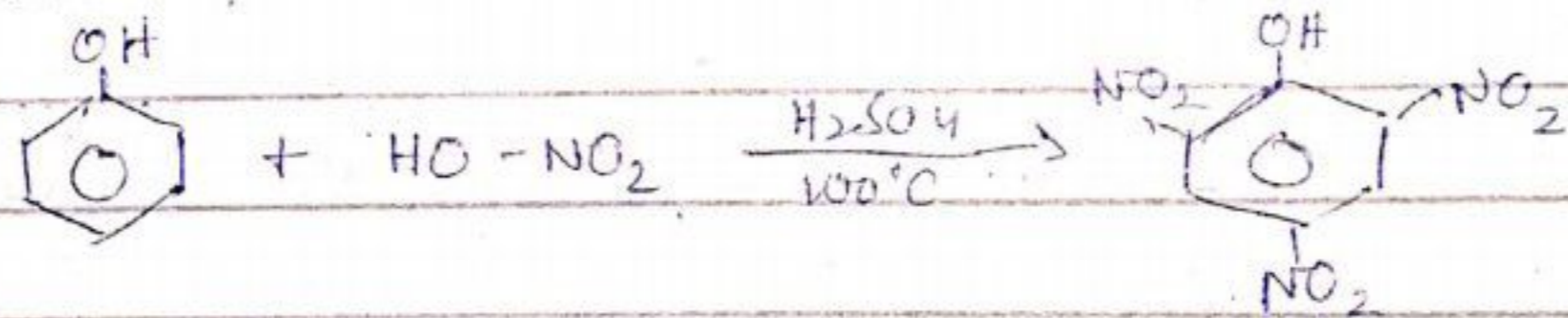


68 BENZENE \longrightarrow T.N.T

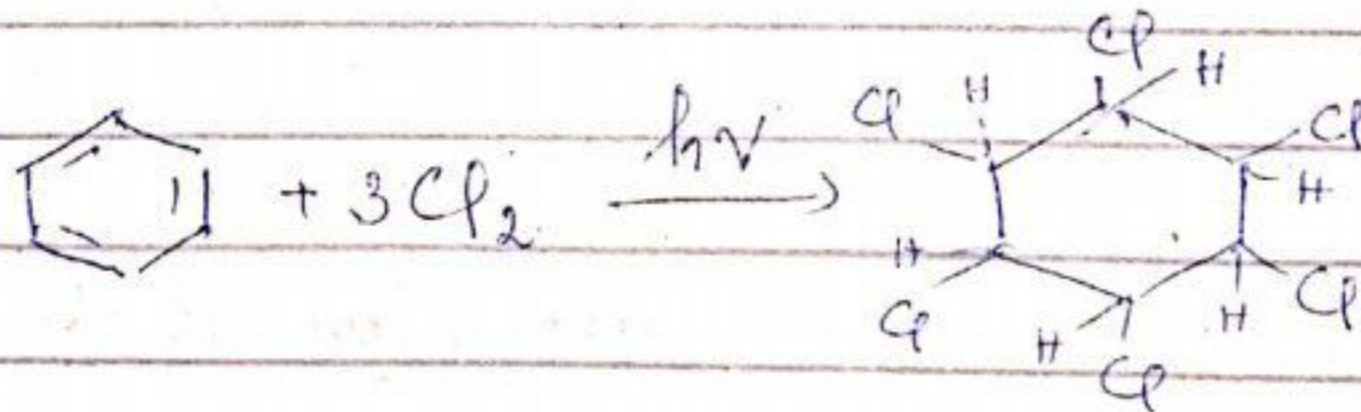


69 BENZENE \longrightarrow PICRIC ACID

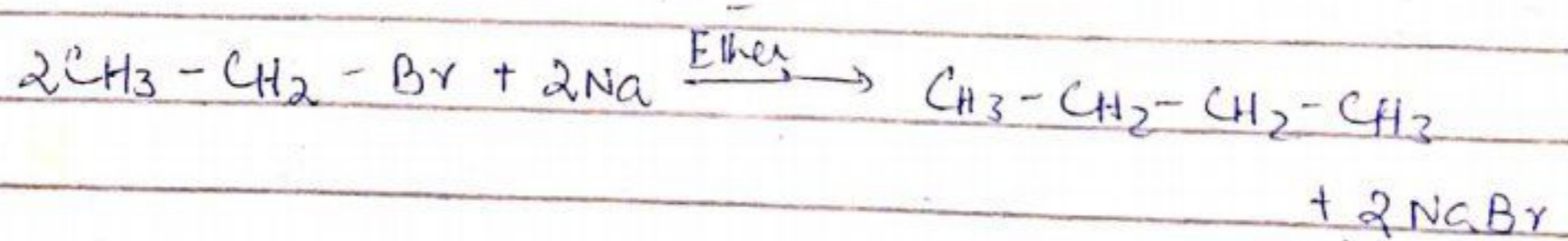
Benzene \longrightarrow Phenol (see Conver: 50)



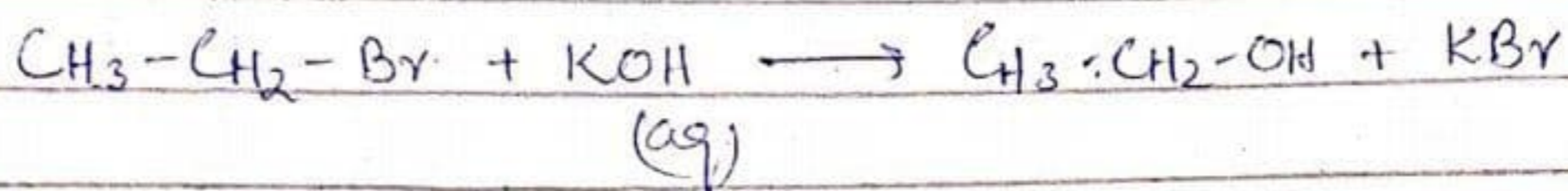
70 BENZENE \longrightarrow HEXACHLOROCYCLOHEXANE



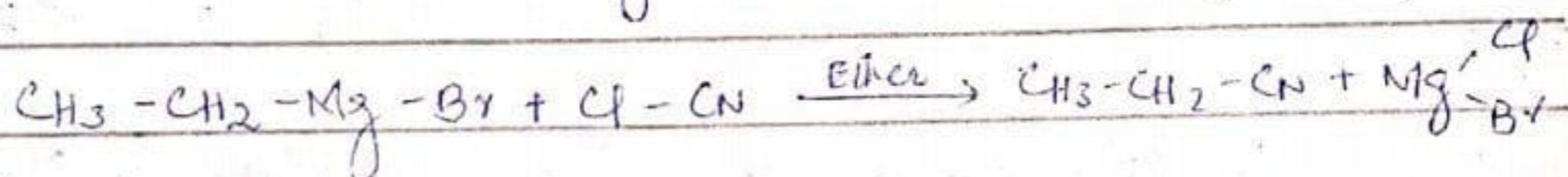
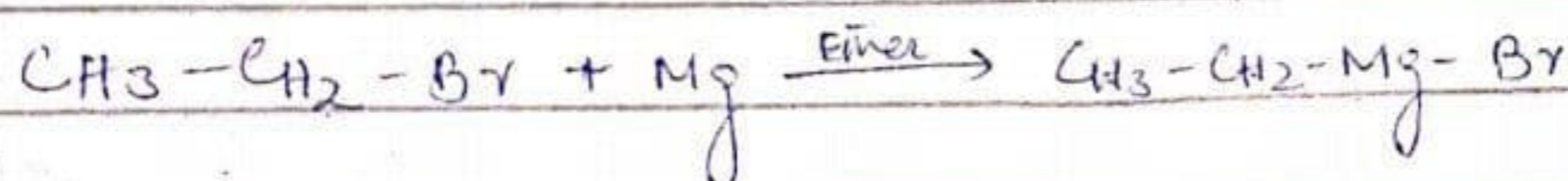
71 ETHYL BROMIDE \longrightarrow n-BUTANE



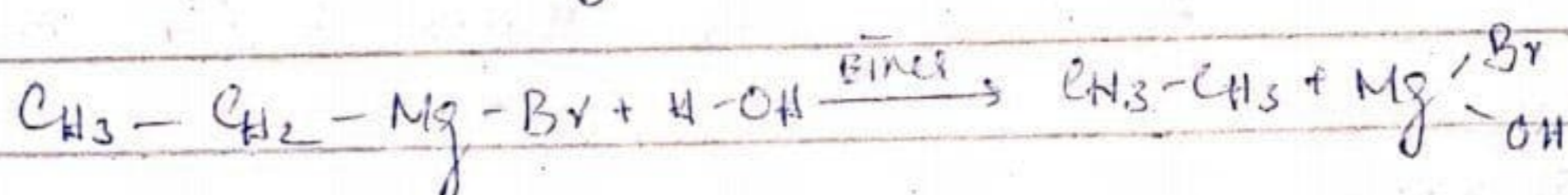
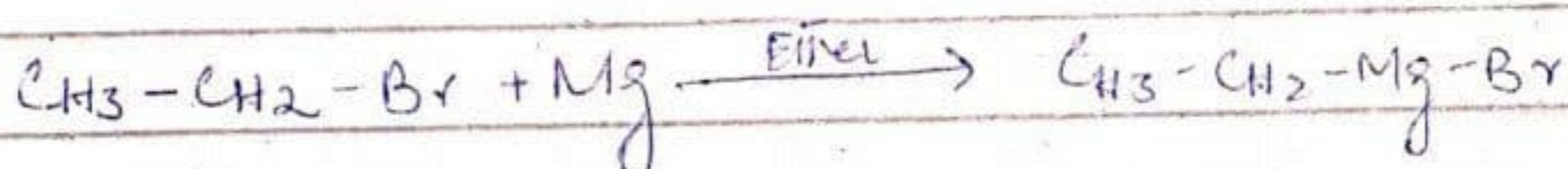
72 ETHYL BROMIDE \longrightarrow ETHYL ALCOHOL



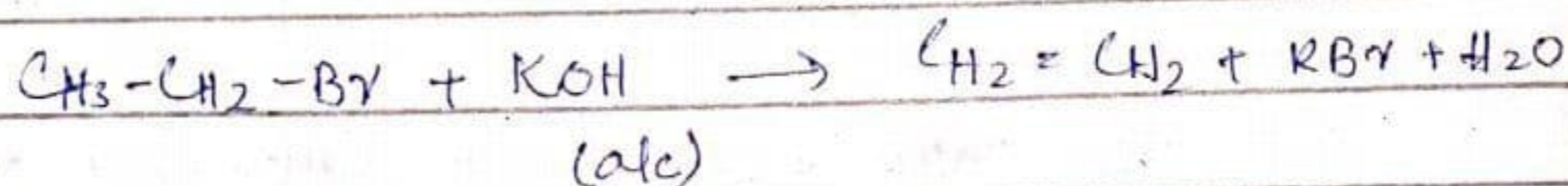
73 ETHYL BROMIDE \longrightarrow ETHYL CYANIDE



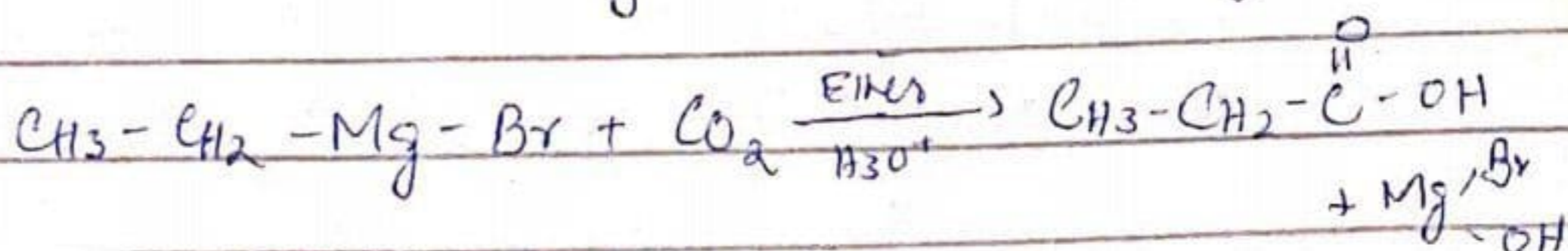
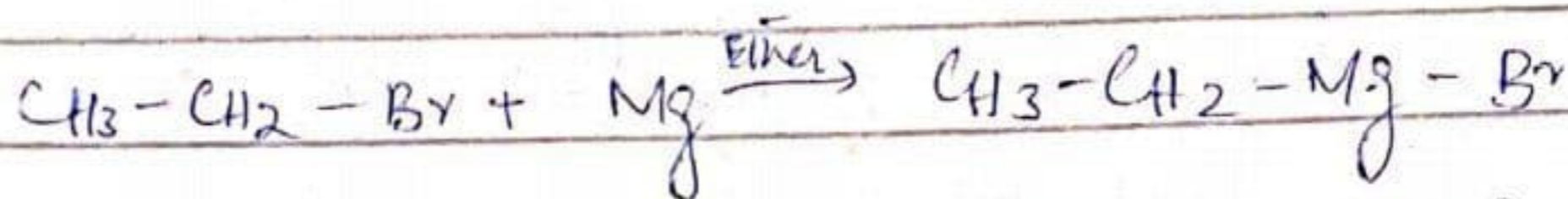
74 ETHYL BROMIDE \longrightarrow ETHANE



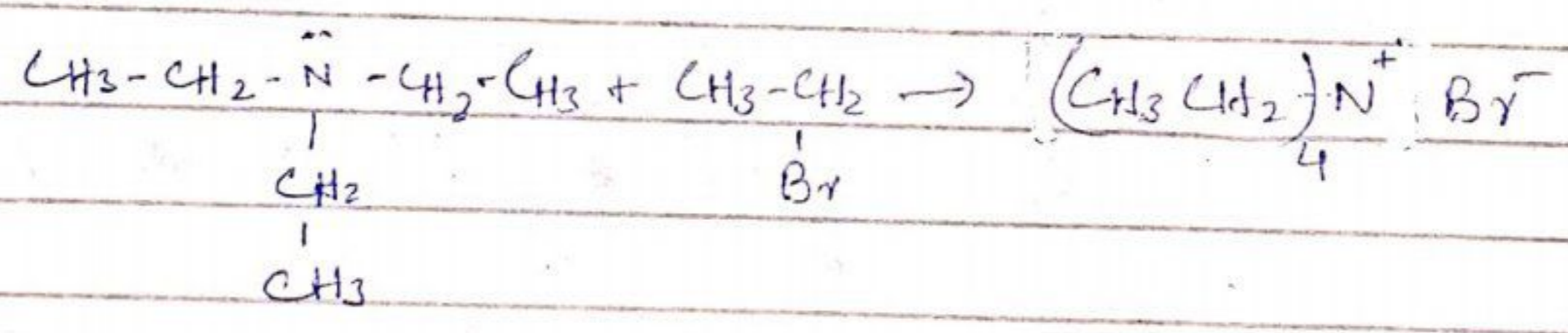
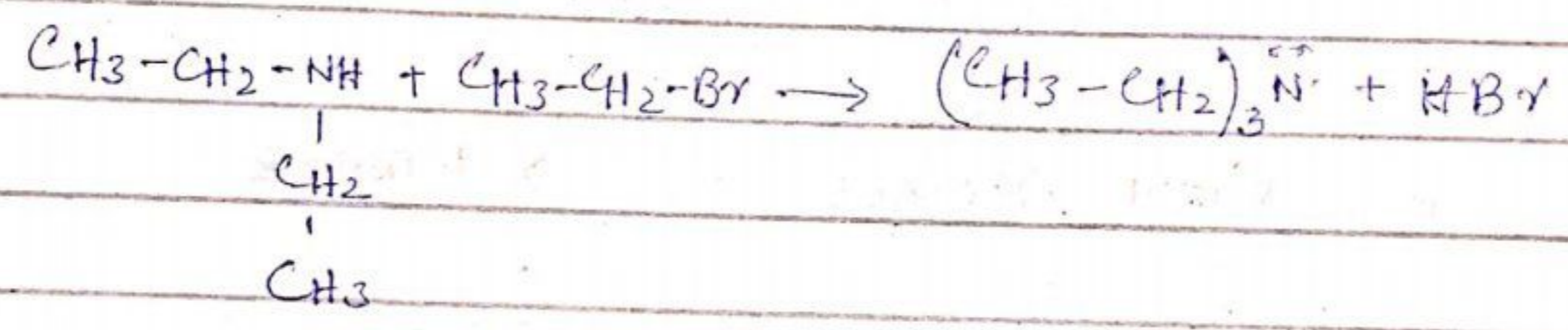
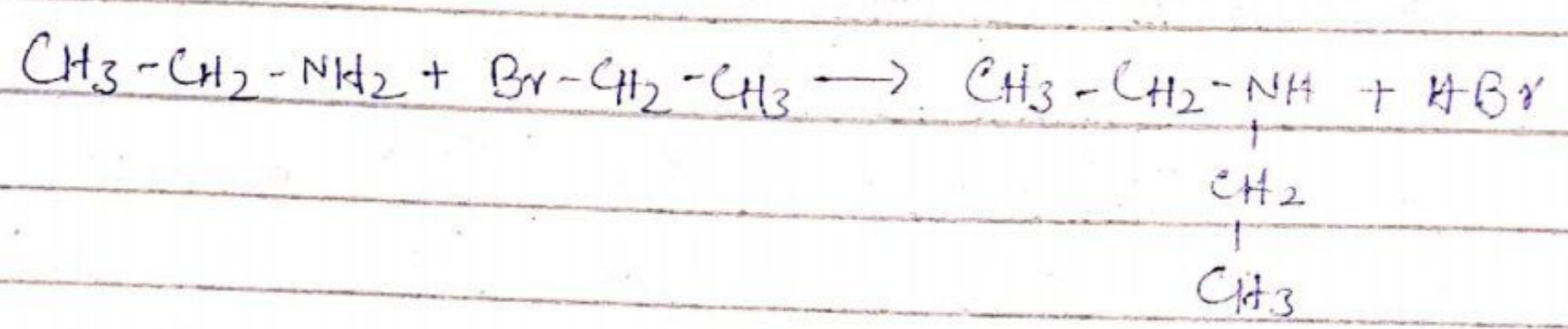
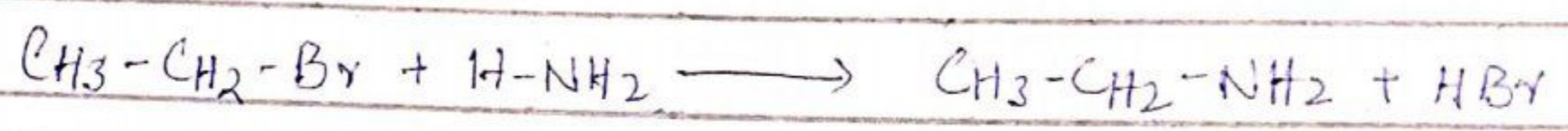
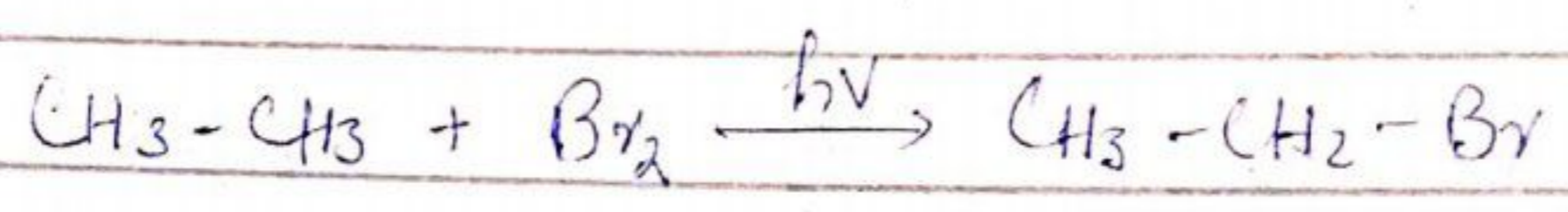
75 ETHYL BROMIDE \longrightarrow ETHENE



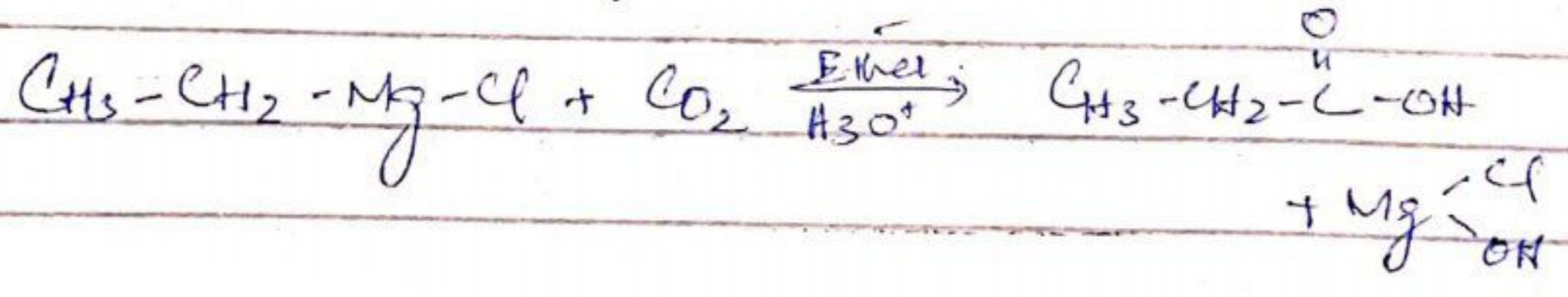
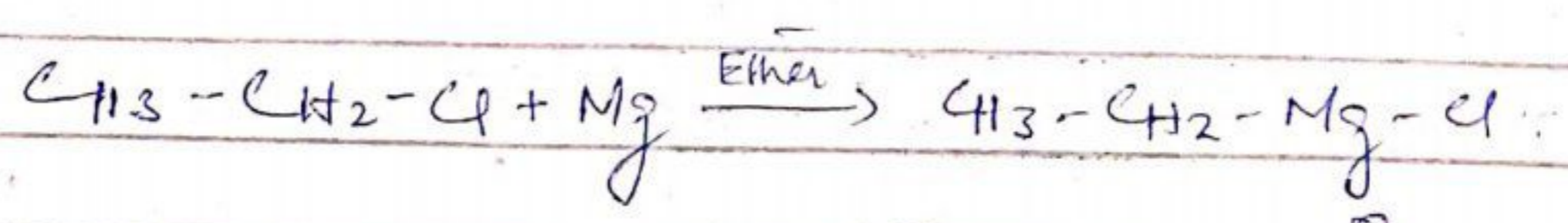
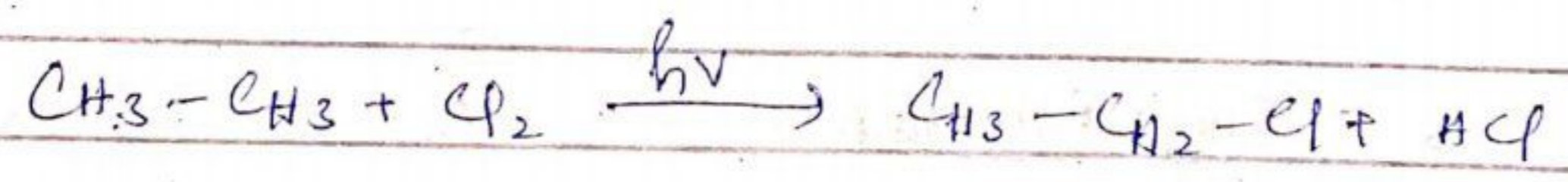
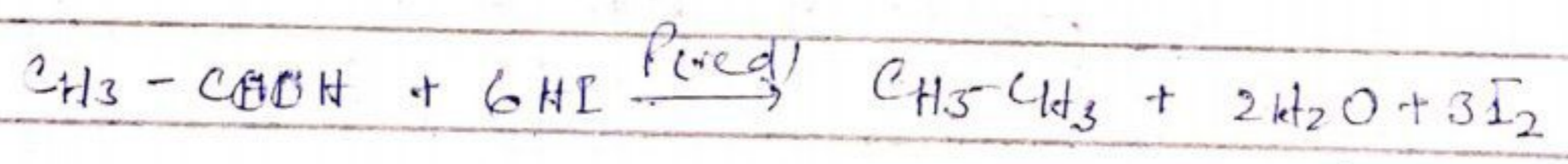
76 ETHYL BROMIDE \longrightarrow PROPIONIC ACID

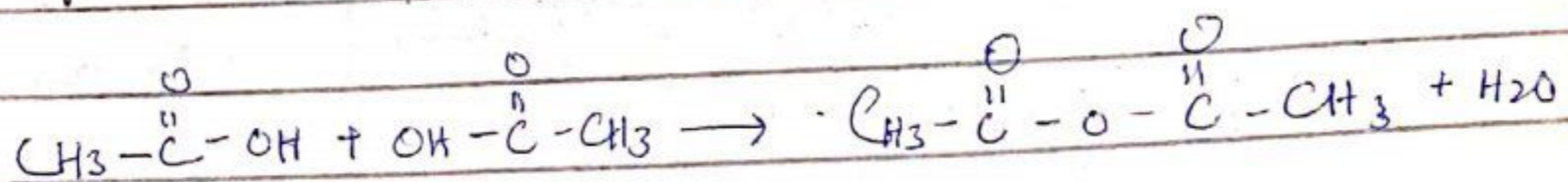
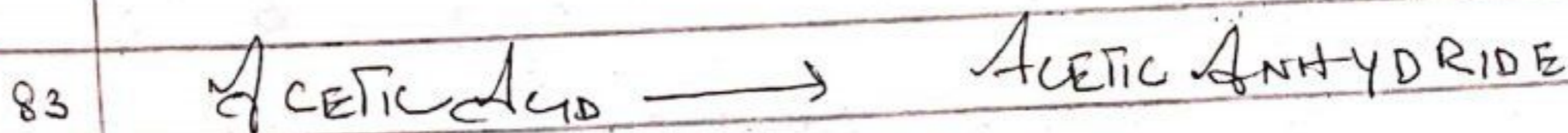
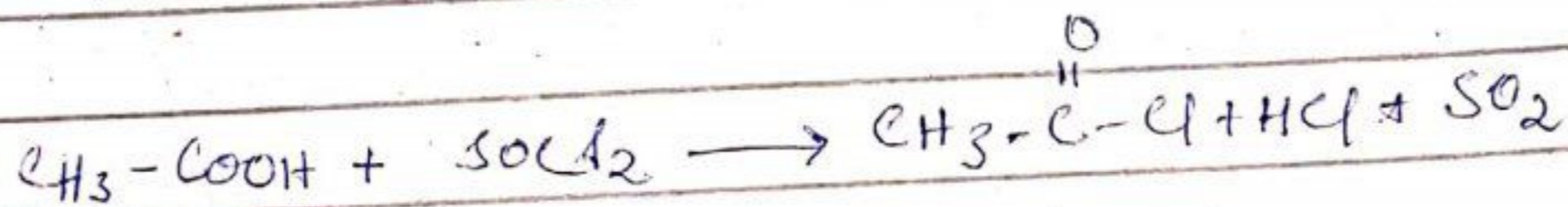
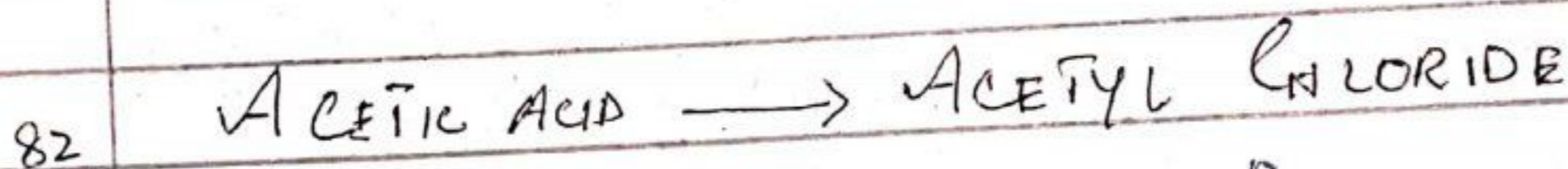
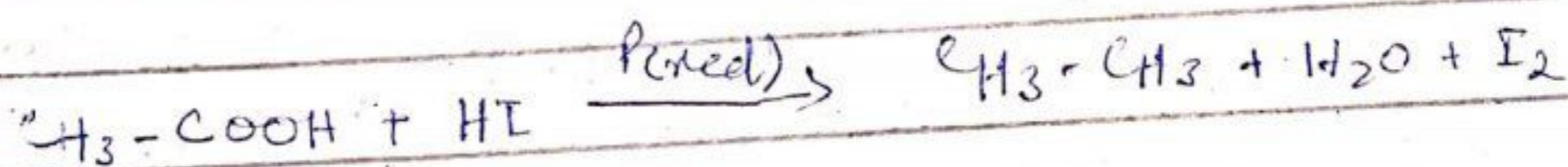
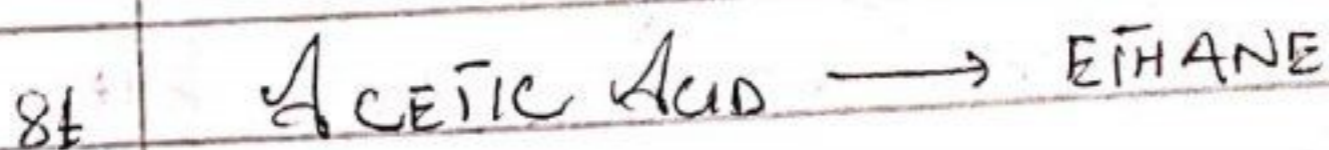
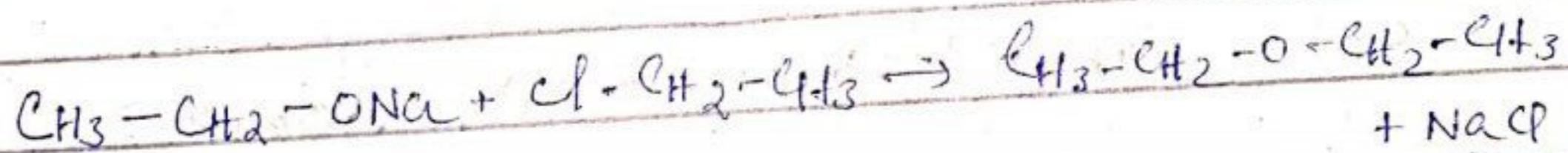
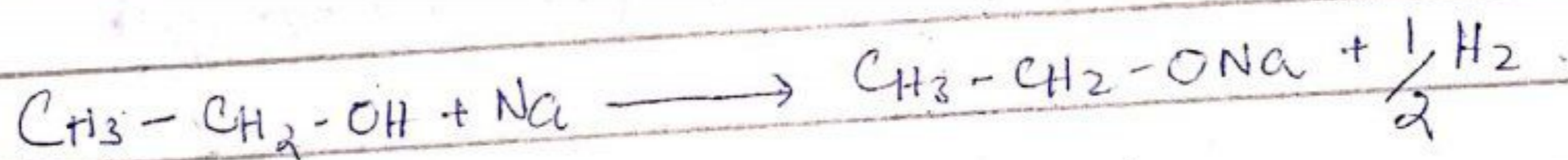
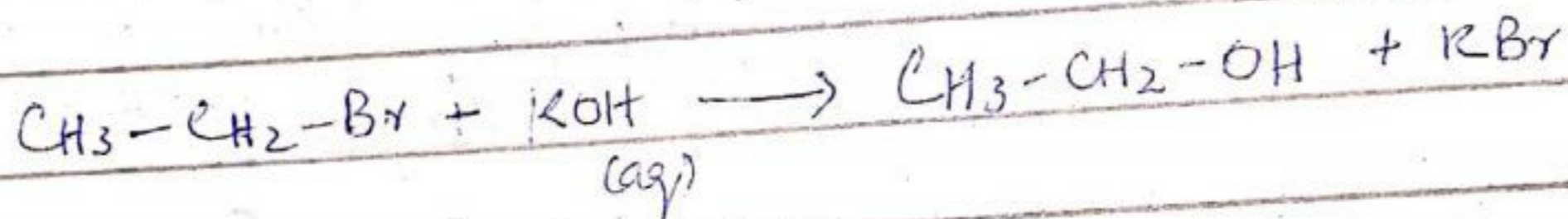
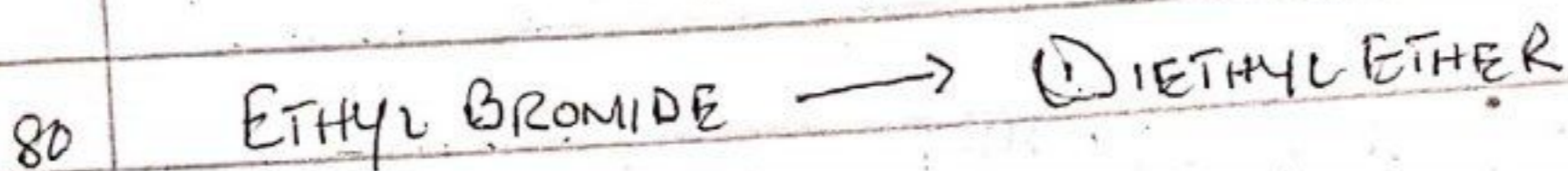
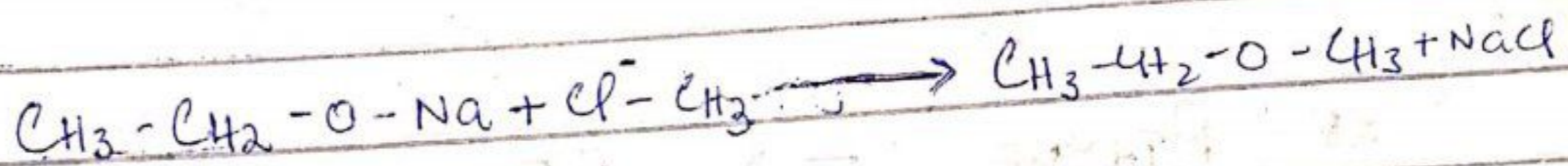
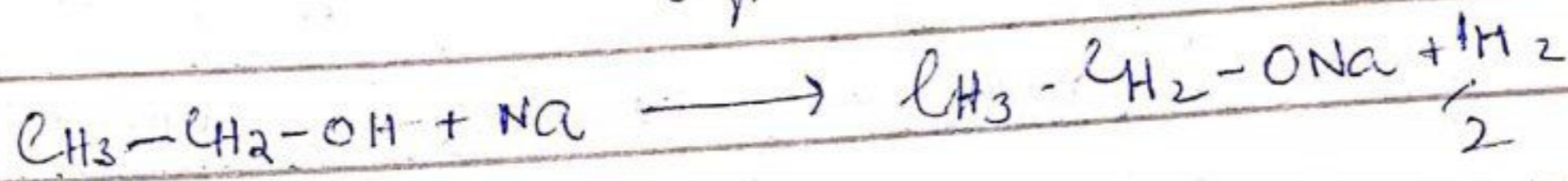
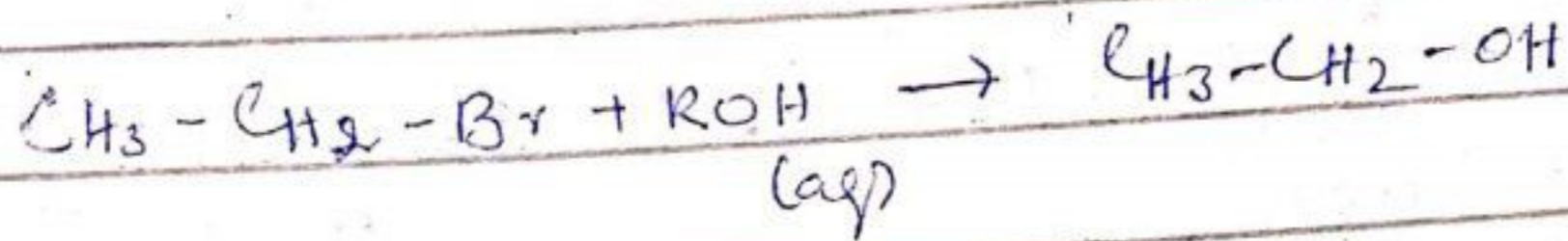


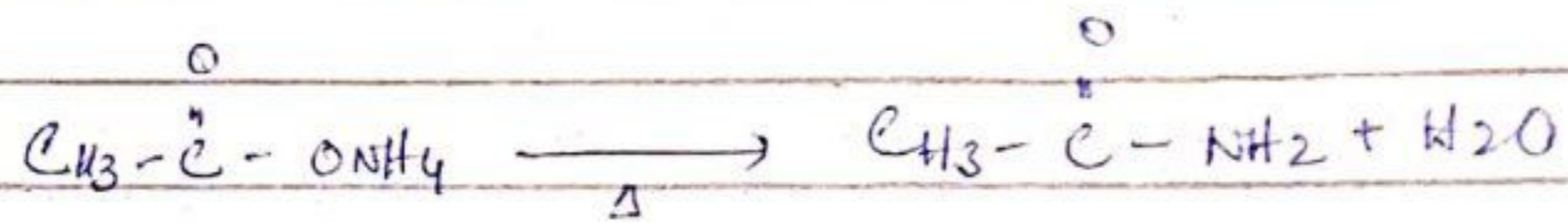
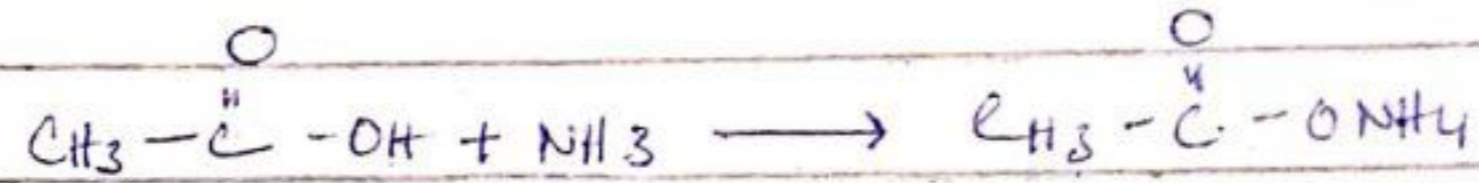
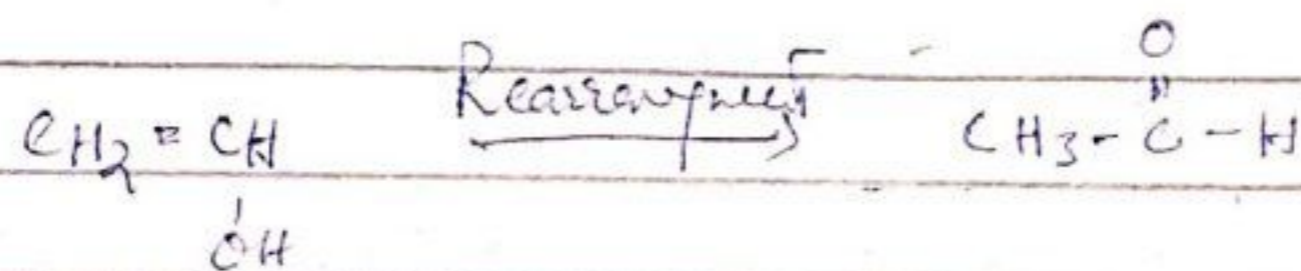
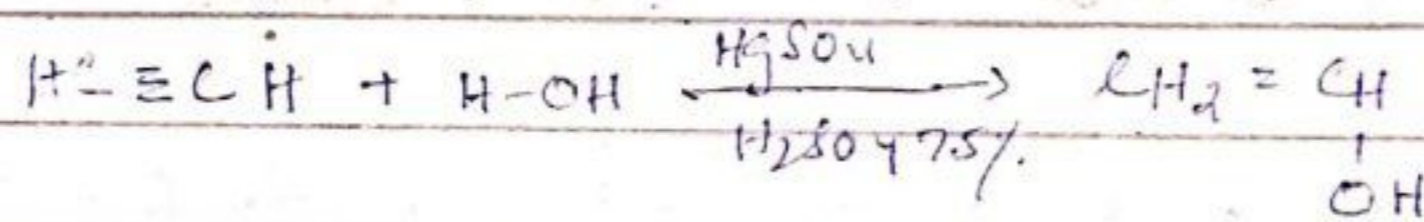
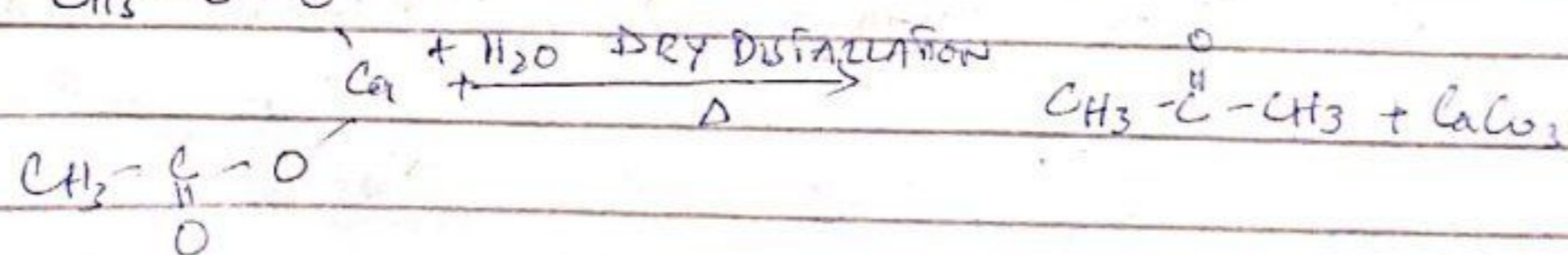
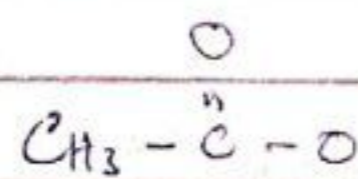
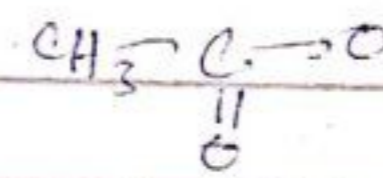
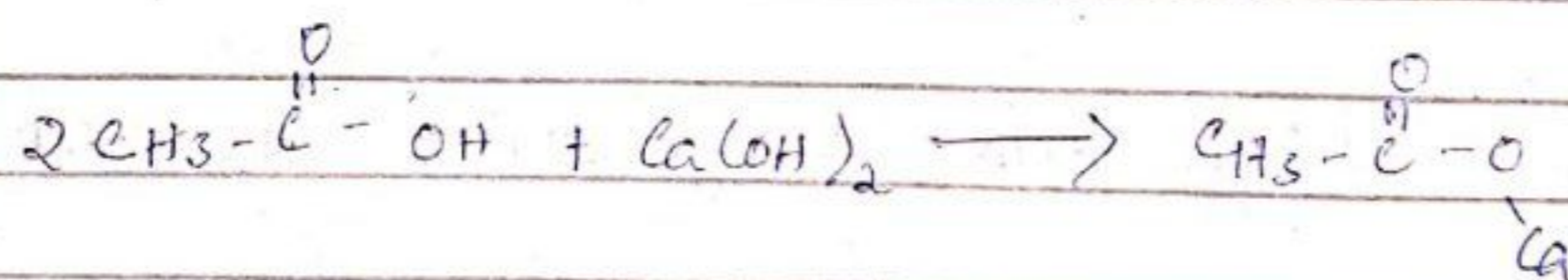
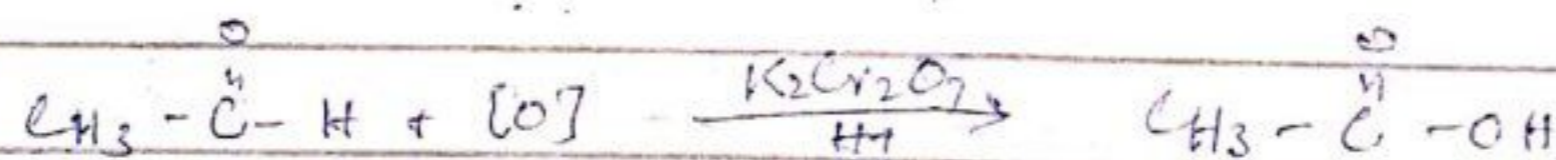
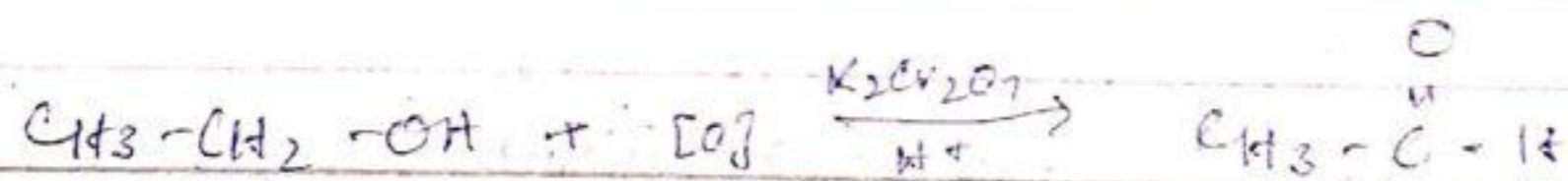
77 ETHANE \longrightarrow TETRAETHYL AMMONIUM BROMIDE



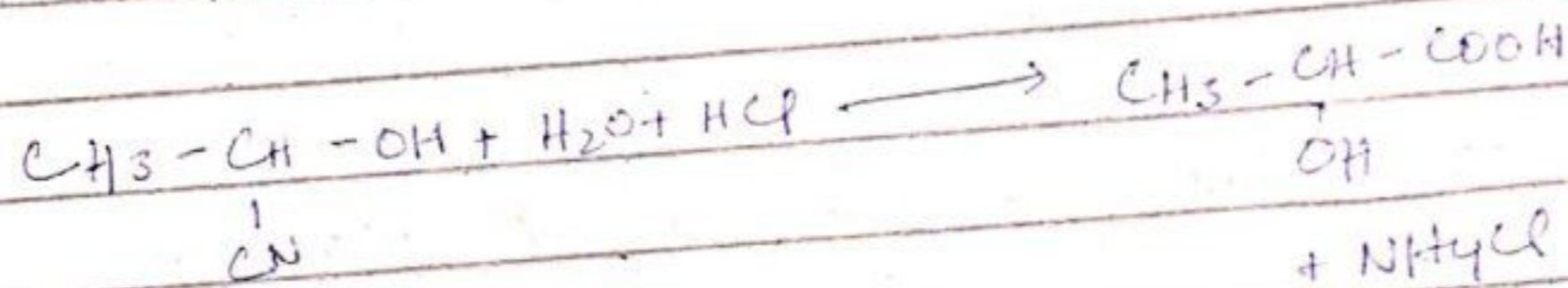
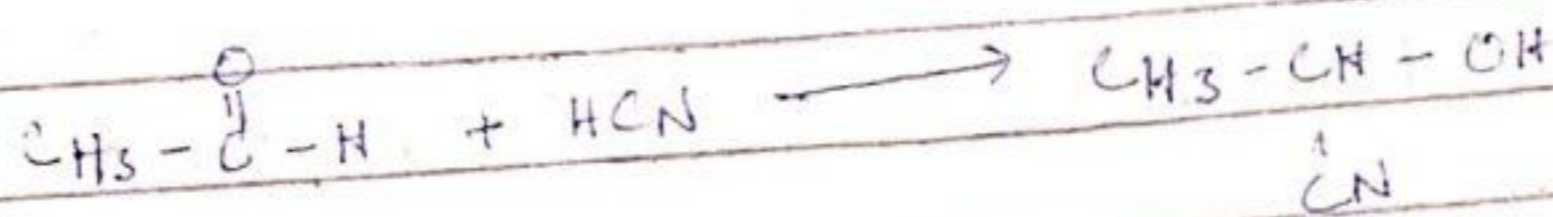
78 ACETIC ACID \longrightarrow PROPIONIC ACID



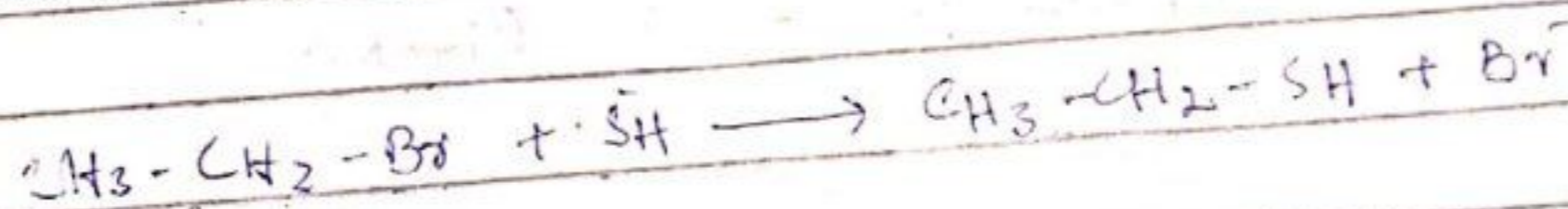


84 ACETIC ACID \rightarrow ACETAMIDE85 ETHYNE \rightarrow ETHANAL86 ETHYL ALCOHOL \rightarrow ACETONE

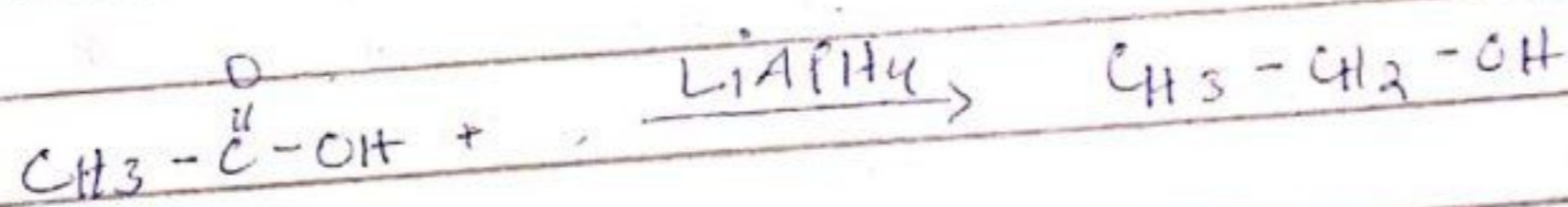
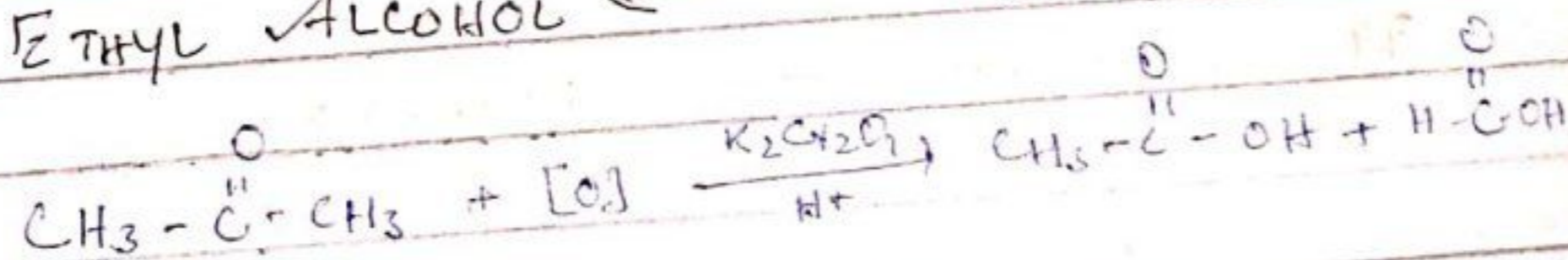
87 Acetaldehyde \longrightarrow LACTIC ACID



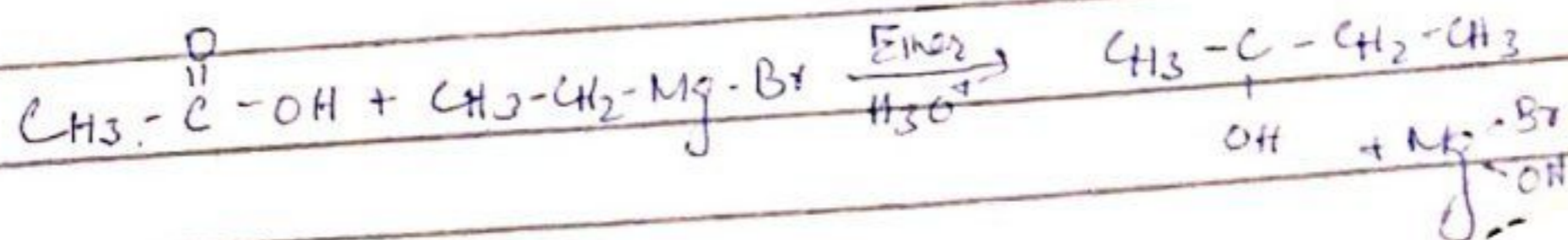
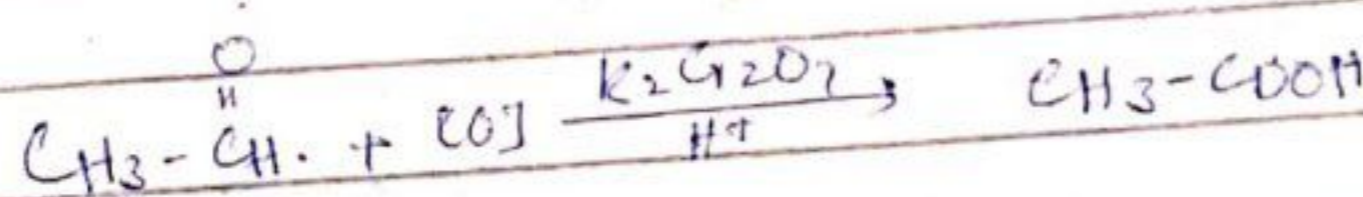
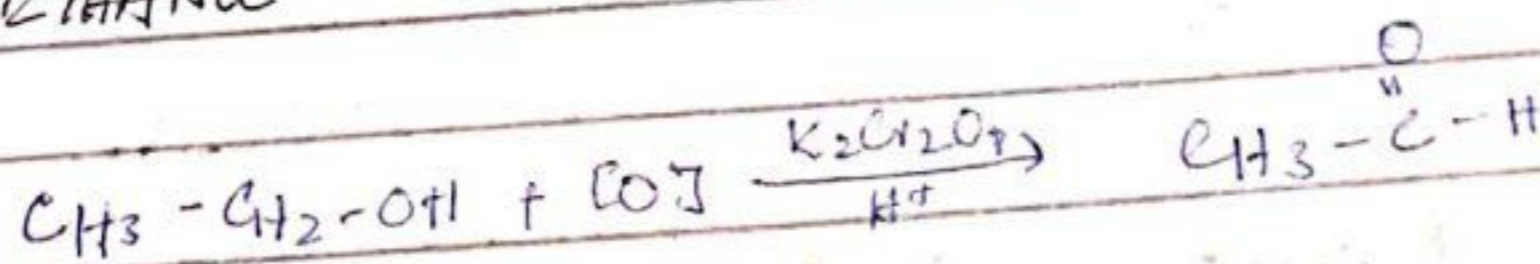
88 ETHYL BROMIDE \longrightarrow ETHYL THIOALCOHOL

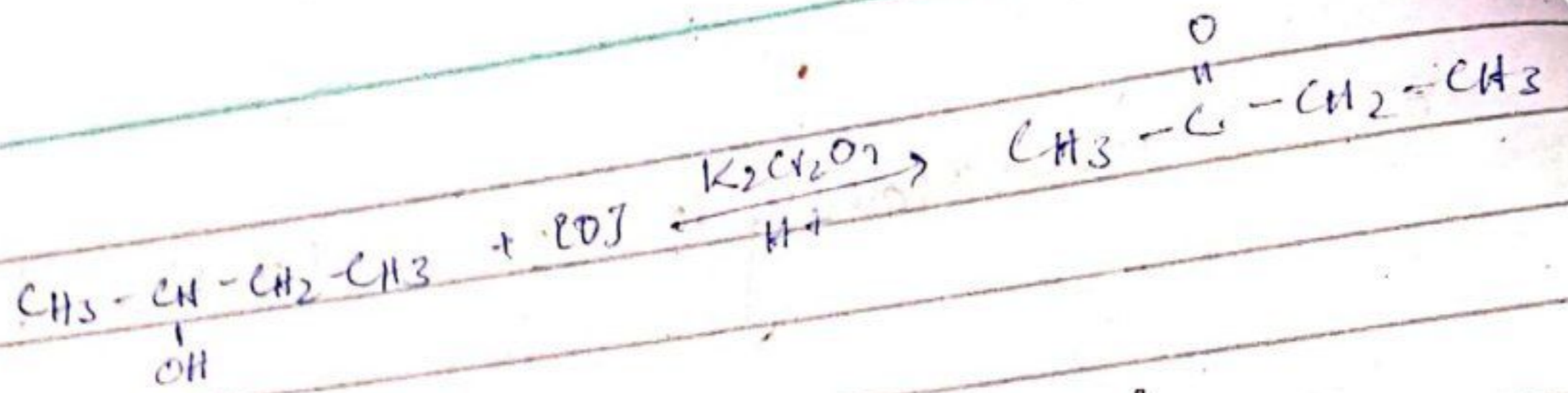


89 ETHYL ALCOHOL \longleftarrow ACETONE

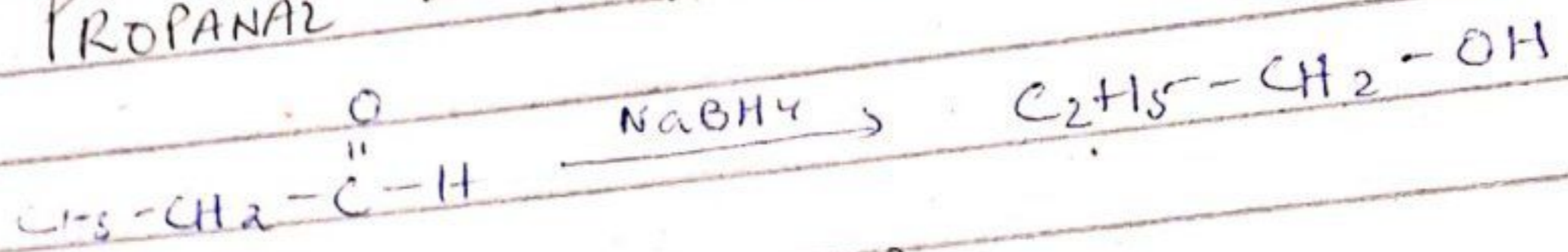


90 ETHANOL \longrightarrow 2-BUTANONE

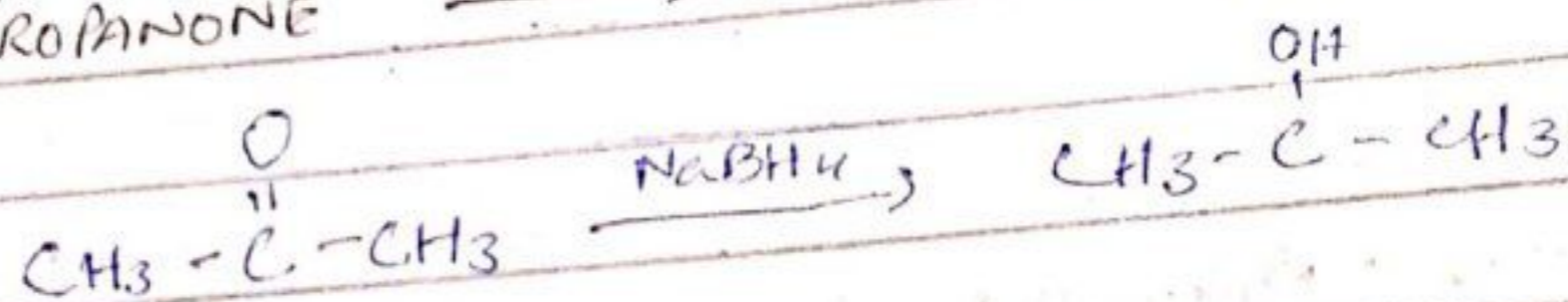




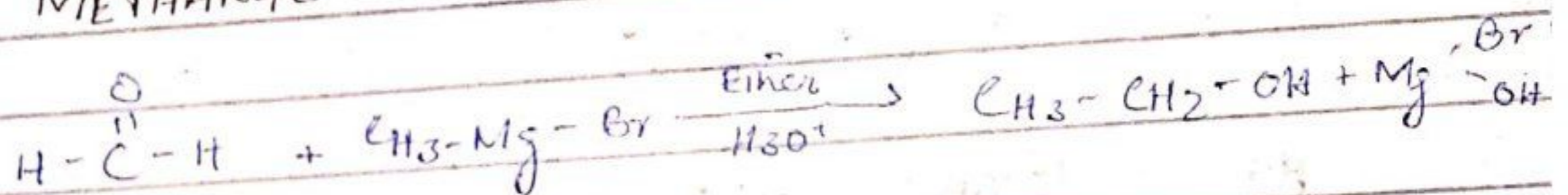
91 PROPANAL \longrightarrow 1-PROPANOL



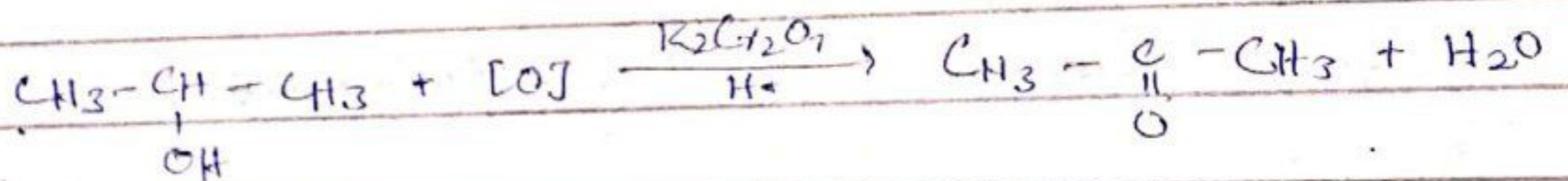
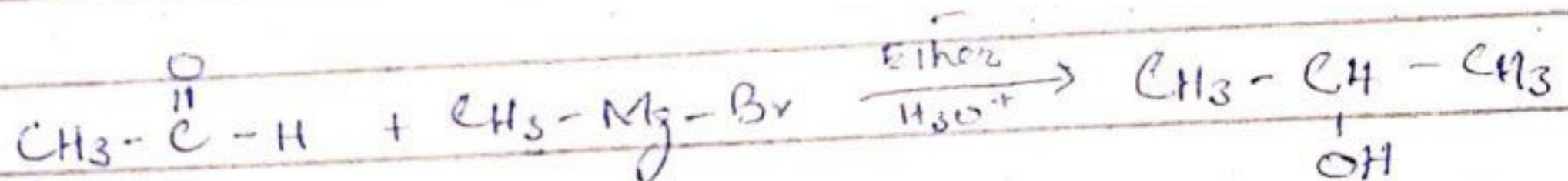
92 PROPANONE \longrightarrow 2-PROPANOL



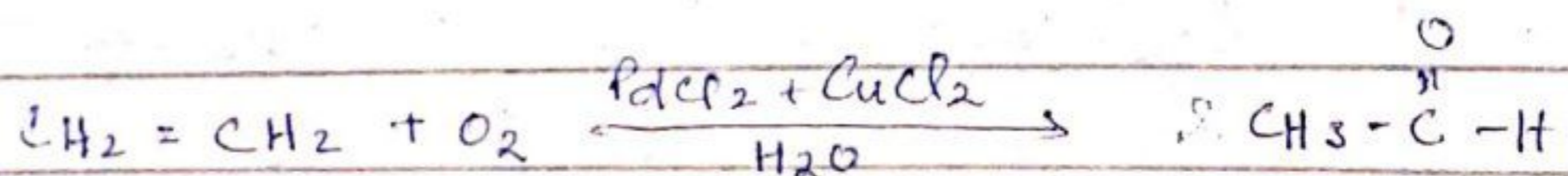
93 METHANAL \longrightarrow ETHANAL



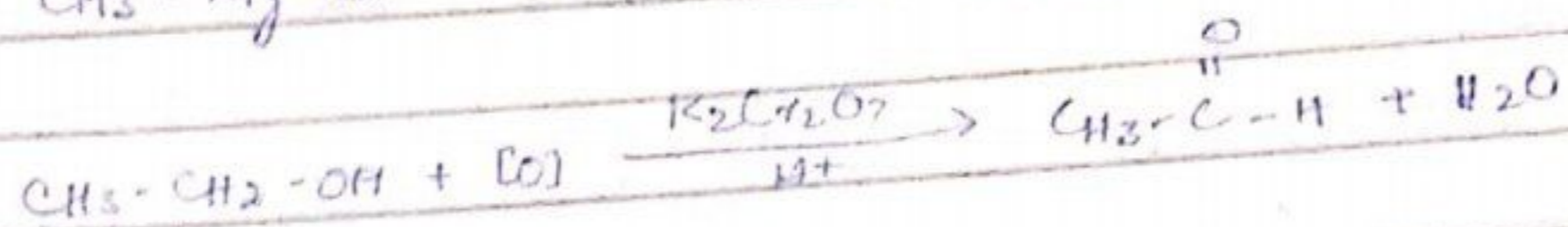
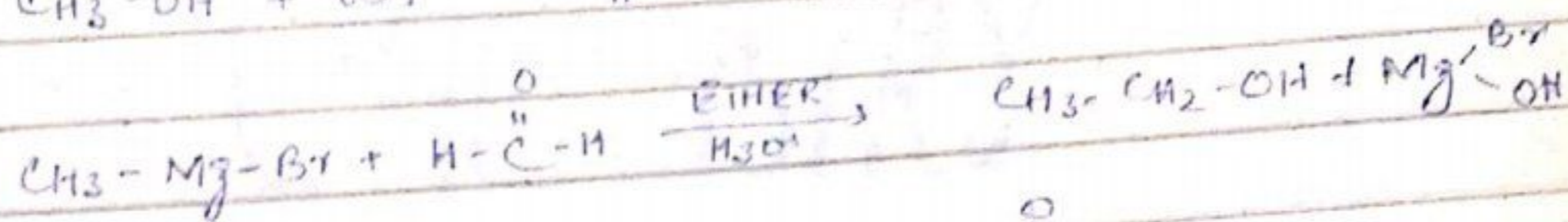
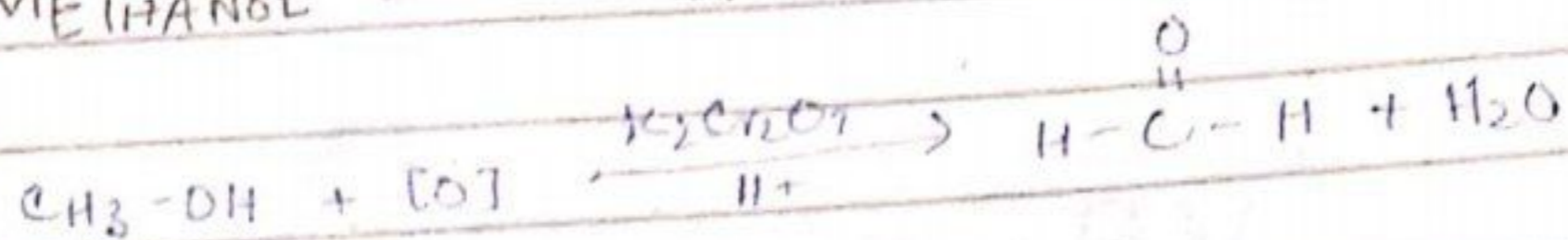
94 ETHANAL \longrightarrow PROPANONE



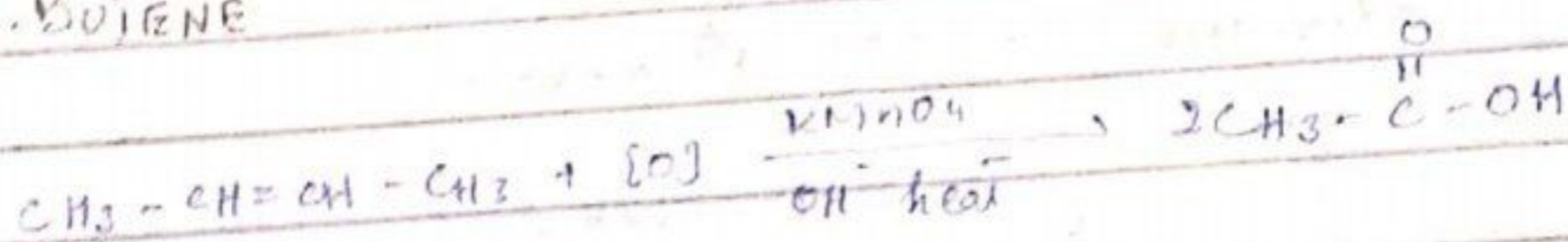
95 ETHENE \longrightarrow ETHANAL



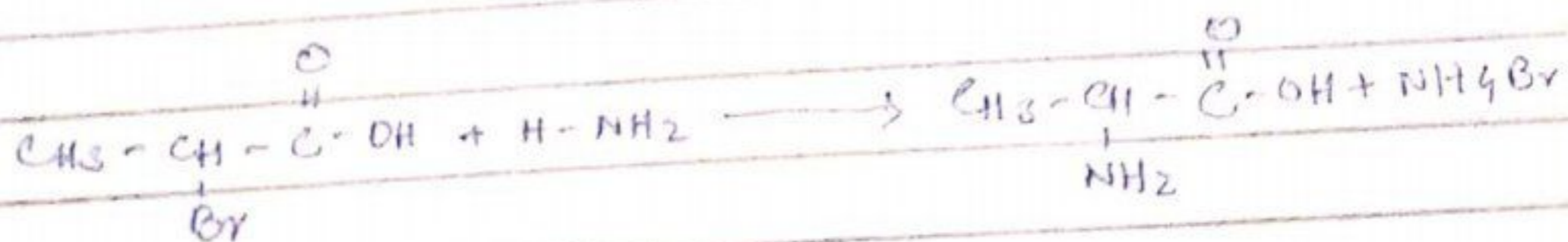
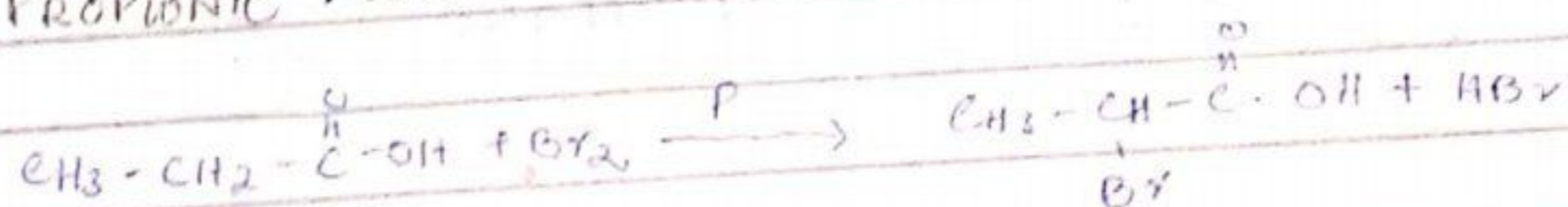
96 METHANOL → ETHANAL



97 2-BUTENE → ACETIC ACID

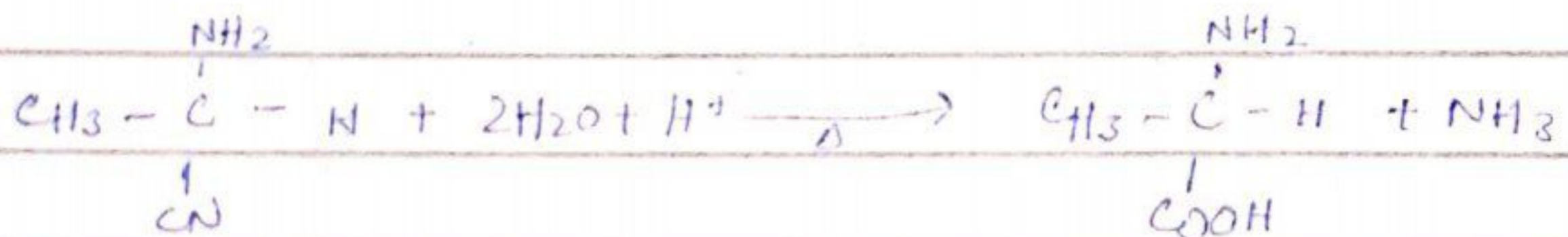
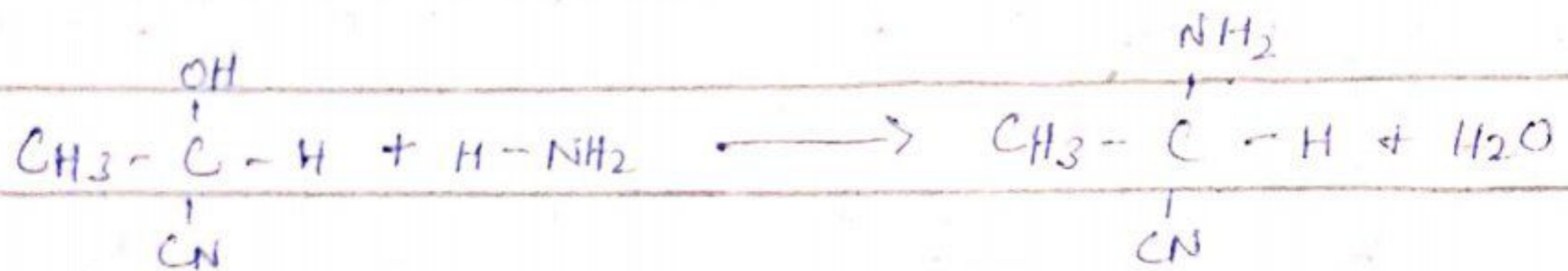
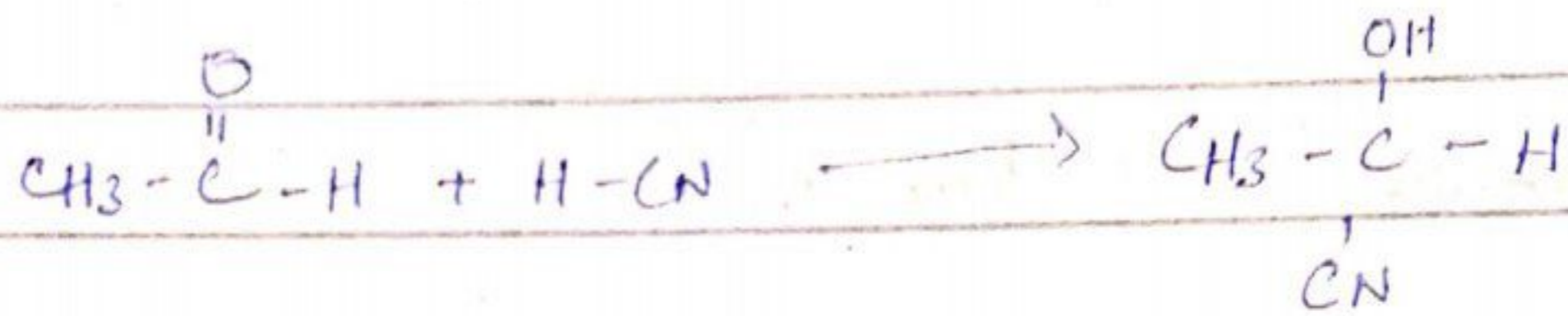


98 PROPIONIC ACID → ALANINE

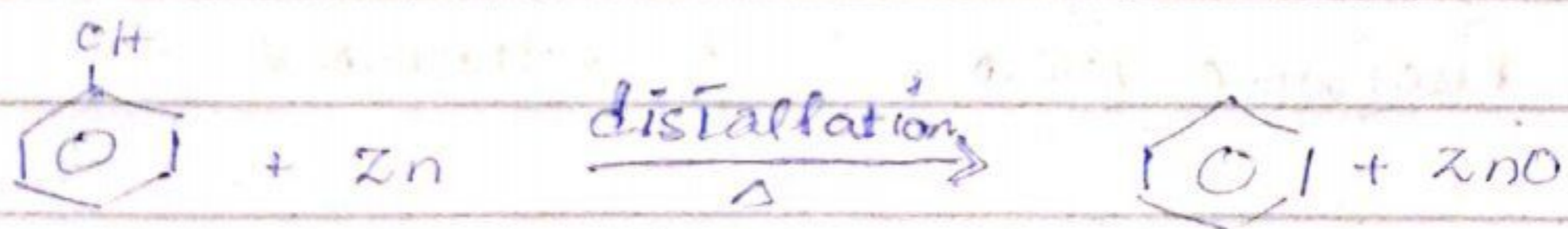
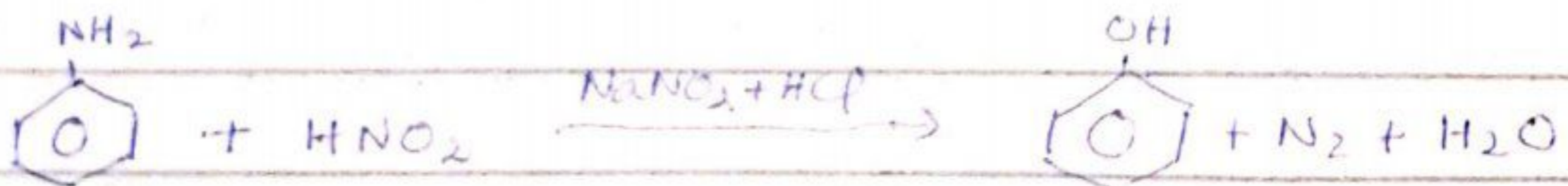


99 ACETALDEHYDE → ALANINE

When acetaldehyde is reacted with HCN in the presence of NH₃ followed by acidic hydrolysis, Alanine is formed.



100 ANILINE \longrightarrow BENZENE



CHEMISTRY

ASSIGNMENT

CHAPTER # 07



QUESTION 7

Why is ethene an important industrial chemical?

Answer

Ethene is used in industry for the production of

- (i) Polythene (plastic)
- (ii) Ethyl alcohol (used for drinking purpose as a substitute of petrol)
- (iii) Glycol (used as anti-freezing agent in radiator).

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CHAPTER # 08

QUESTION 9

(a)

Outline the methods available for the preparation of alkanes.

Answer

There are five methods for the preparation of alkane

- (i) Hydrogenation of unsaturated hydrocarbons
(Sabatier's reaction)
- (ii) From alkylhalides ($R-X$)
 - (a) Reduction of alkyl halides
 - (b) Hydrogenolysis of alkyl halides

- iii) From sodium salt of monocarboxylic acid
 (a) Decarboxylation
 (b) Kolbe's electrolytic method

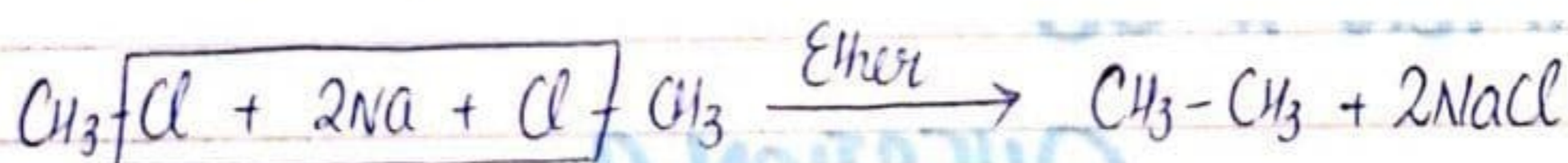
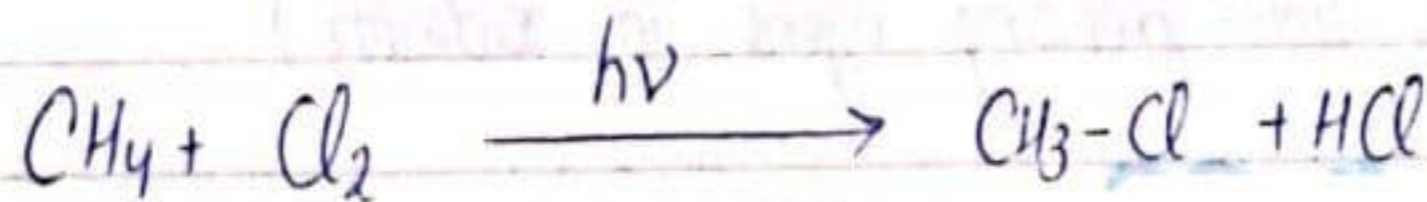


- (iv) From carbonyl compounds (Aldehydes and ketones)
 (a) Clemmensen's reduction (Ketenes)
 (b) Wolf-Kishner's reduction (Aldehydes)

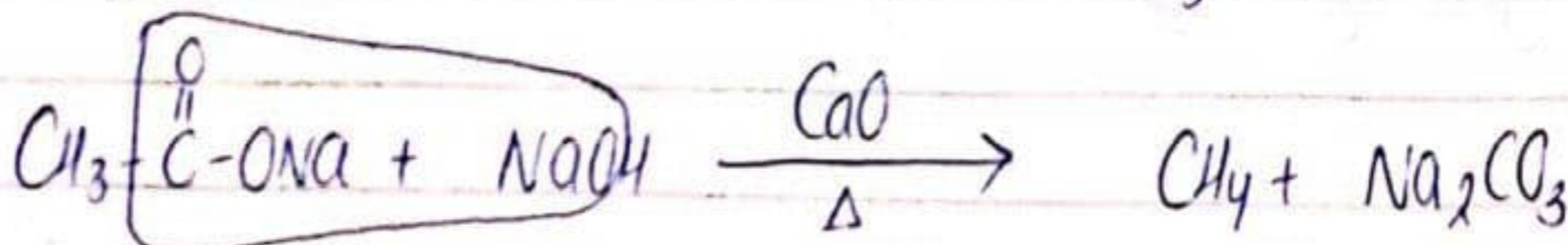
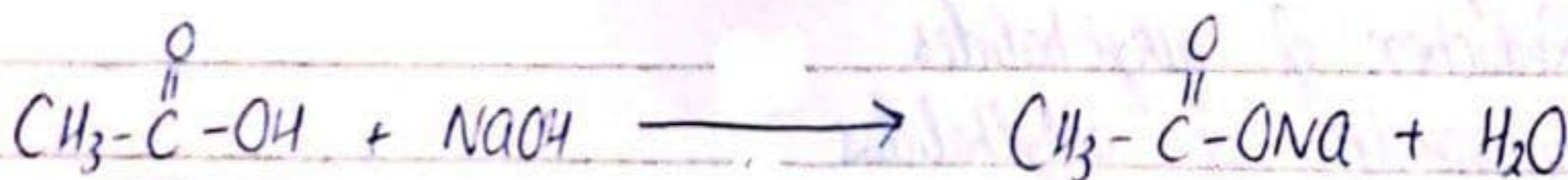
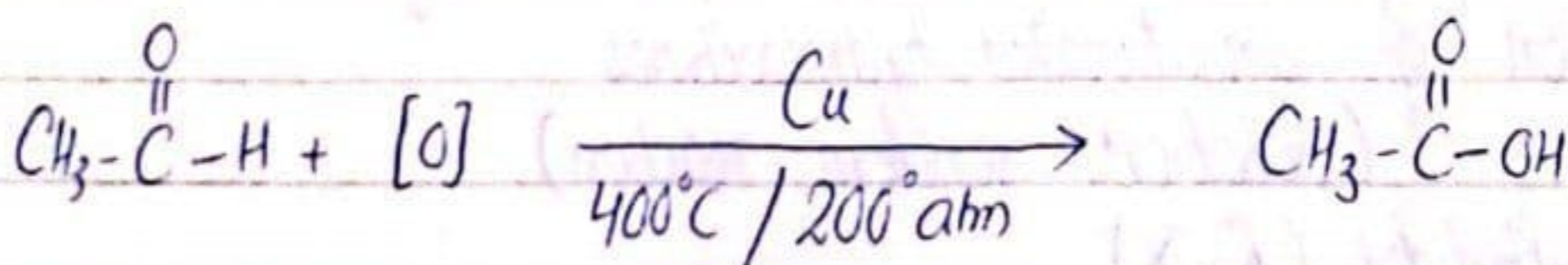
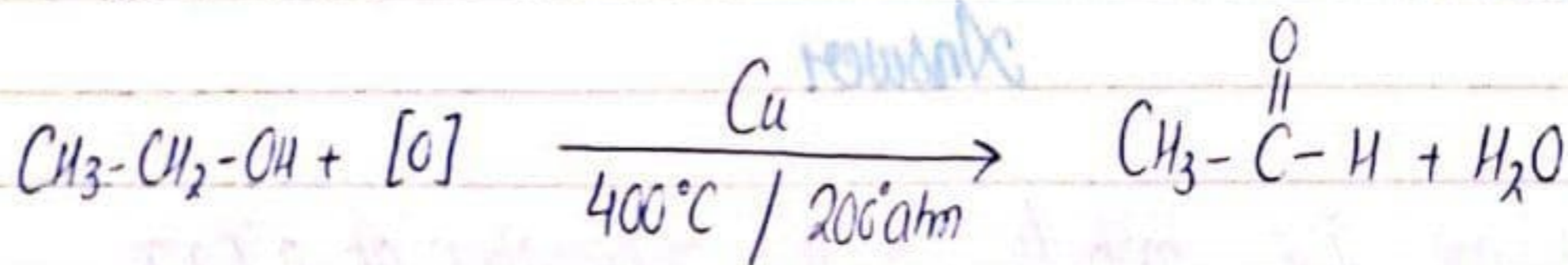
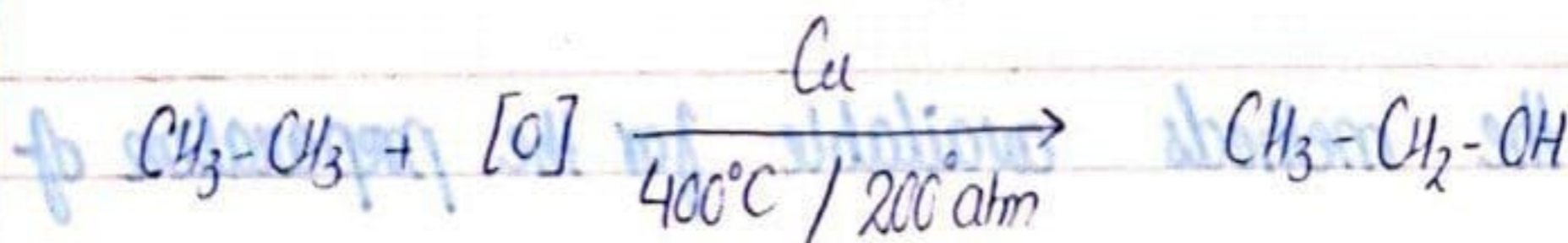
- (v) From Grignard reagent (R-Mg-X)

(b)
 How will you bring about the following conversions?

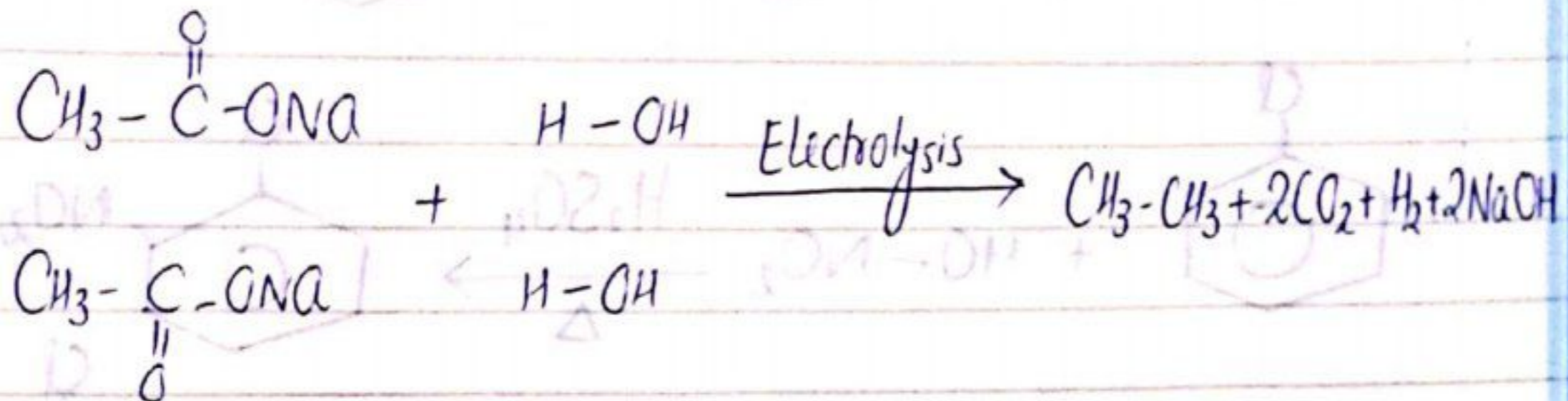
- (i) Methane to Ethane



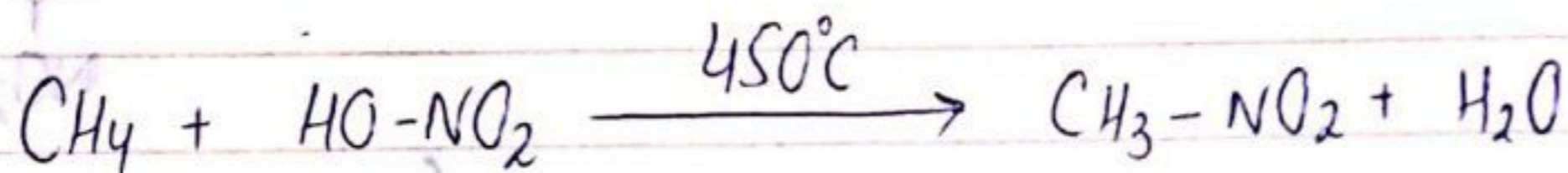
- (ii) Ethane to Methane



(iii) Acetic acid to Ethane



(iv) Methane to nitromethane



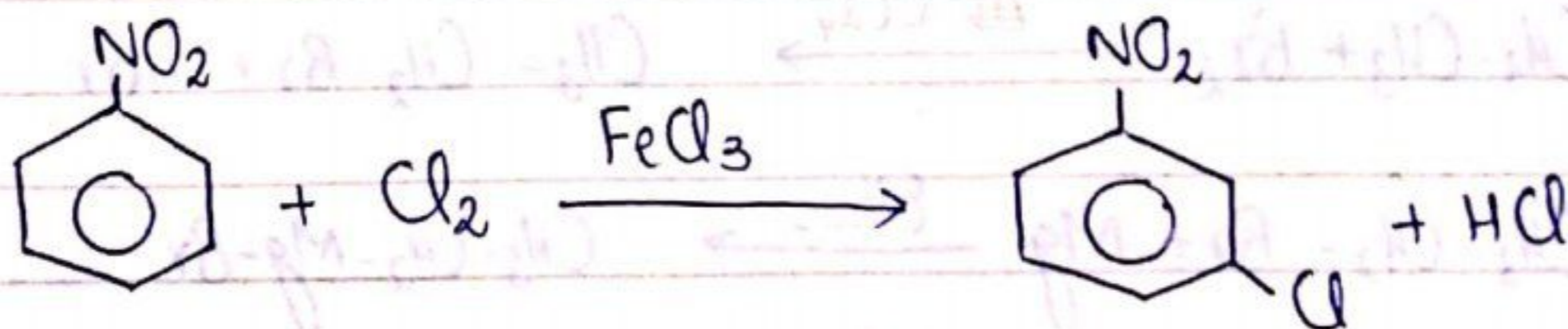
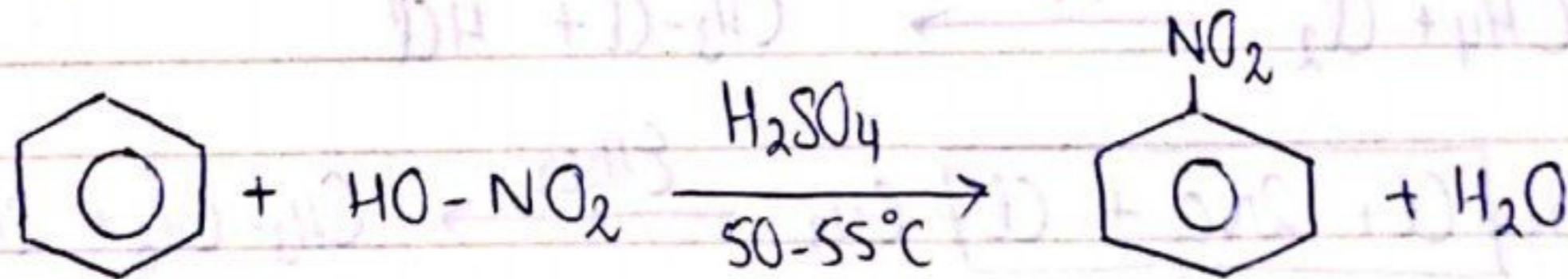
nitromethane

CHAPTER # 09

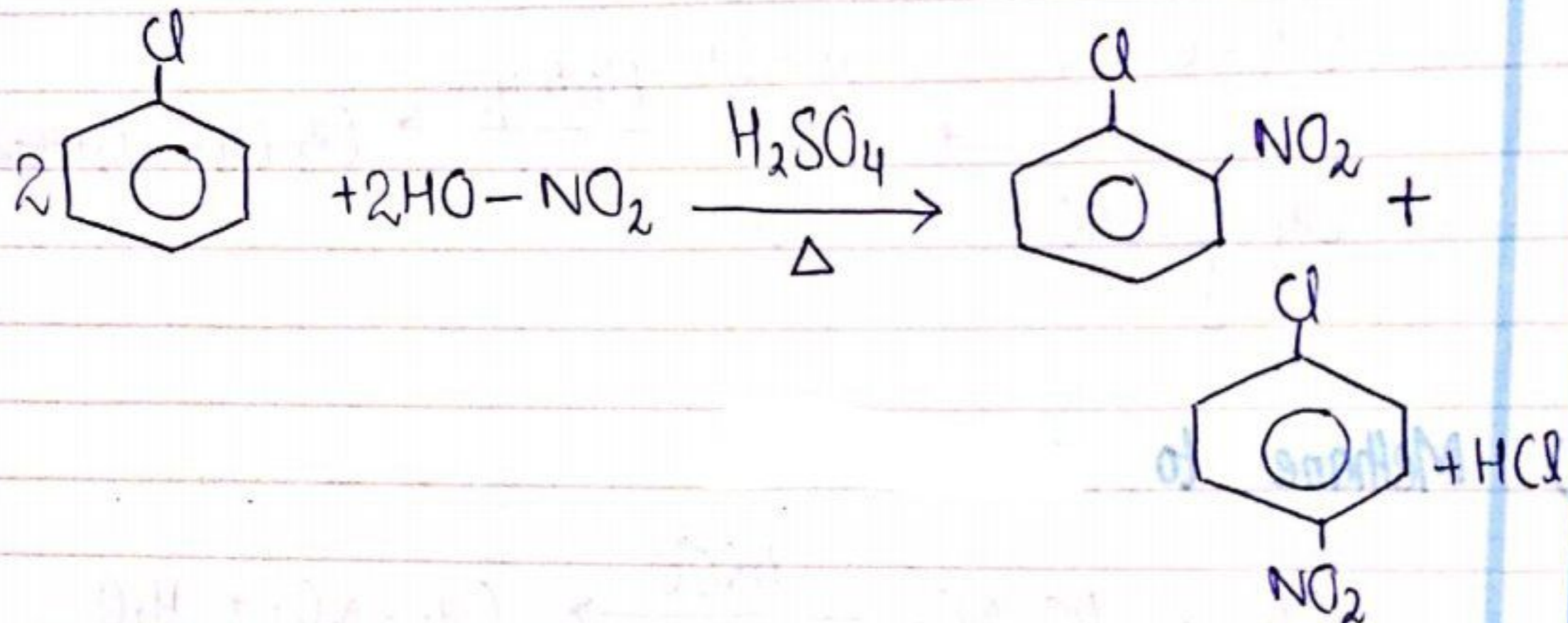
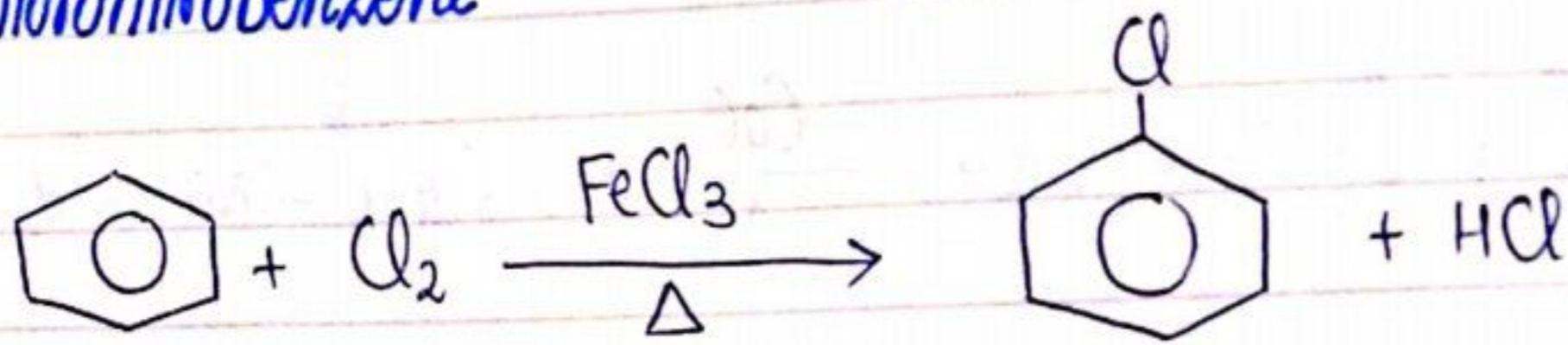
QUESTION 12

How will you prepare the following compounds from benzene in two steps.

(a) m-chloronitrobenzene



m-chloronitrobenzene

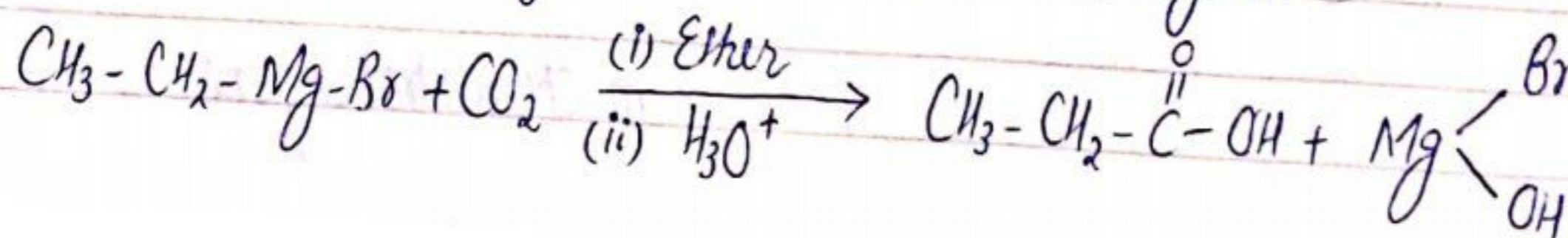
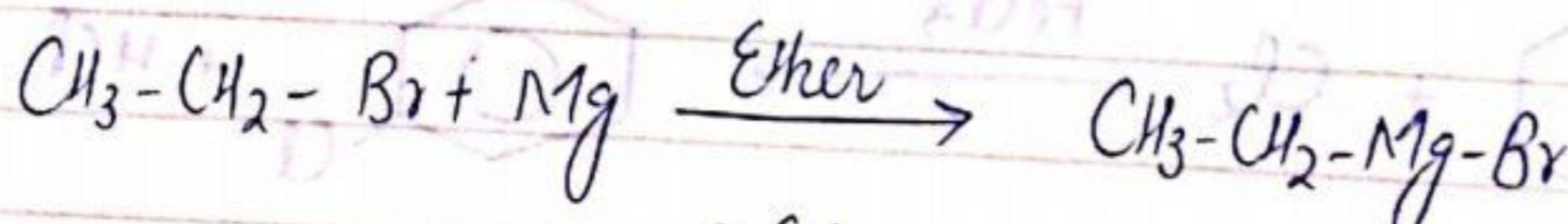
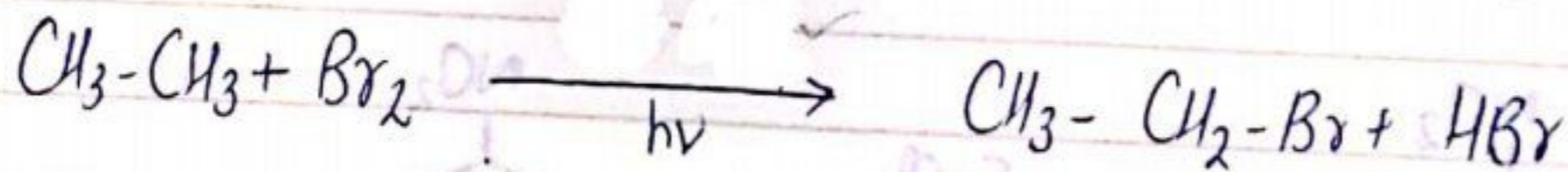
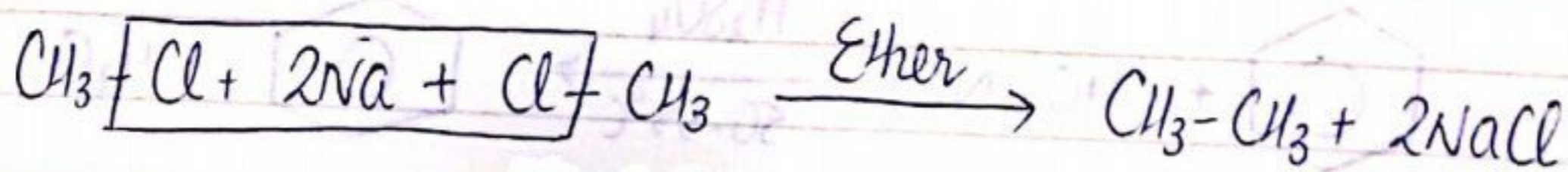
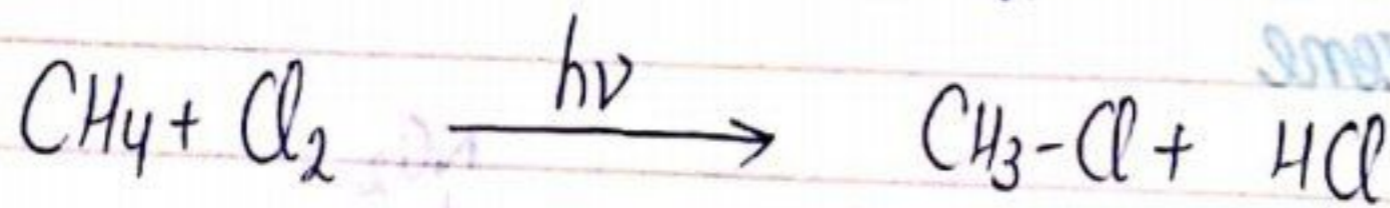
(b) *p*-chloronitrobenzene

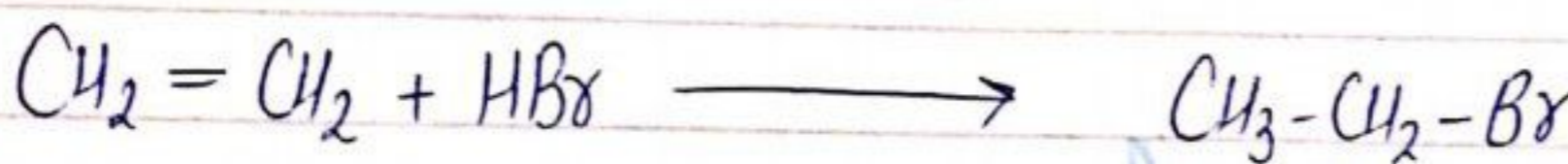
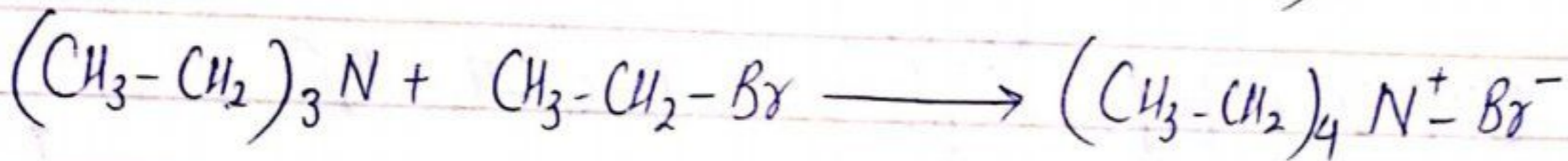
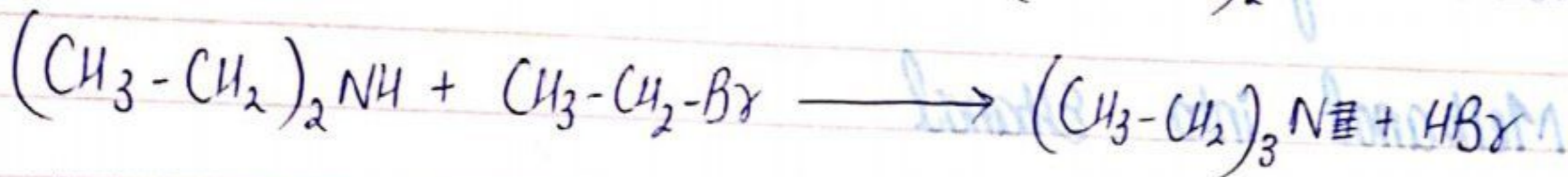
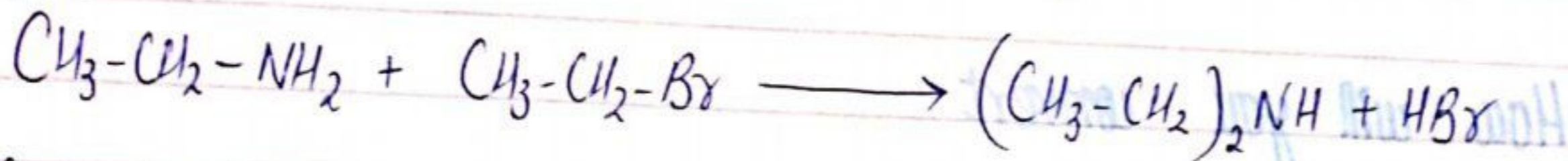
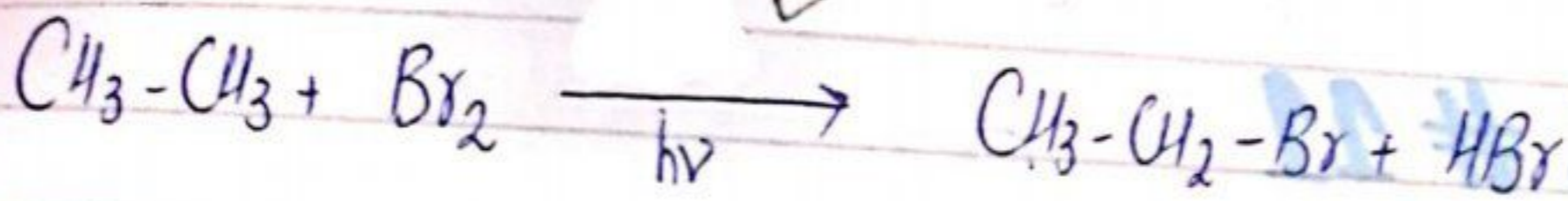
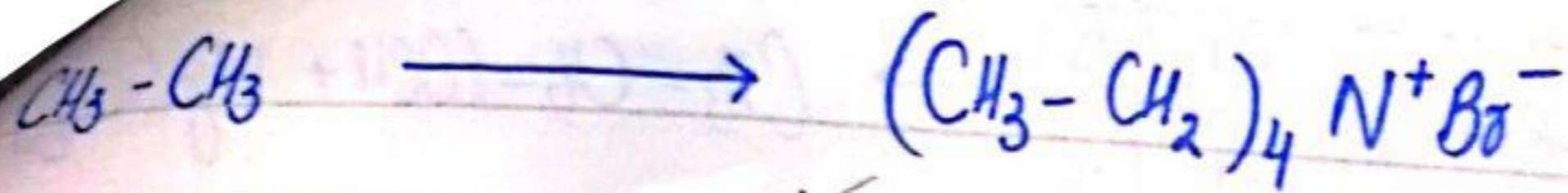
(para is a major product)

CHAPTER # 10

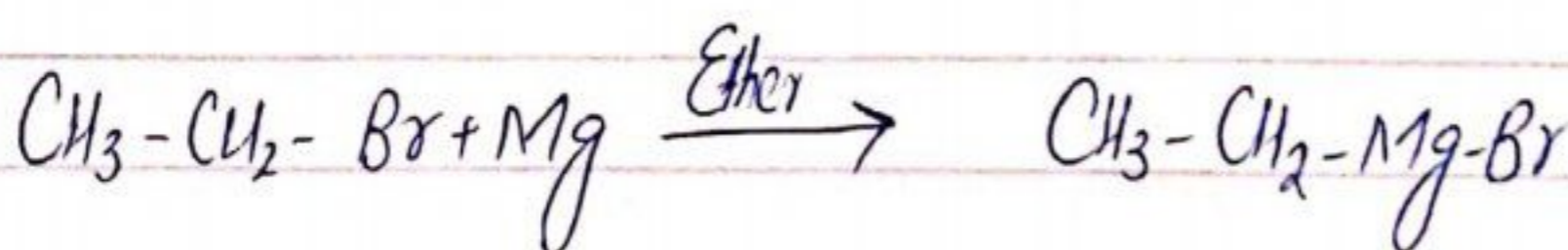
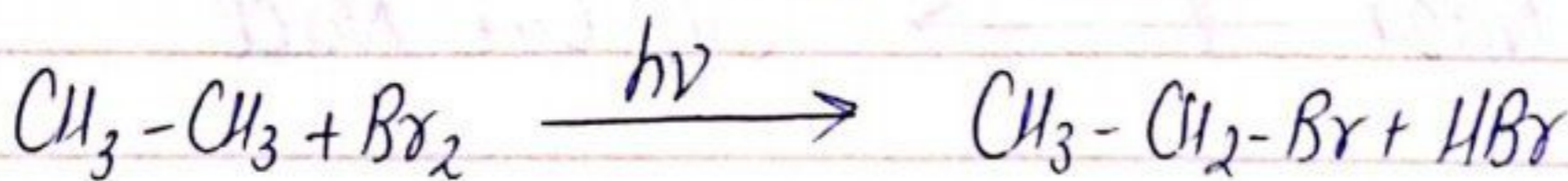
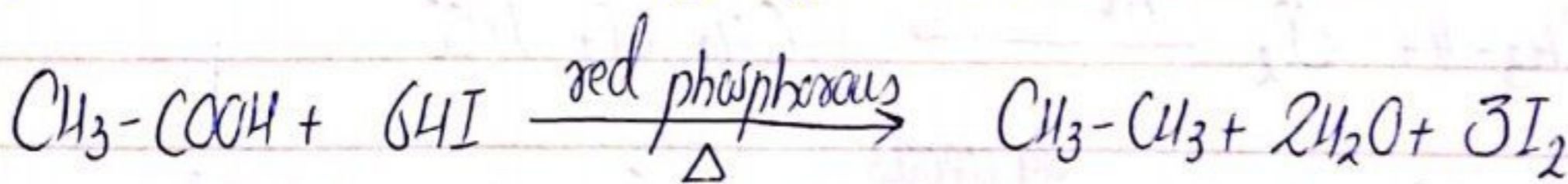
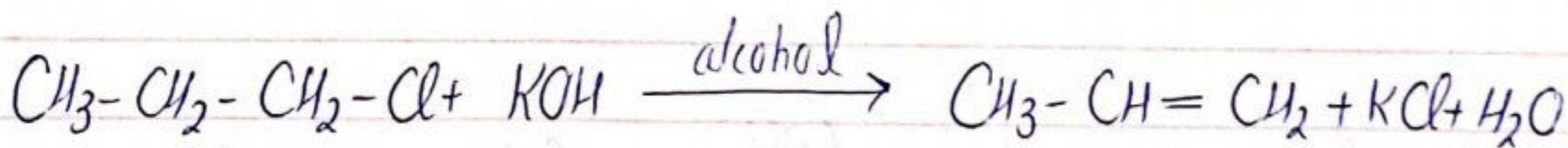
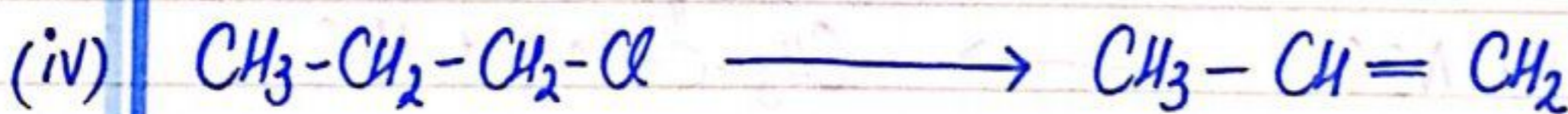
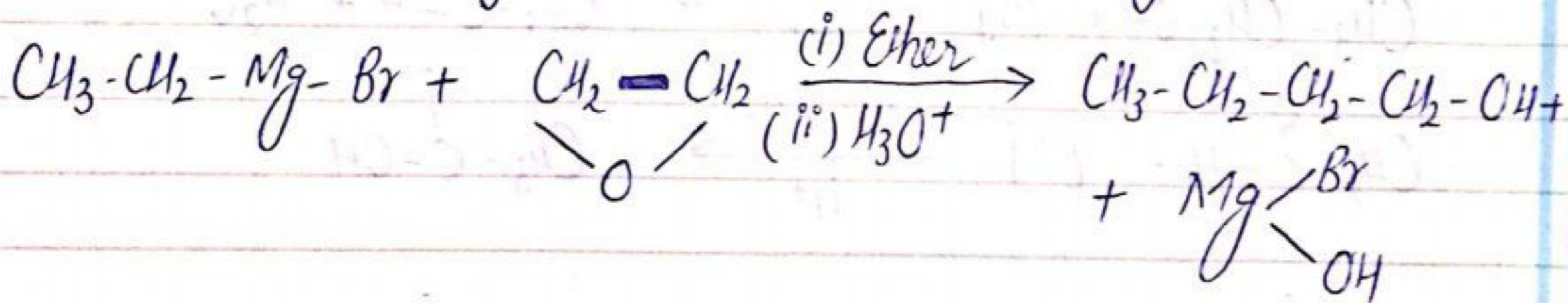
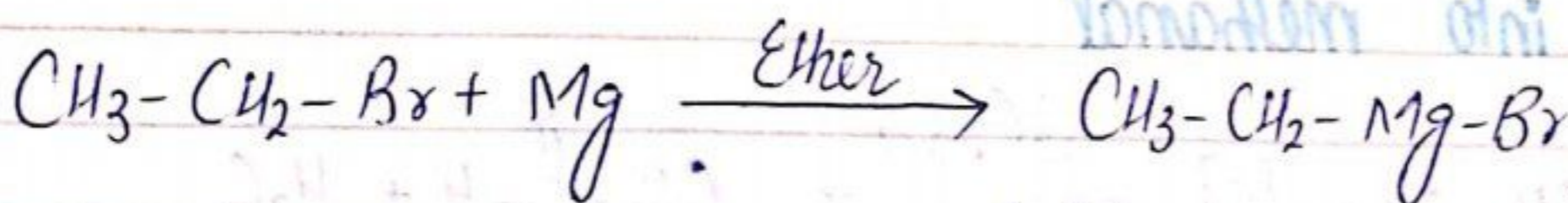
QUESTION 12

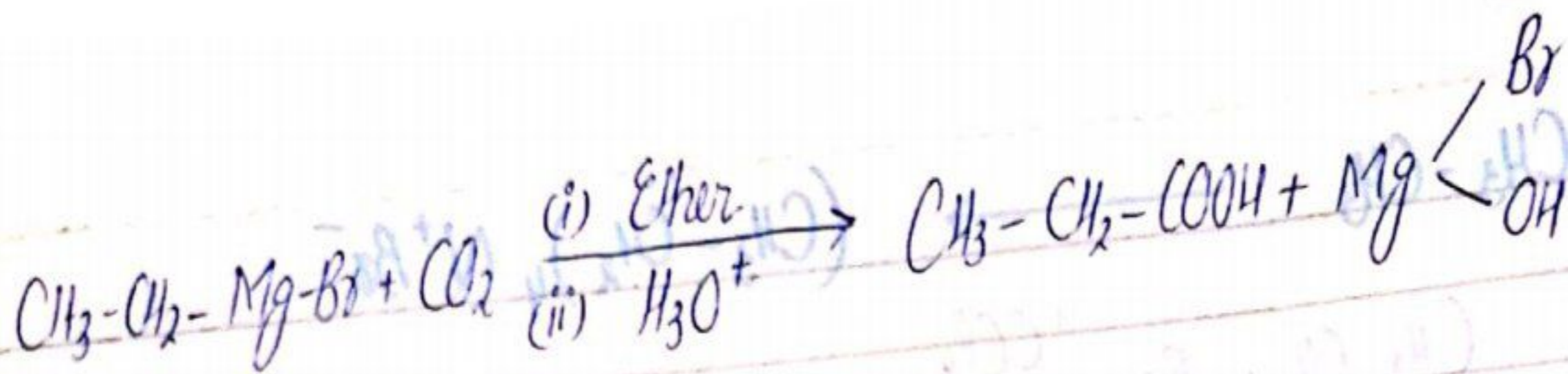
How will you carry out the following conversions.





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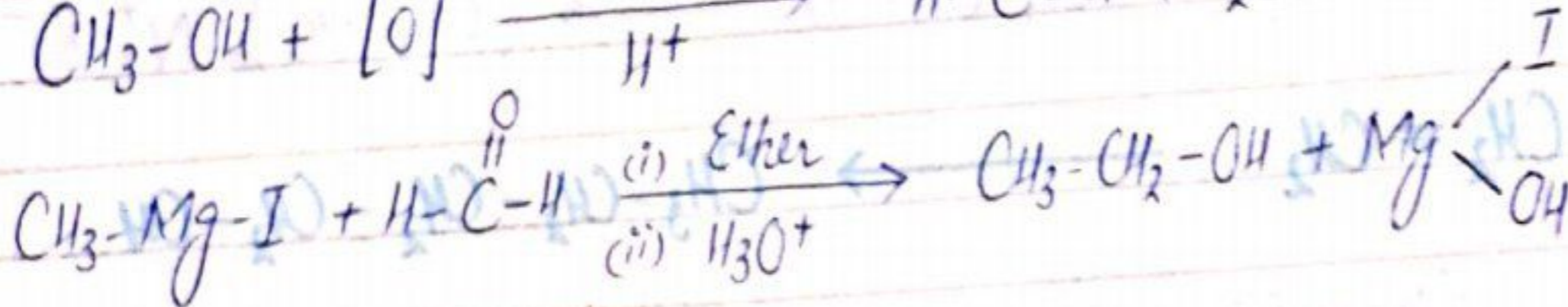
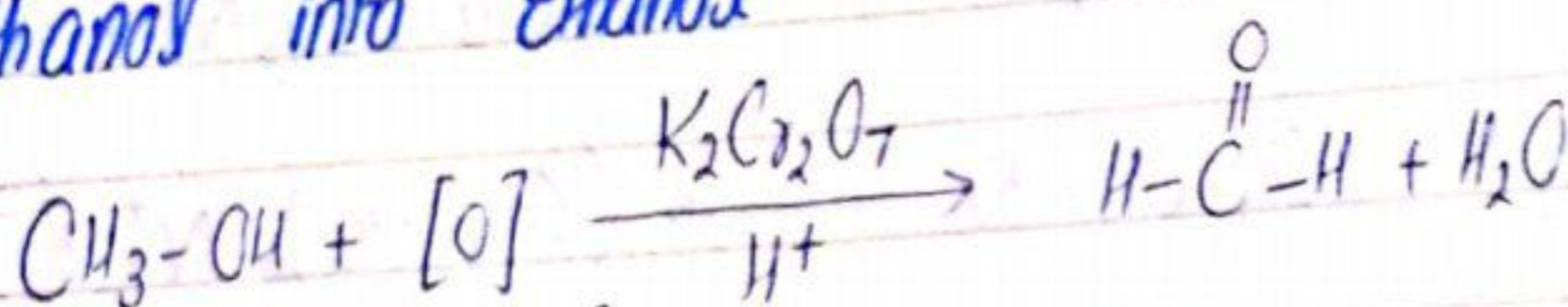


CHAPTER # 11

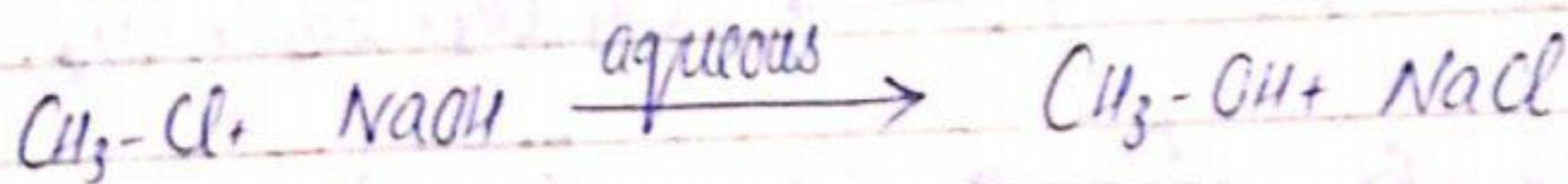
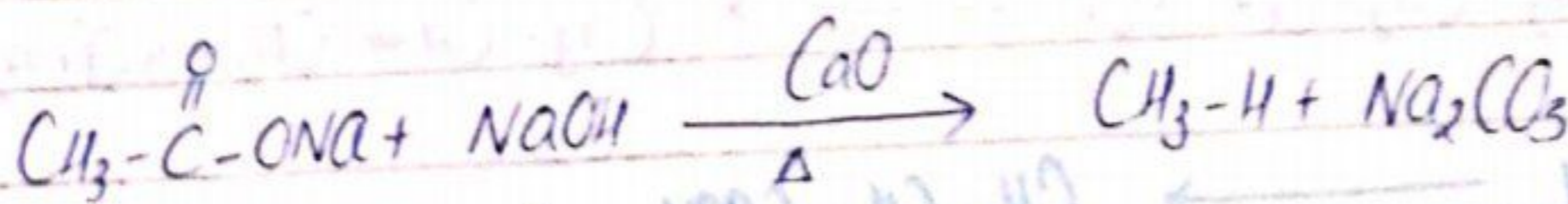
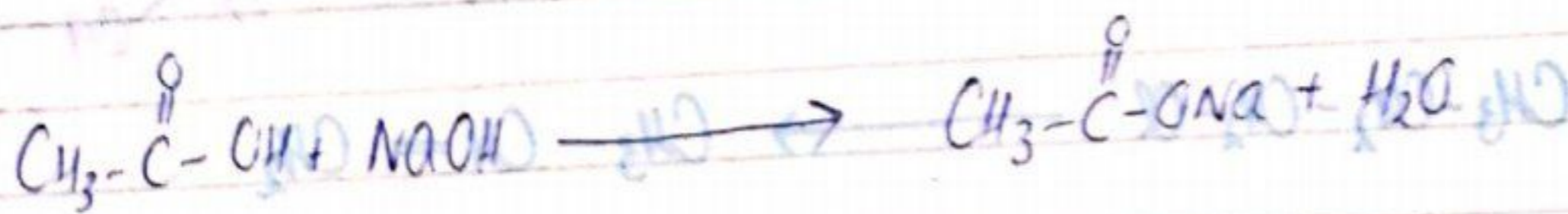
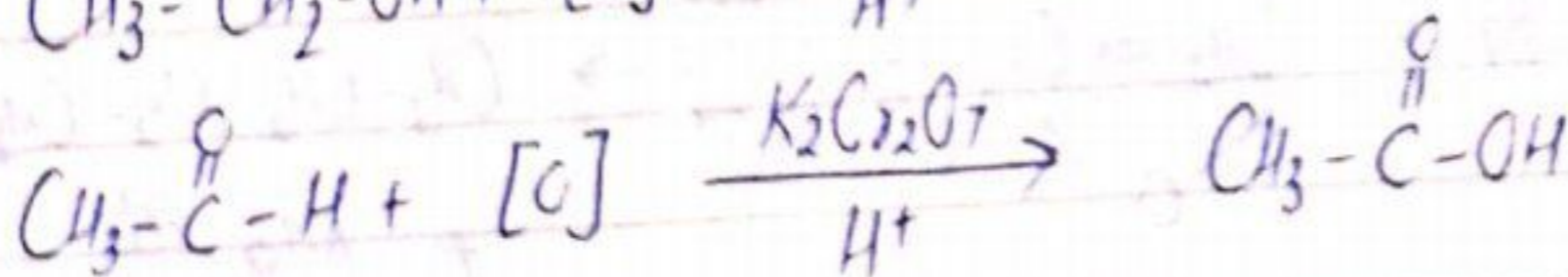
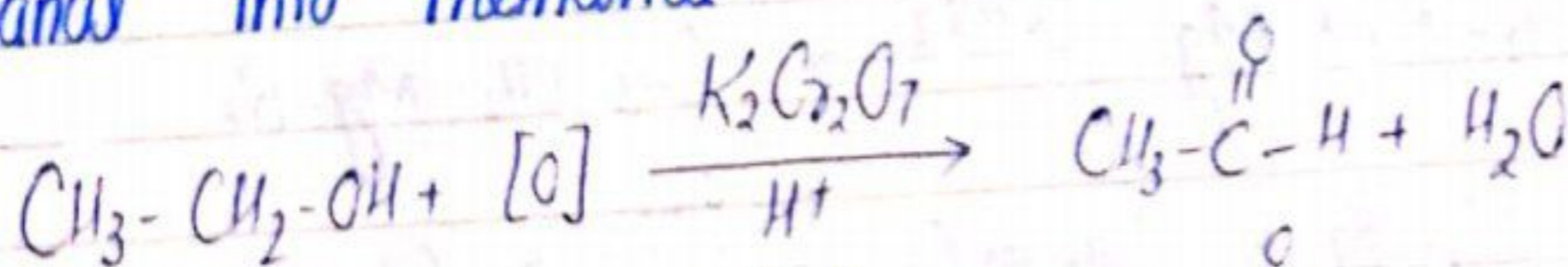
QUESTION 12

How will you convert

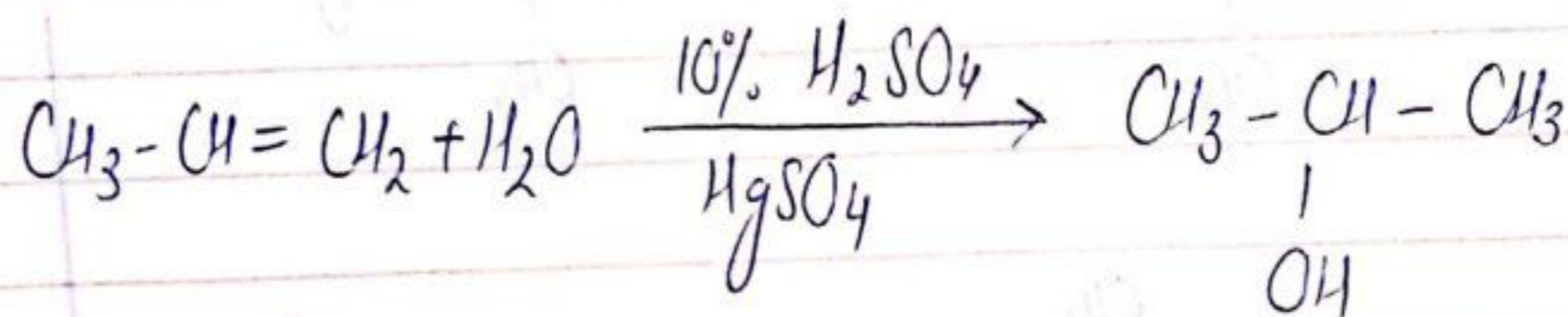
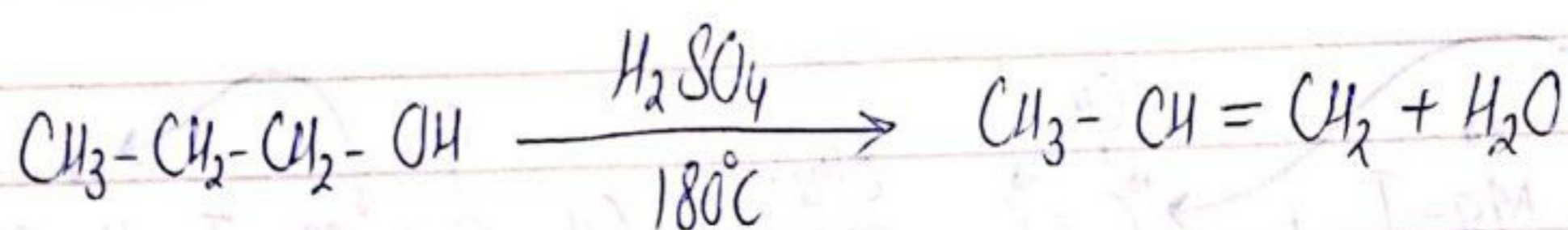
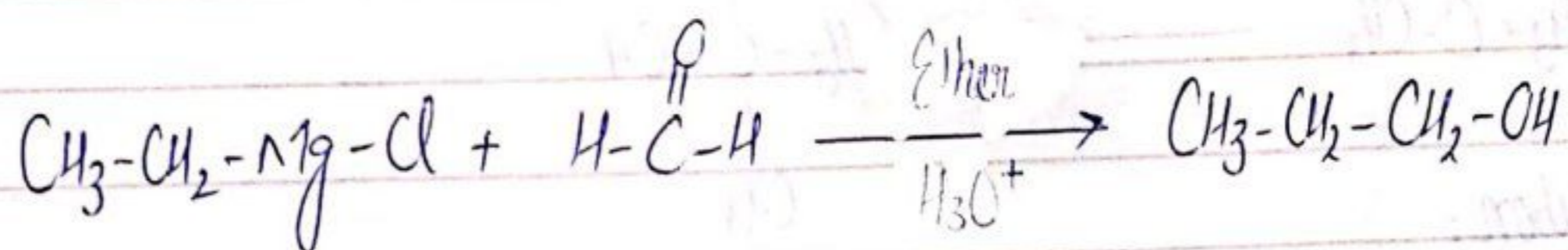
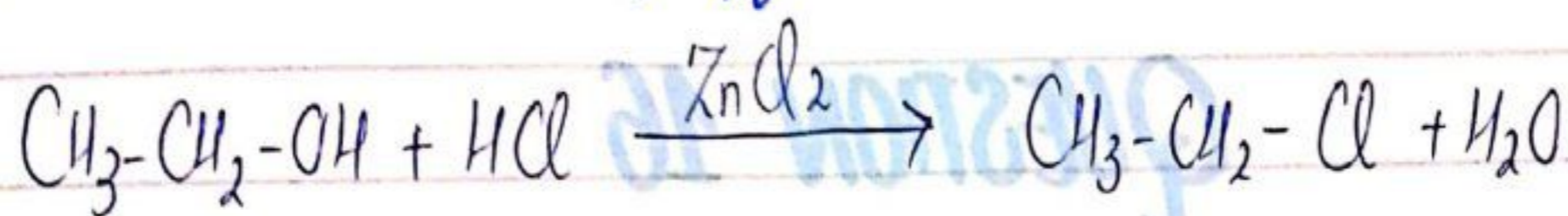
(i) Methanol into Ethanal



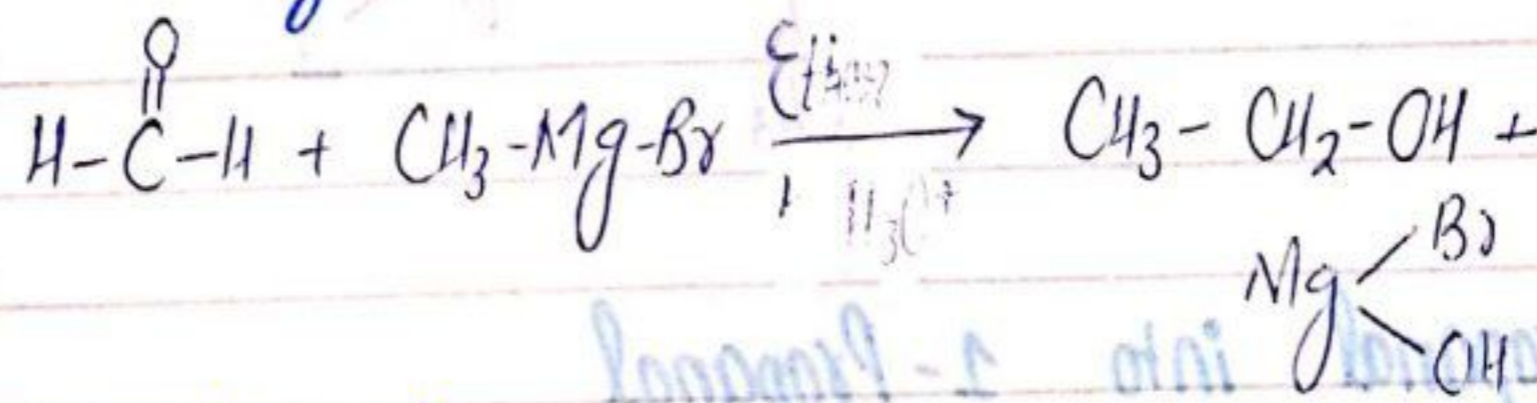
(ii) Ethanal into methanal



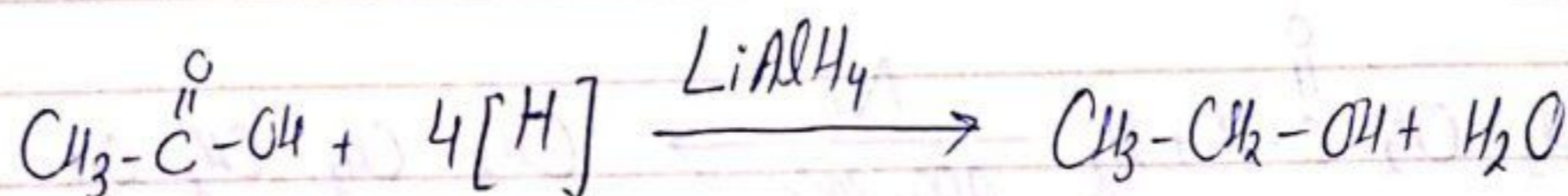
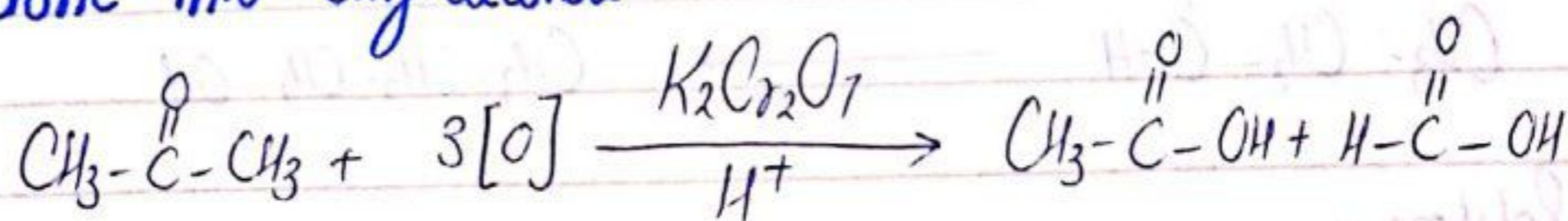
(iii) Ethanol into Iso-propyl alcohol



(iv) Formaldehyde into ethyl alcohol

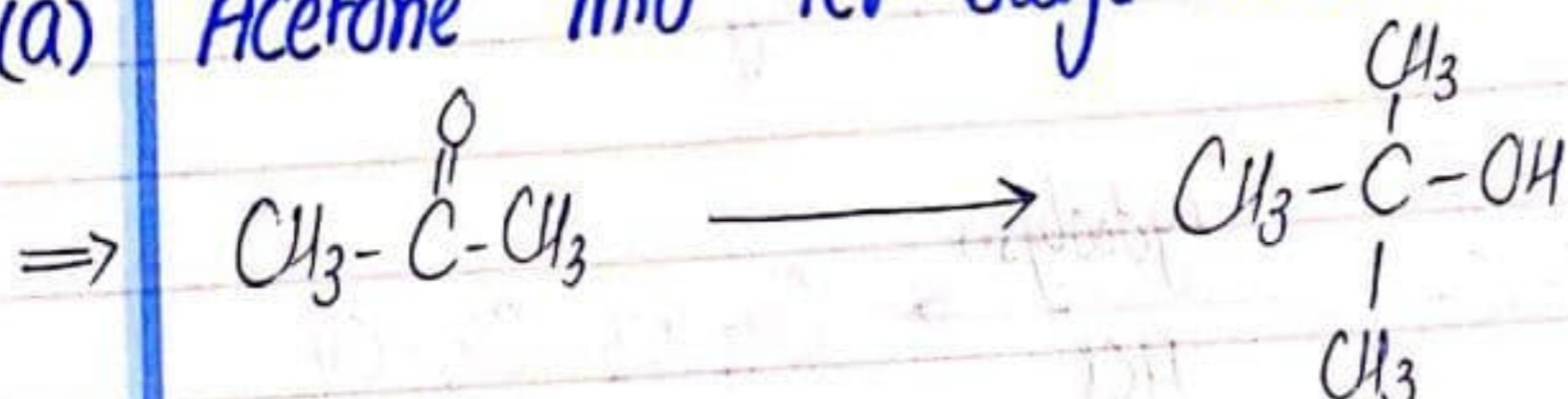
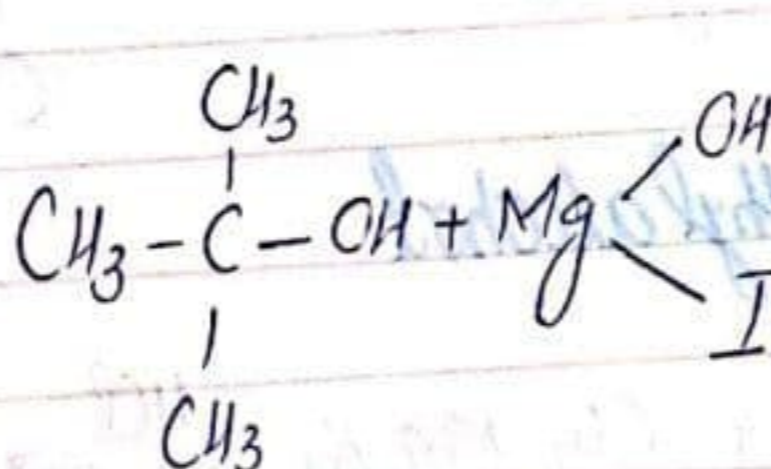
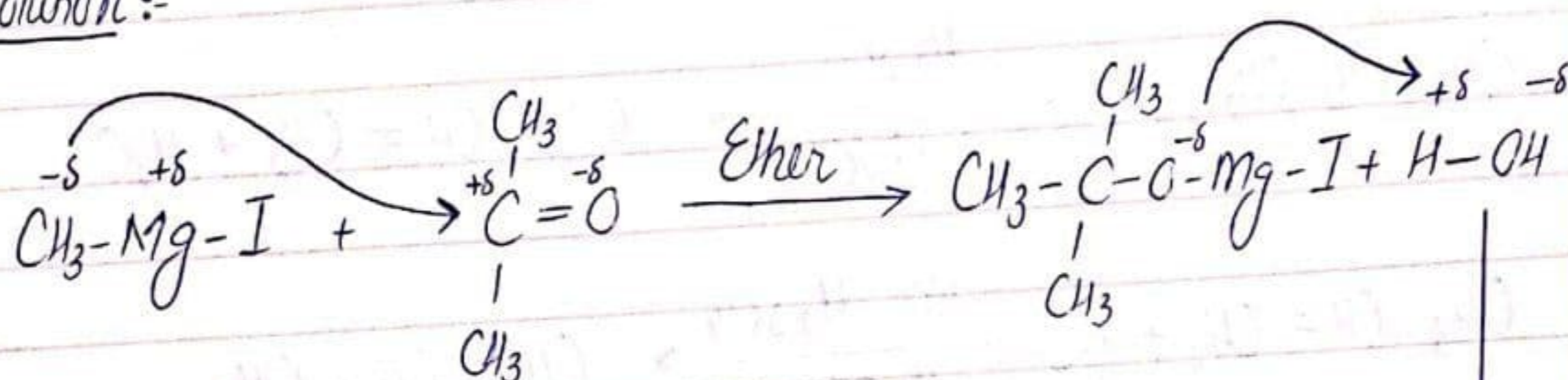


(v) Acetone into ethyl alcohol

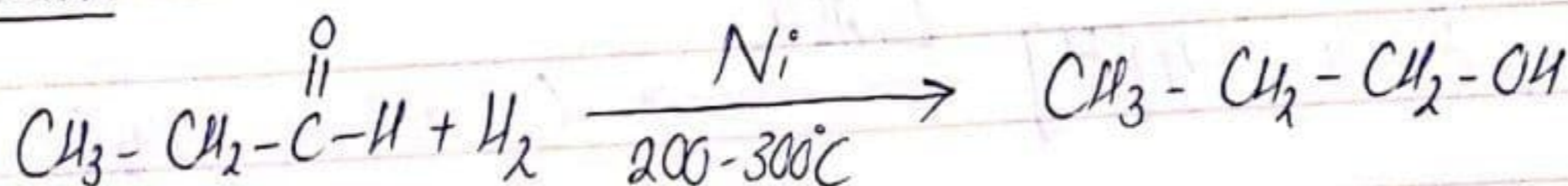


QUESTION 16

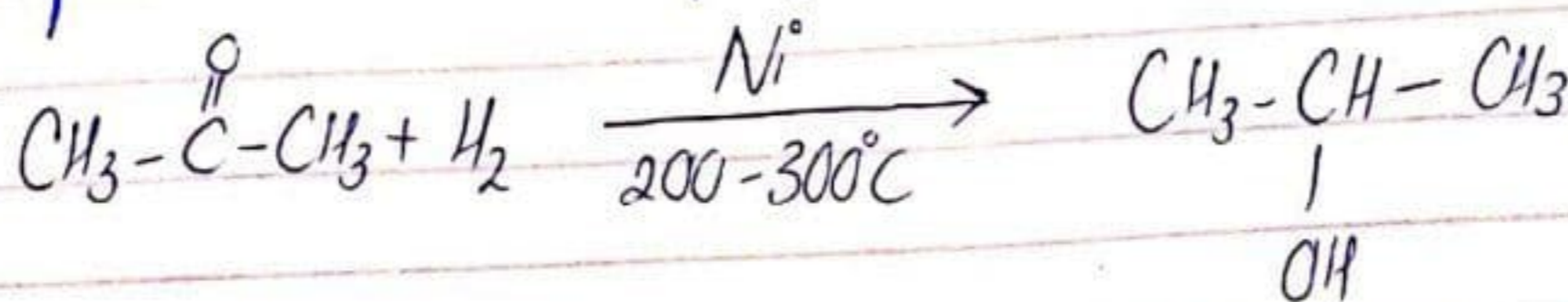
(a) Acetone into ter-Butyl alcohol

Solution :-

(b) propanal into 1-Propanol

Solution :-

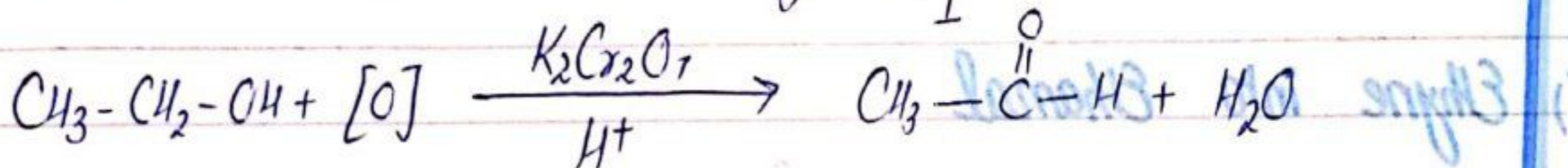
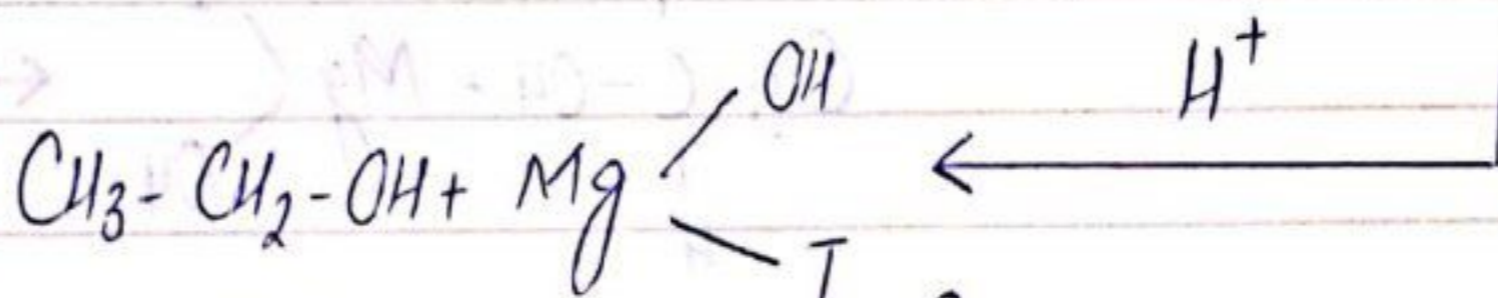
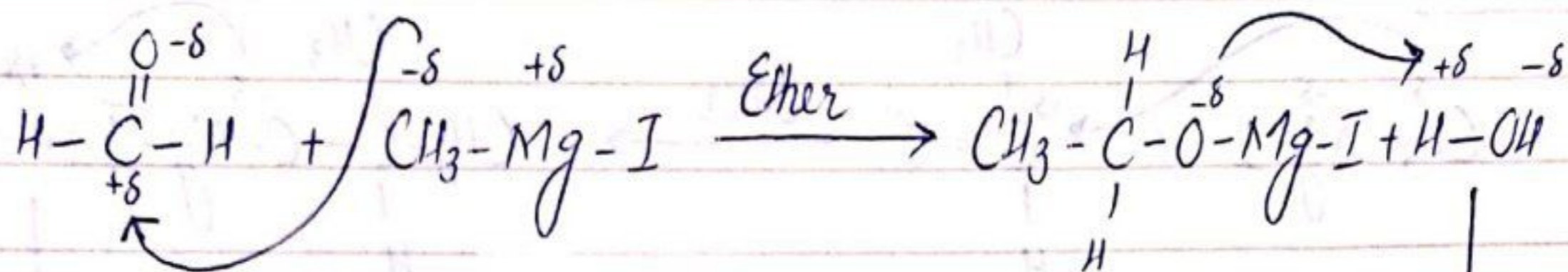
(c) Propanone into 2-propanol



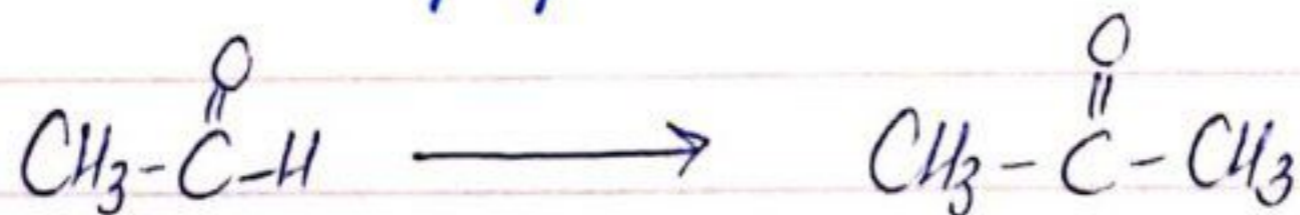
(iv) Methanal into Ethanal



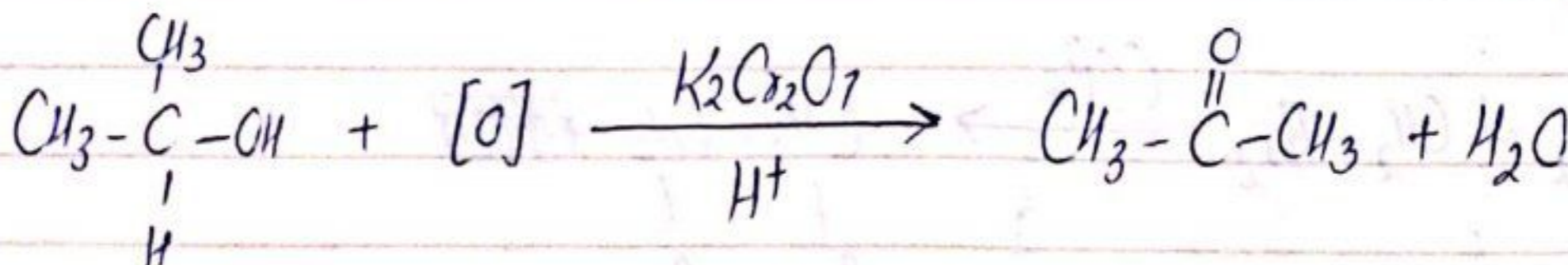
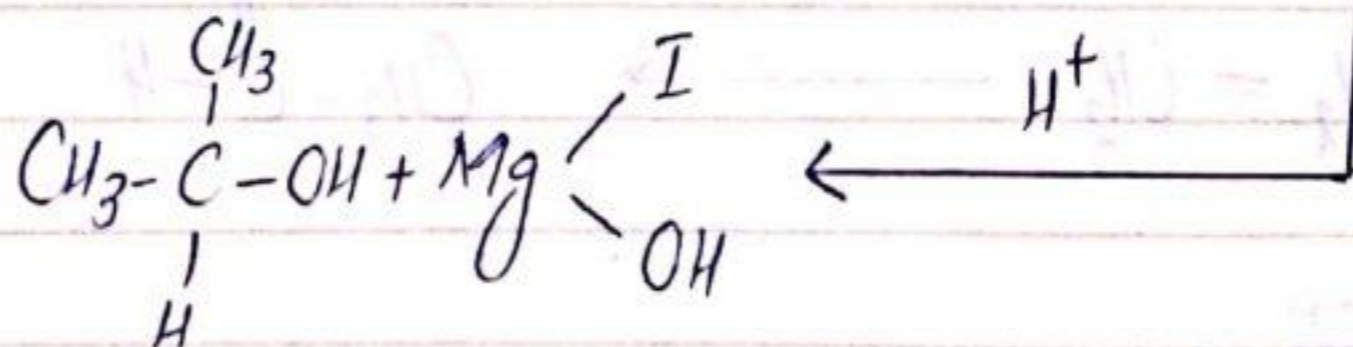
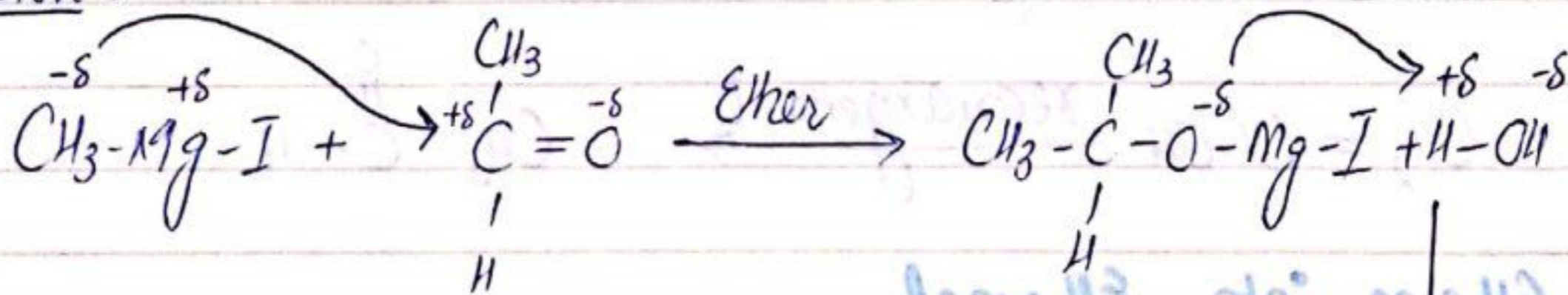
Solution :-



(v) Ethanal into propanone

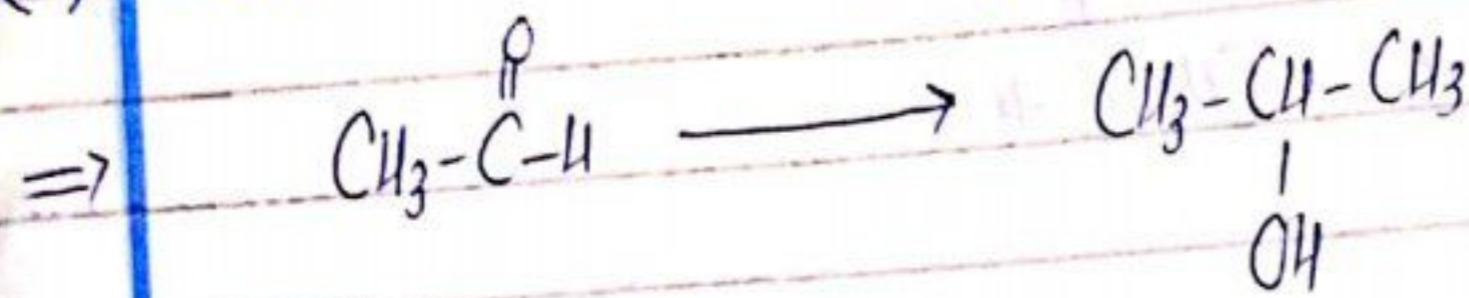


Solution :-

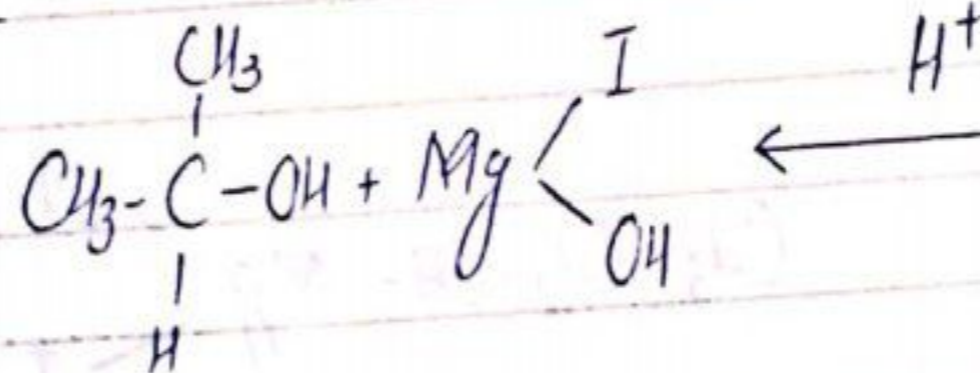
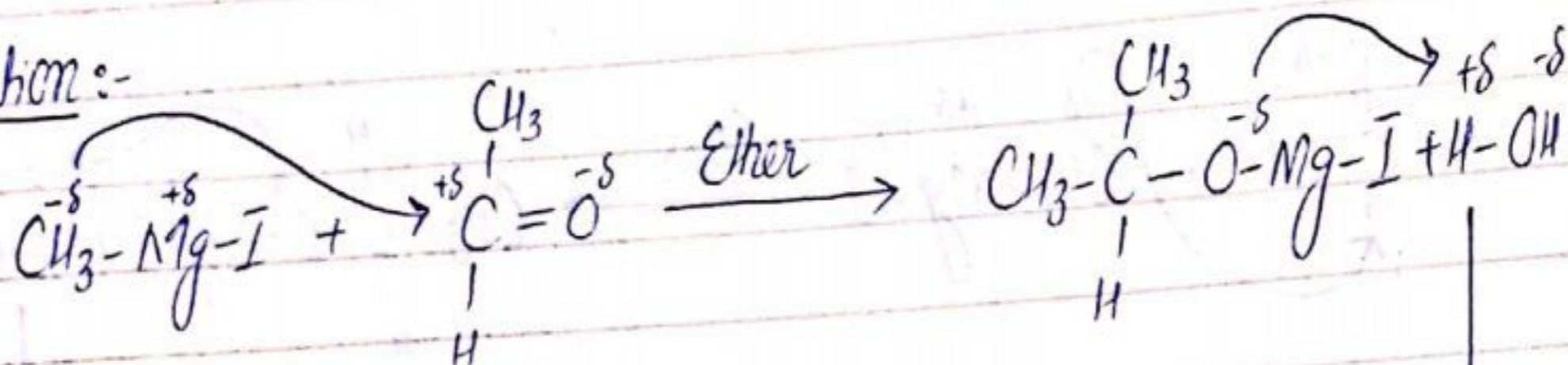


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(vi)

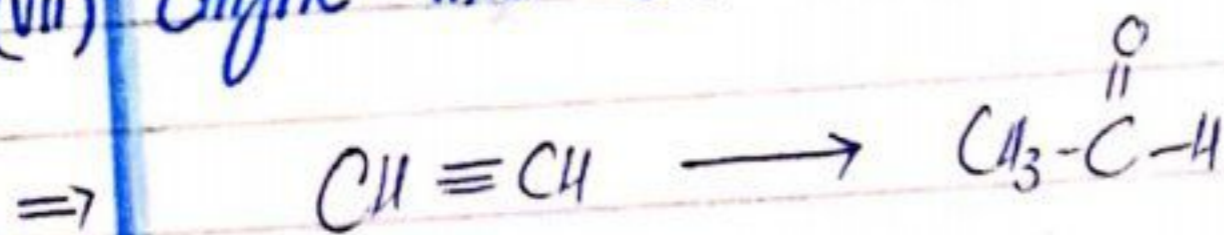
Ethanal into 2-propanol



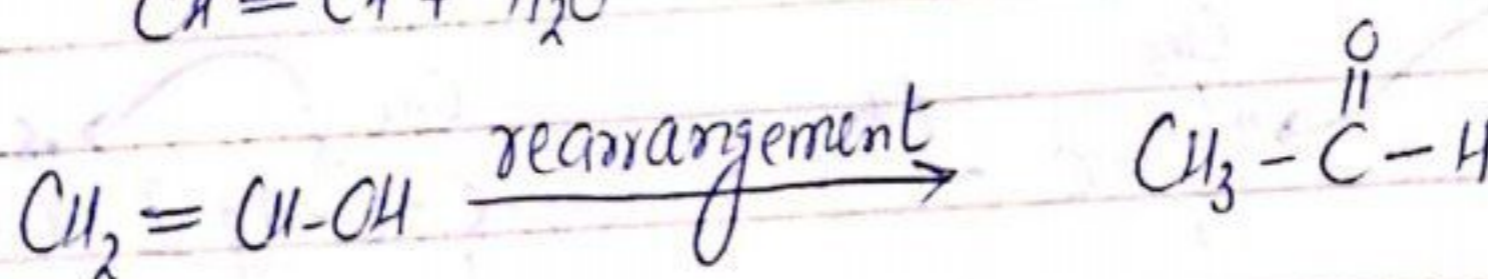
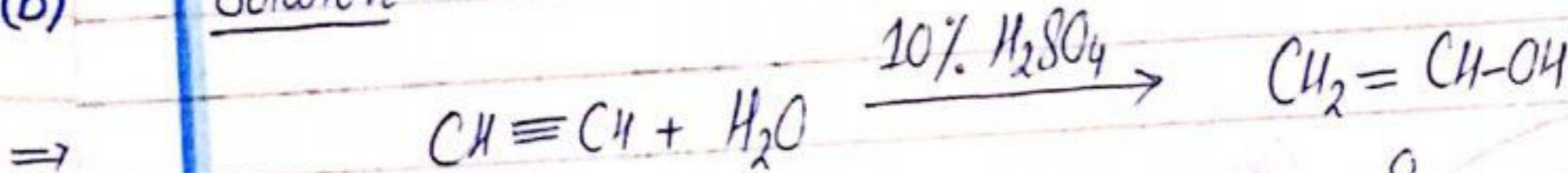
Solution :-



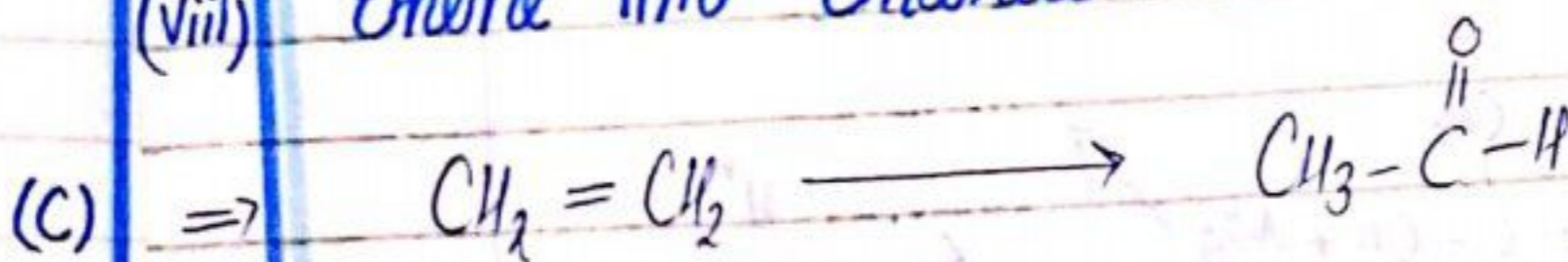
(vii) Ethyne into Ethanal



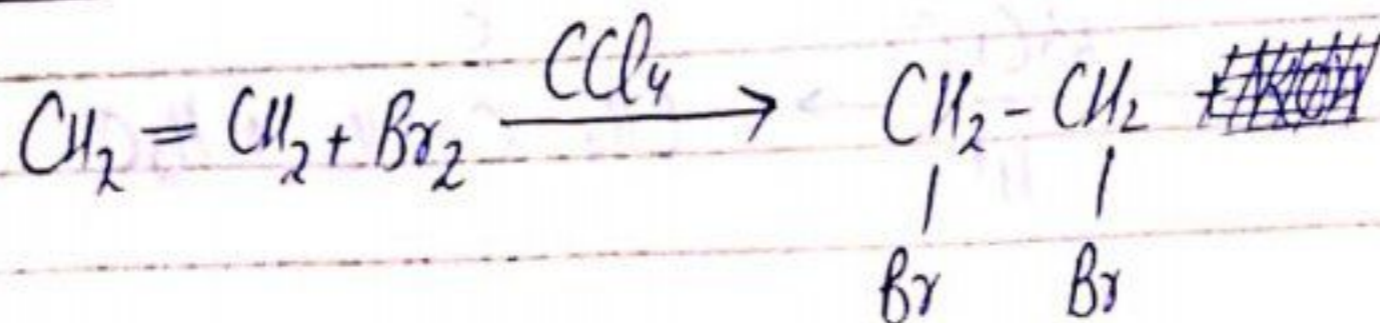
(b) Solution :-

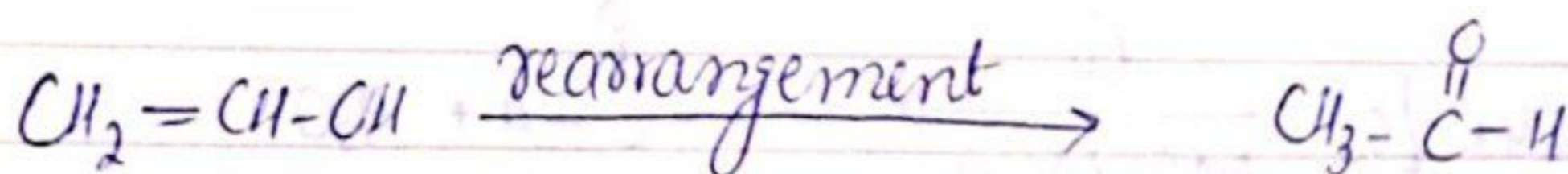
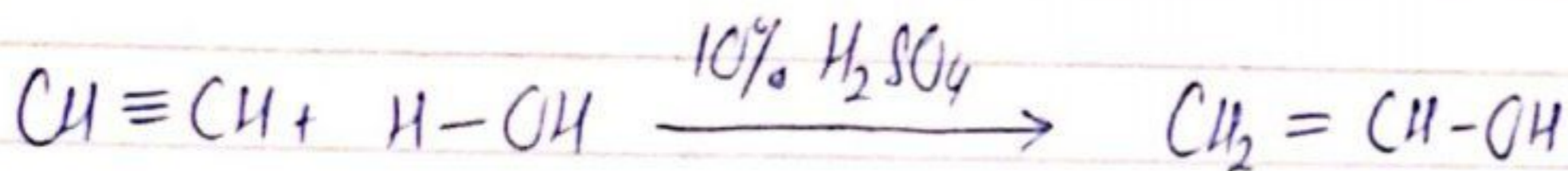
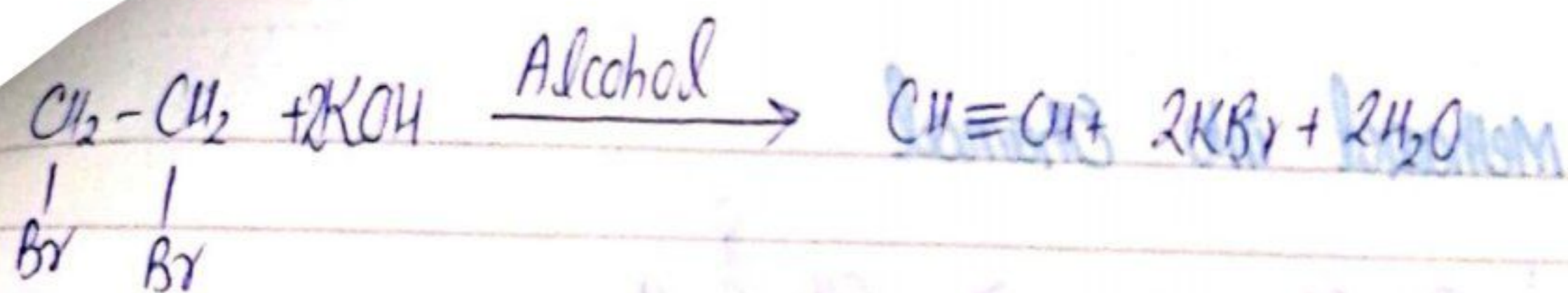


(viii) Ethene into Ethanal

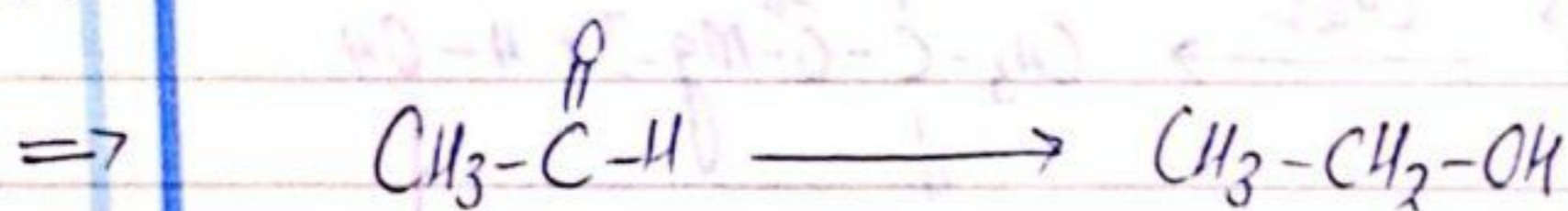


Solution :-

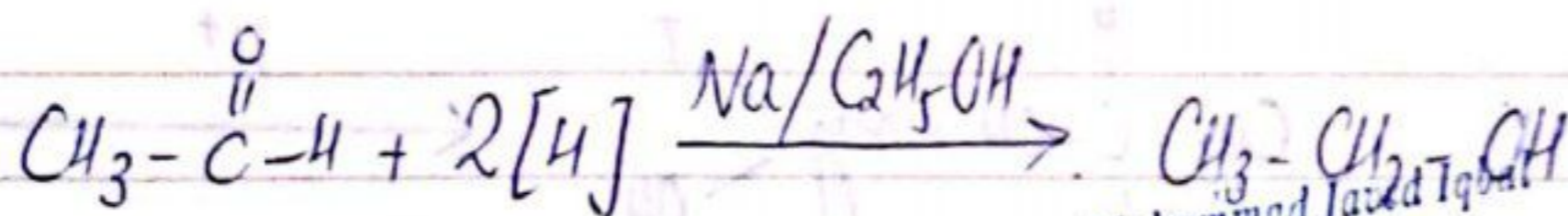




(ix) Ethanal into Ethanol



Solution :-

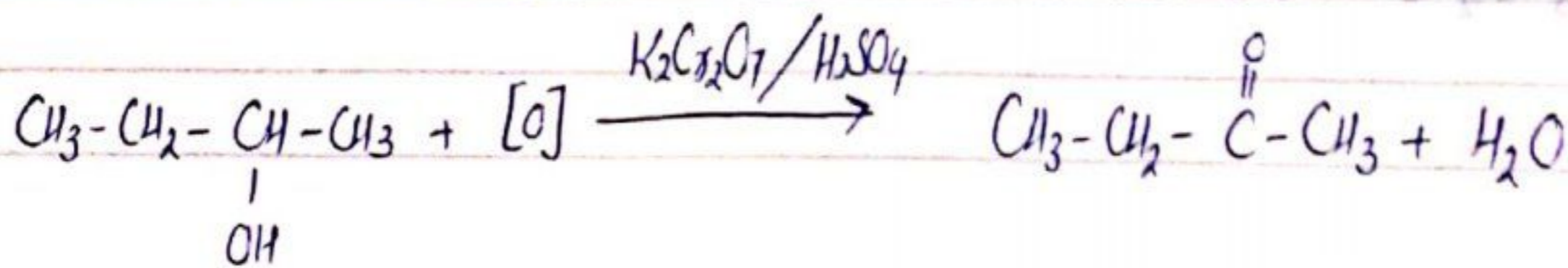
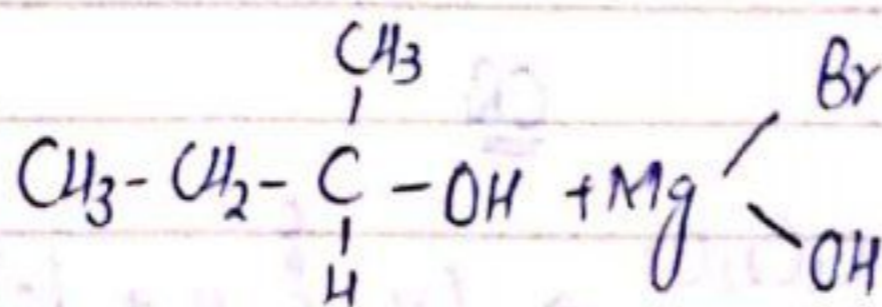
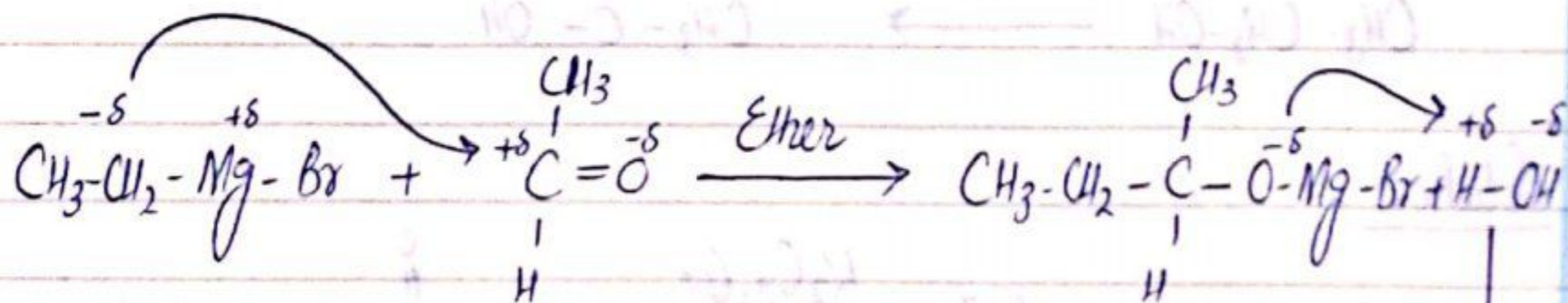


Muhammad Javed Tq
HOD Chemistry
Askara Colleges Rwp.

(x) Ethanal into 2-Butanone



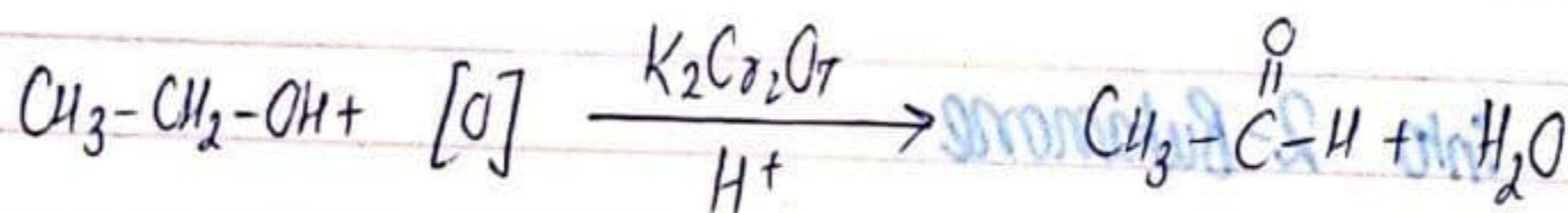
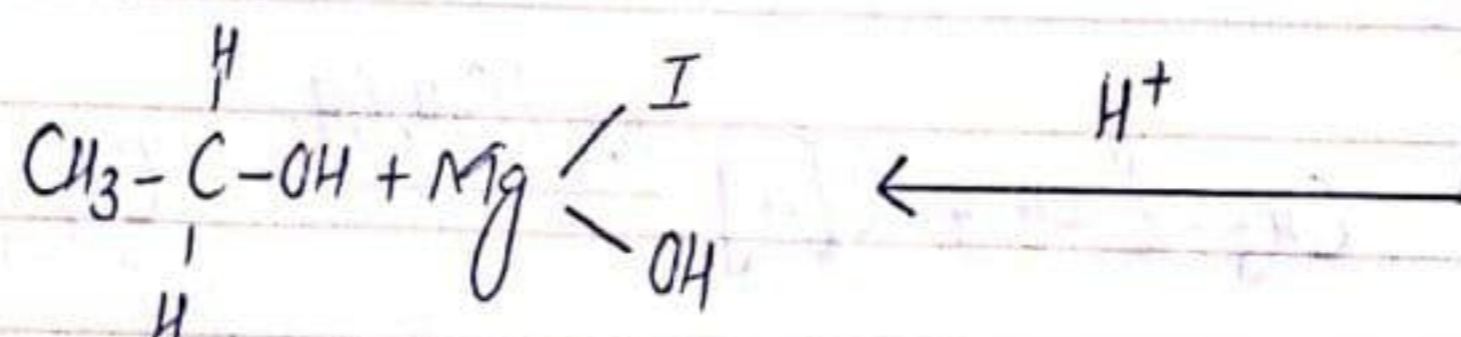
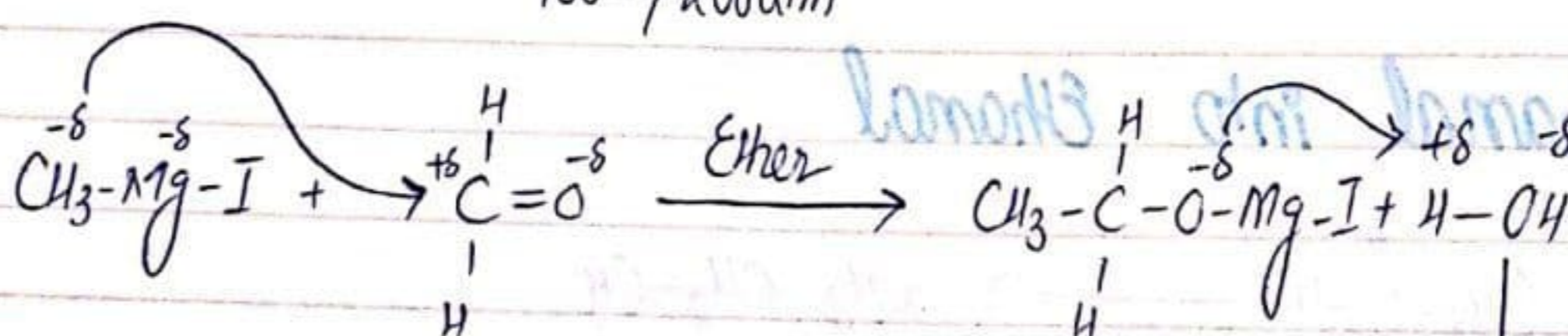
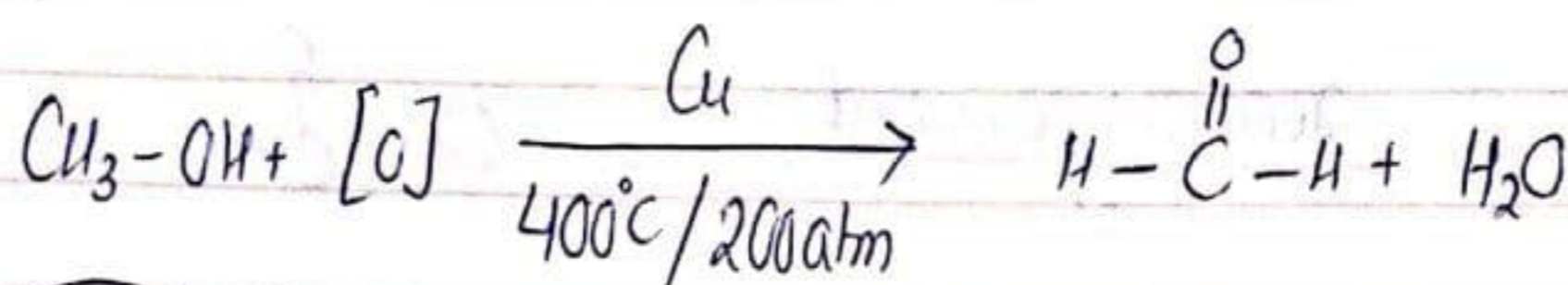
Solution :-



(xi) Methanol into Ethanal



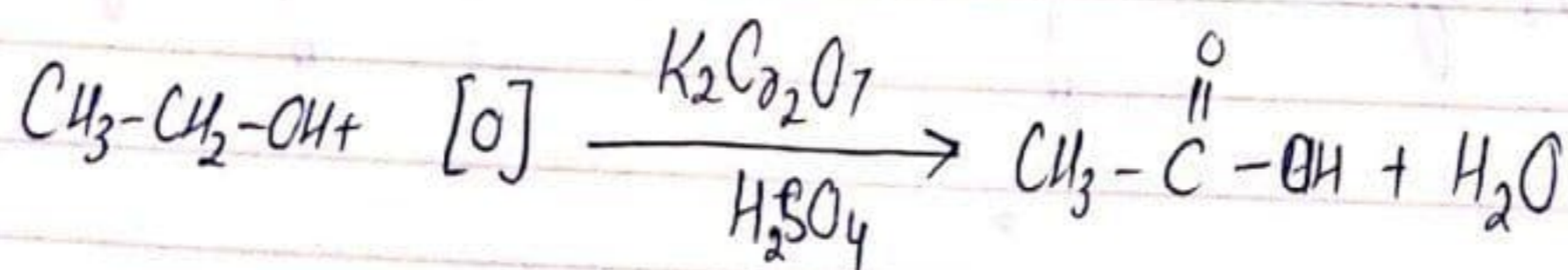
Solution :-



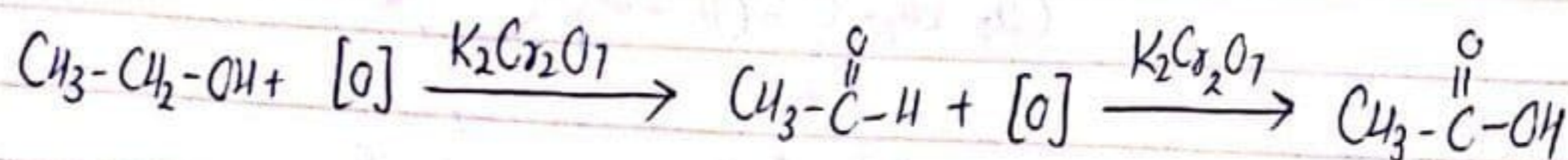
(xii) Ethanol into Ethanoic acid



Solution :-



OR



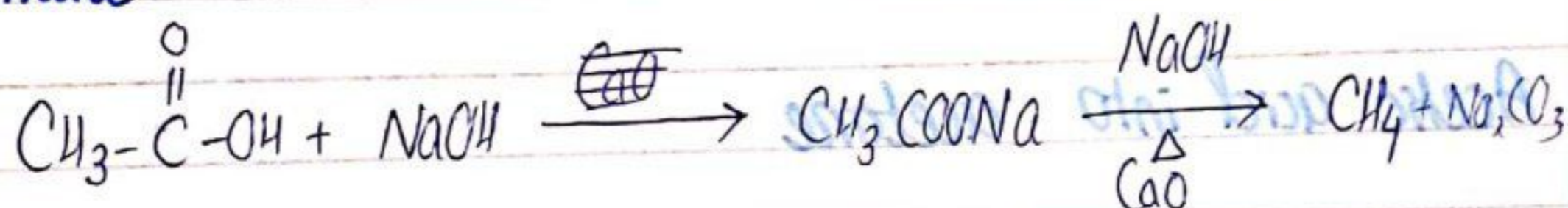
CHAPTER # 13

QUESTION 6

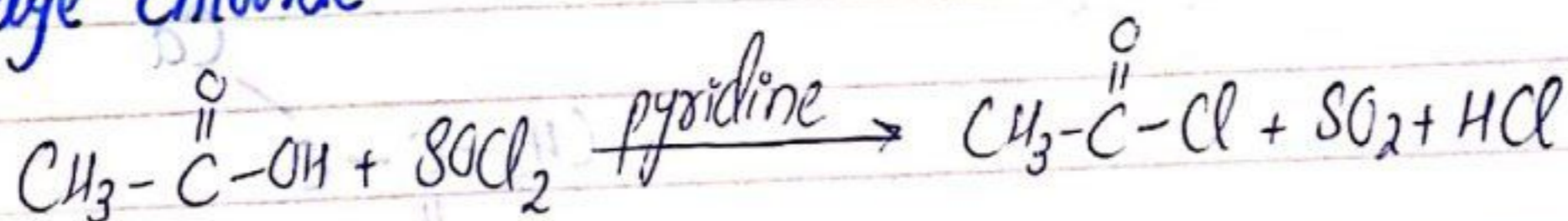
(b)

How would you convert acetic acid into the following compounds?

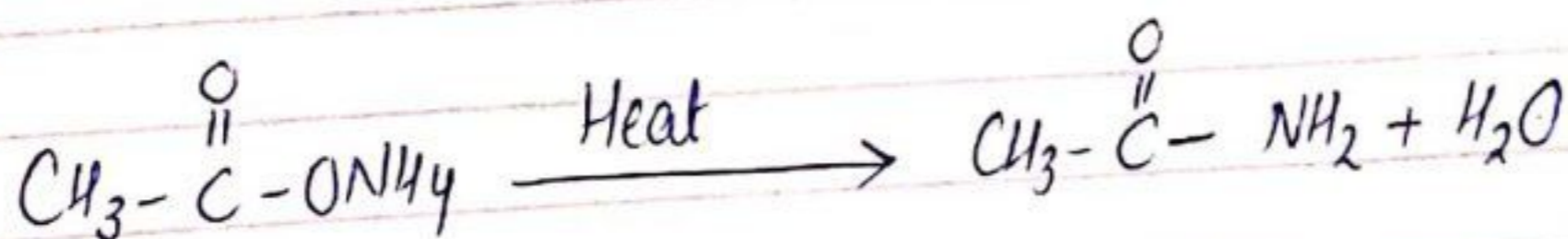
(i) Methane



(ii) Acetyl chloride



(iii) Acetamide



(iv) Acetic anhydride

