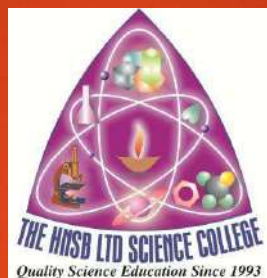


THE HNSB LTD SCIENCE COLLEGE HIMMATNAGAR



B.Sc. Sem-IV

SUBJECT : SUBJECT ELECTIVE

PAPER : CC CH 401A

TOPIC : NAME REACTION

BY

Dr. Z. M. GADHAWALA

Discussion Point:-

Course Outcomes :

- **Arndt-Eisterst Reaction**
- **Hoffman Reaction**
- **Diels-Alder Reaction**
- **Aldol Condensation**

NAME REACTION

• Arndt Eistert, Hoffmann, Diels-Alder,

Dr. Z. M.
Gadhwal

① आर्न्ट-आइस्टर्ट युकिया :

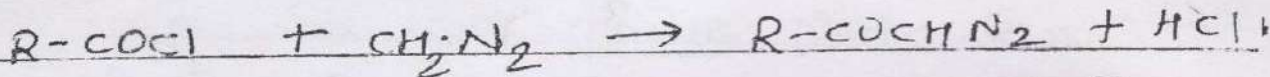
• Arndt-Eistert Reaction :

→ Arndt : सायनेडाइमिथेन वा $-CHO$, $-CO-$ & $-COCl$ साथेना युकियावा आर्याय

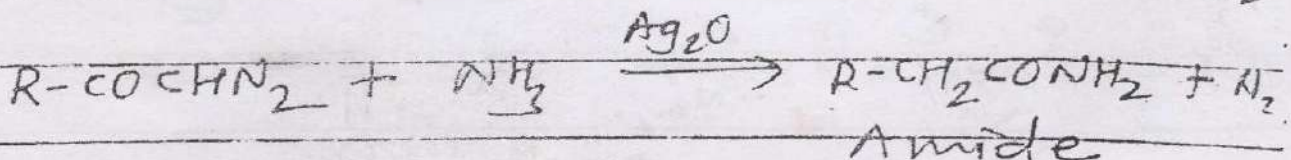
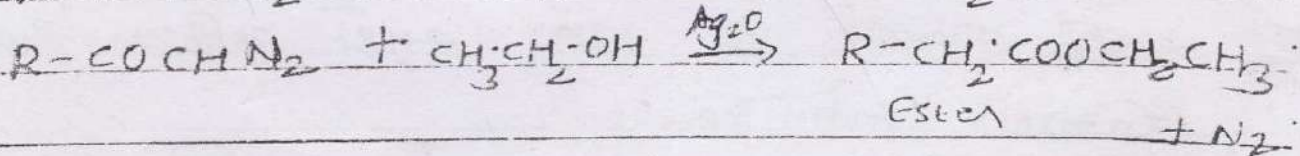
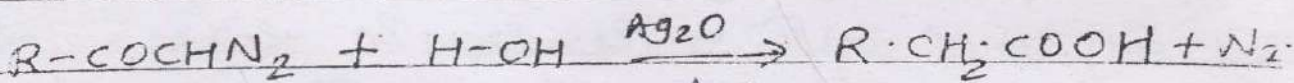
Eistert : सायनेडाइमिथेना रंग & जंदाएल वा आर्याय

• सिद्धांत : अल्डिहाइड, अल्डिहाइड, अल्डिहाइड, विषमयुक्तिक रसिस → समाजधमं ब्रुवा वा अल्डिहाइड रसिस

• युकिया :

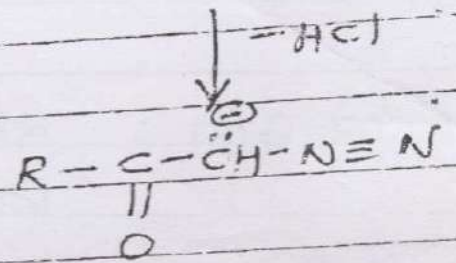
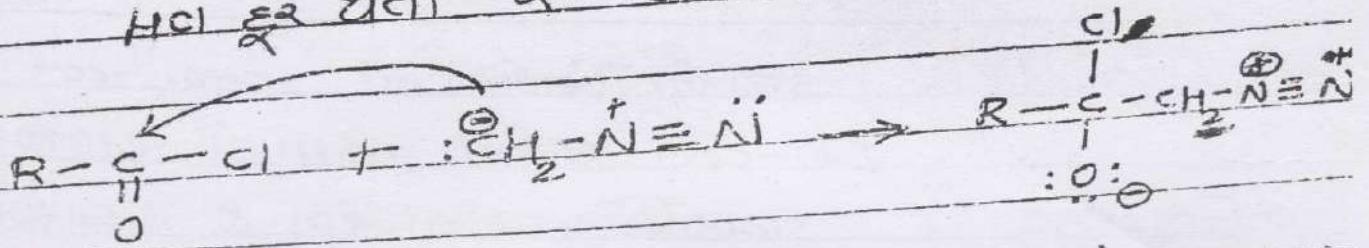


α -सायनेडाइमिथेन



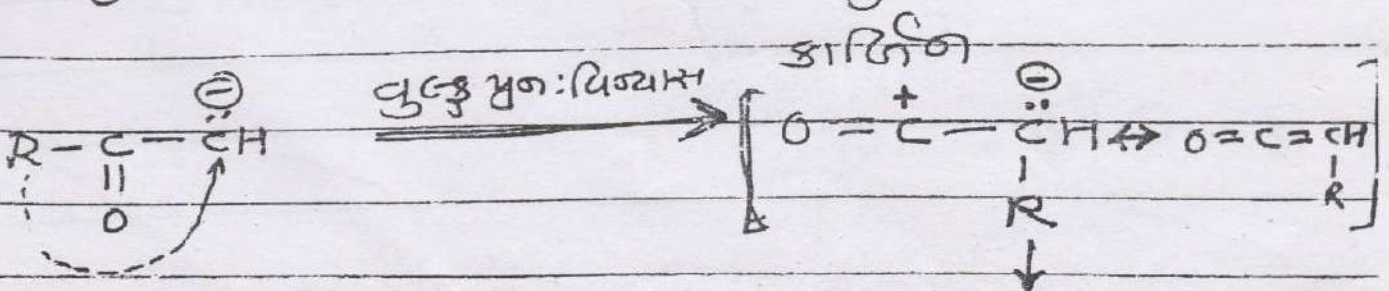
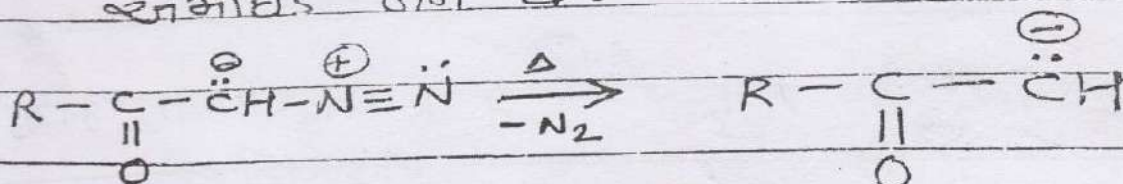
• क्रियाविधि :

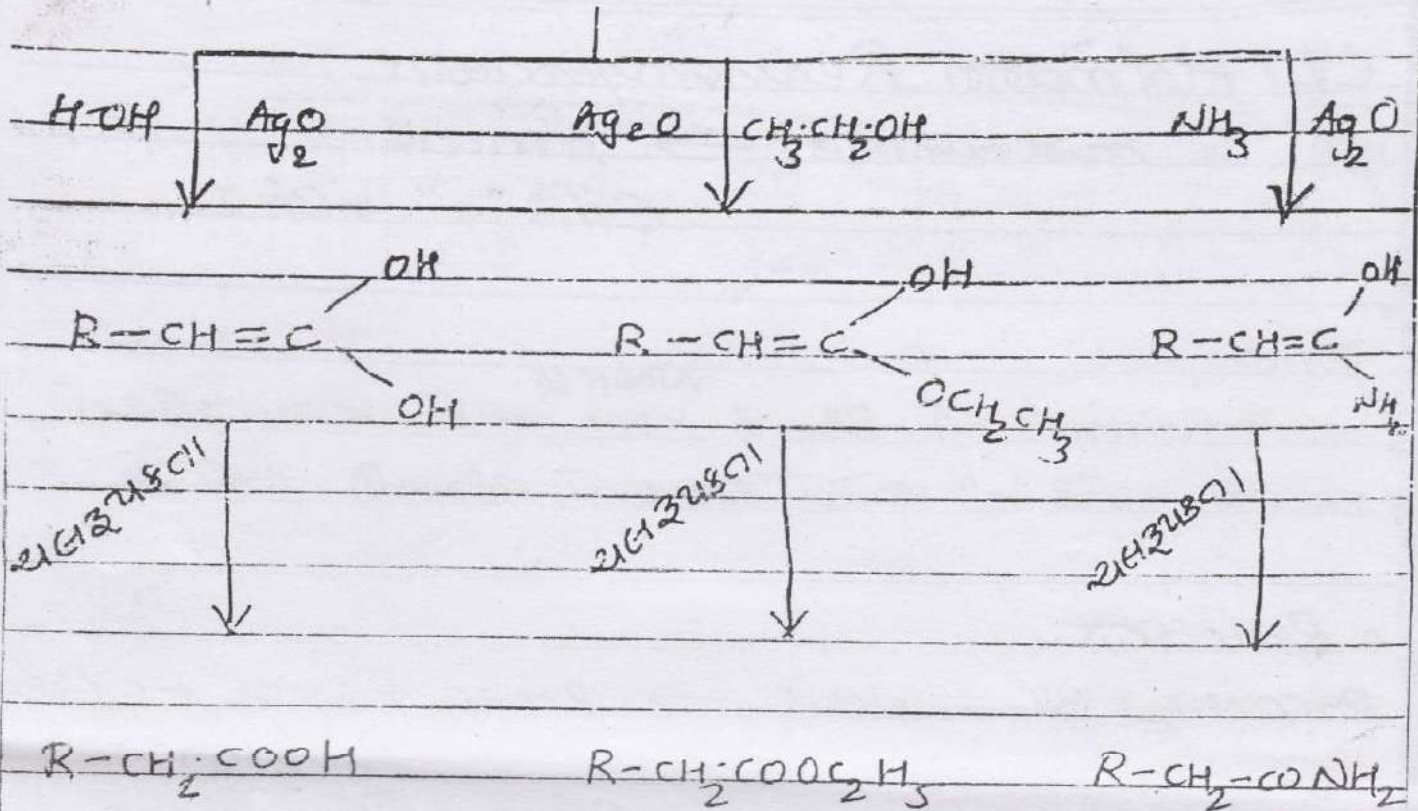
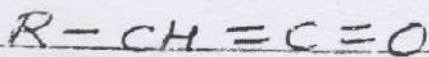
(I) સાયસોક્ષોમિથોને કાર્બોનિલ કાર્બન પર attack કરે છે તો આ મધ્યસ્થ તબક્કા બને છે જેમાં HCl દૂર થવા α-સાયસોક્ષો કિટોને બને છે



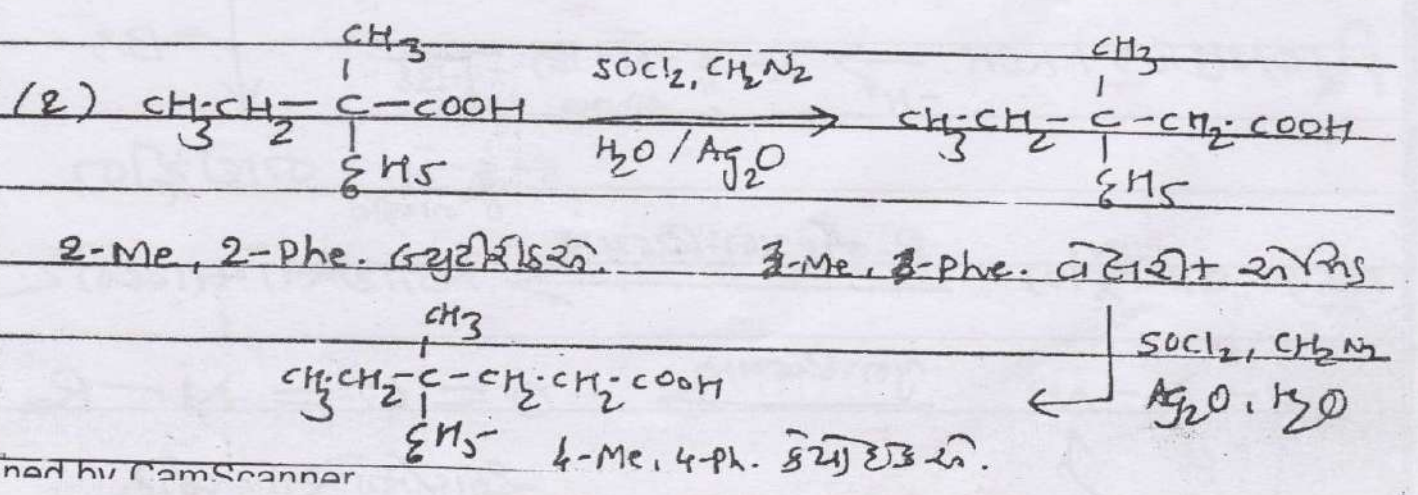
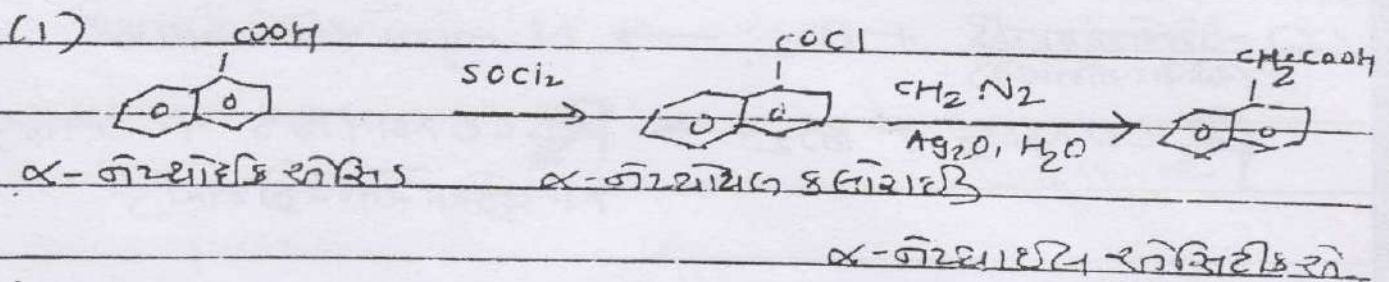
α-સાયસોક્ષો કિટોને

(II) α-સાયસોક્ષો કિટોને નું વિદ્યતન દ્વારા N₂ દૂર થાય છે. આથી કાર્બોન બને છે. જેમાં R નું સ્થાનગતર [વુલ્ફ મુન: વિ.] દ્વારા કિટોને બને છે. જેનું પાલ સાથે જ. પિ. દ્વારા સોસિડ, આલ્કોહોલ સાથે સોસ્ટર & NH₃ સાથે યુક્તિયા દ્વારા સોમાઈડ બને છે.





* ઉપયોગો :



1 Naphthoic acid Use :

Intermediate for synthesis of pharmaceuticals, plant growth hormones, dyes.

1 Naphthyle acetic acid :

used in agriculture for (cellulose fiber formation in plants). Also used to stop premature fruits dropping on trees.

<https://youtu.be/xO0PLb1X3ek>

<https://youtu.be/xO0PLb1X3ek>

(2) Hofmann Rearrangement :

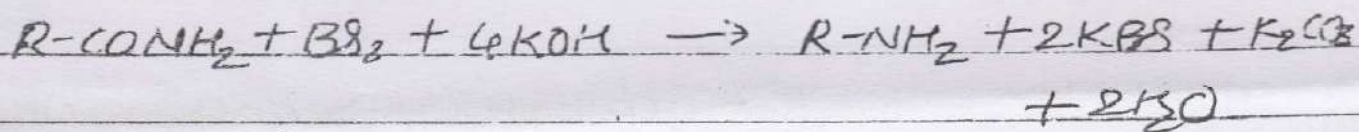


(एक "C" आबे)

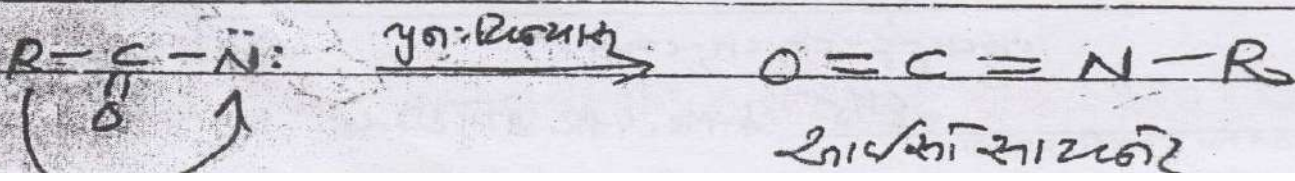
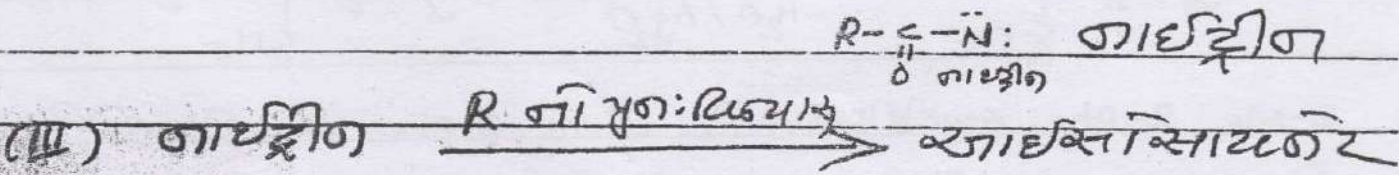
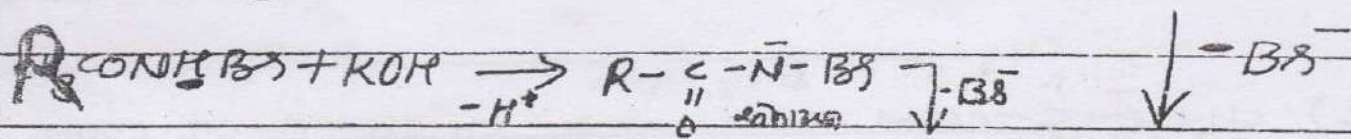
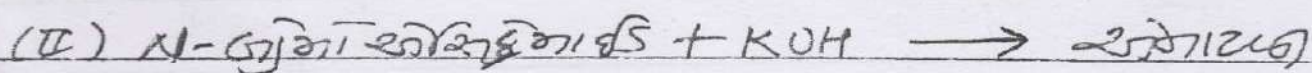
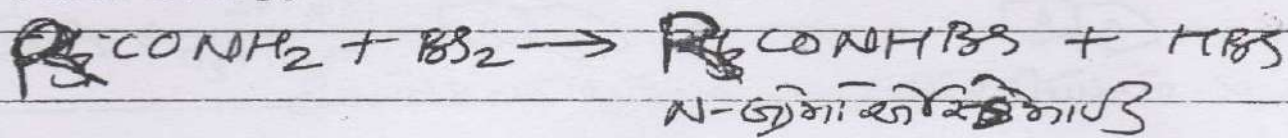
Principle :

असिड-अमीडस वा Br_2 & KOH साथ रासा. प्रतिक्रिया कराई आउं "C" आबे हरावता-अमीडस बनैतै.

• Reaction :

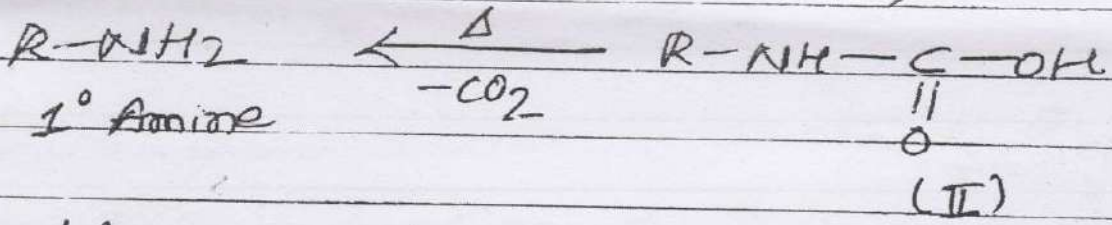
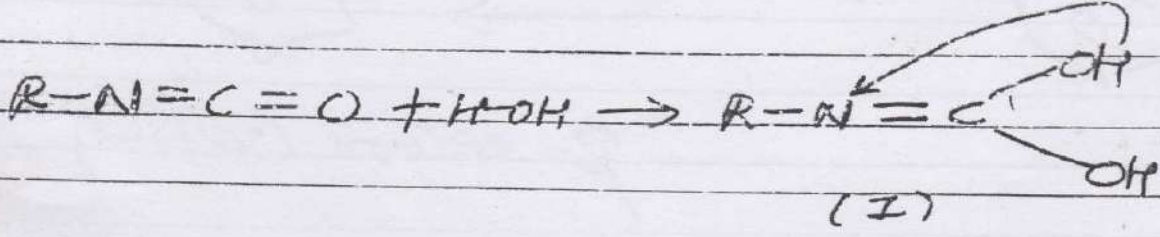


• Mechanism :



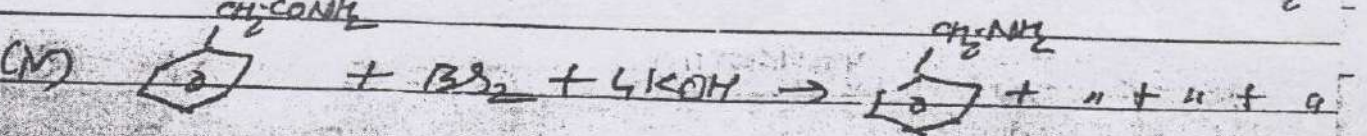
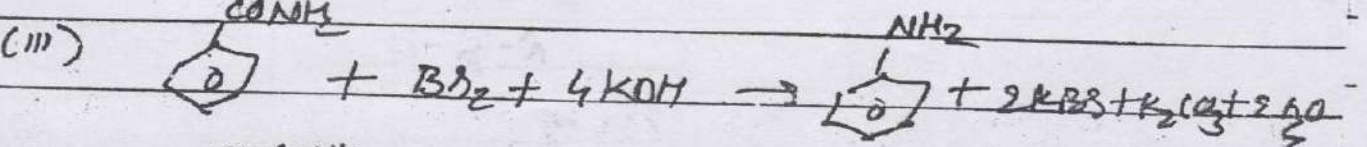
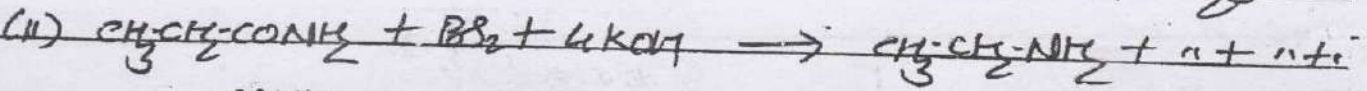
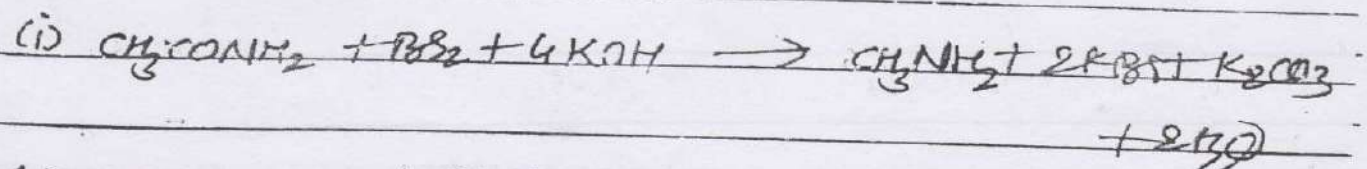
(iv) R-NH-CO-NH-R (डाइडाइड्रॉइड्स) $\xrightarrow{\text{H. प्र.}}$ R-NH-CO-NH-R (II)

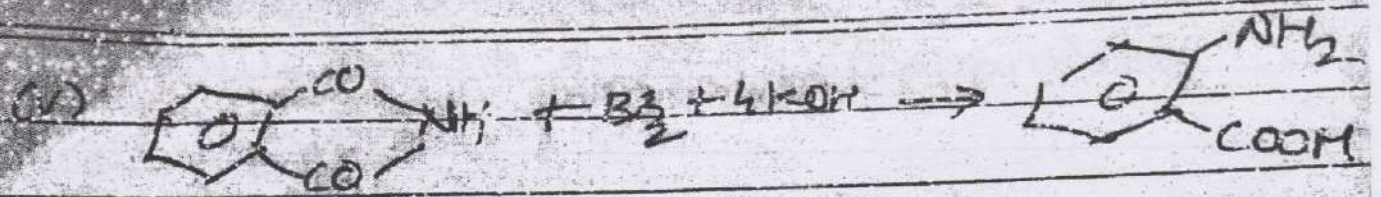
R-NH-CO-NH-R (II) $\xrightarrow[-\text{CO}_2]{\Delta}$ R-NH_2 (I° Amine)
(डिडाइड्रॉइड्स)



• Uses :

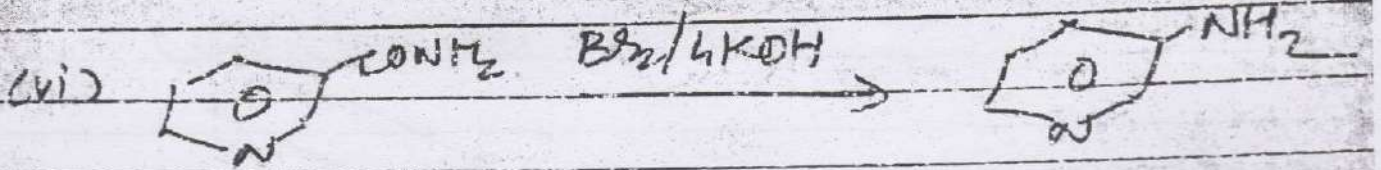
(i) For preparation of I° Aliphatic/Aromatic Amine:





2-थोडीस-एनोनाइड

इन्डोएनाल अम्ल



β- एनोना (पुडीस)

(viii)

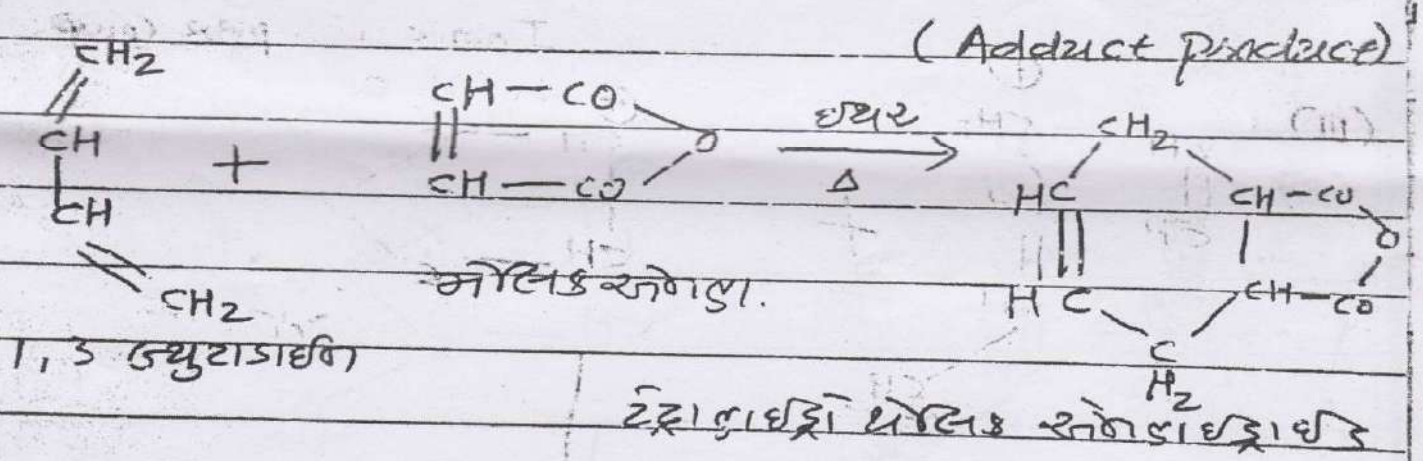
<https://youtu.be/0v0qRkWOPn4>

(3) Diels-Alder Reaction OR Diene Synthesis

• Founders : Diels & Alder
1950 Nobel Prize.

• Principle : 1,3-डाइएन + मोलिक्यूलोफिलेन → 6-संस्थावाणु संयोजक
1,3-डाइएन सायकलॉपेन/मोलिक्यूलोफिलेन/अल्फा, बेटा, गामा, डेल्टा/सिक्लोहेक्सेन।

• e.g. 1,3-डाइएन + मोलिक्यूलोफिलेन $\xrightarrow[\Delta]{\text{उत्पन्न}}$ ट्रेडाइड्रो टोलीफेन-डाइड्रो

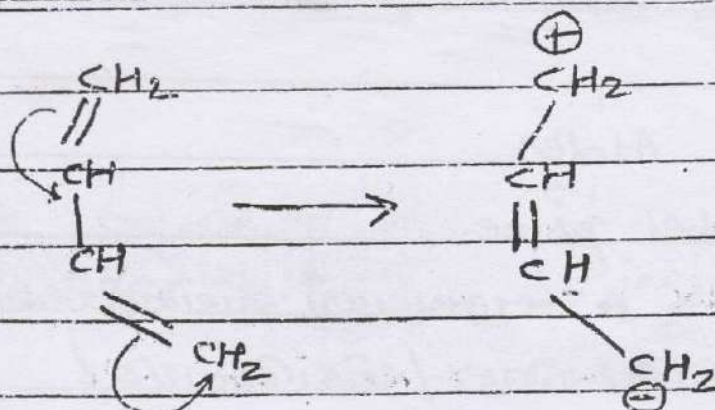


→ जहाँ एथिलीनिक द्विबंध धरावता संयोजनमां द्विबंध नी गणुं केम CO नी संख्या वधु लेम सा प्रक्रियाकी क्रियाशीलता पधे हे.

• Mechanism

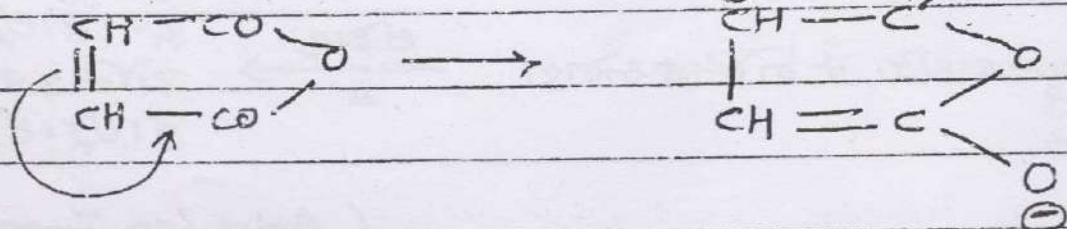
सुसुधन संयोजक
(Transition)

(I)



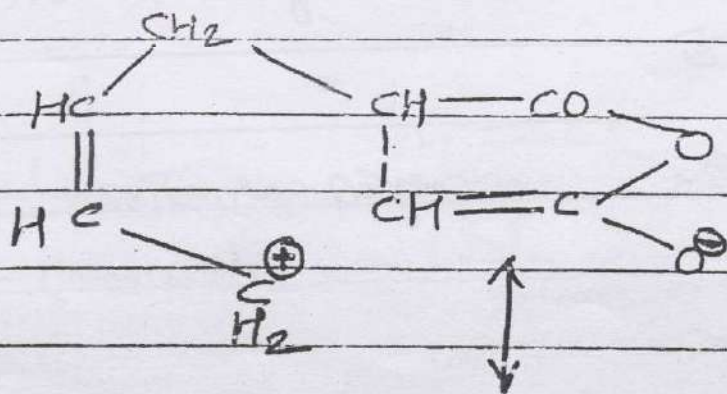
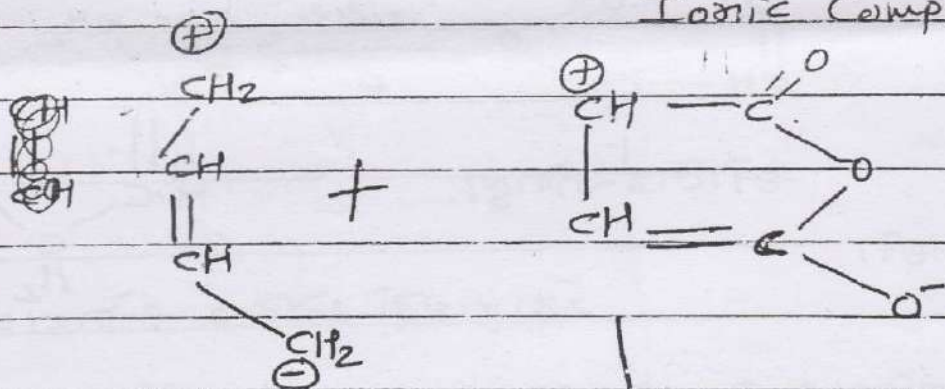
Ionic Complex
Comp.

(II)

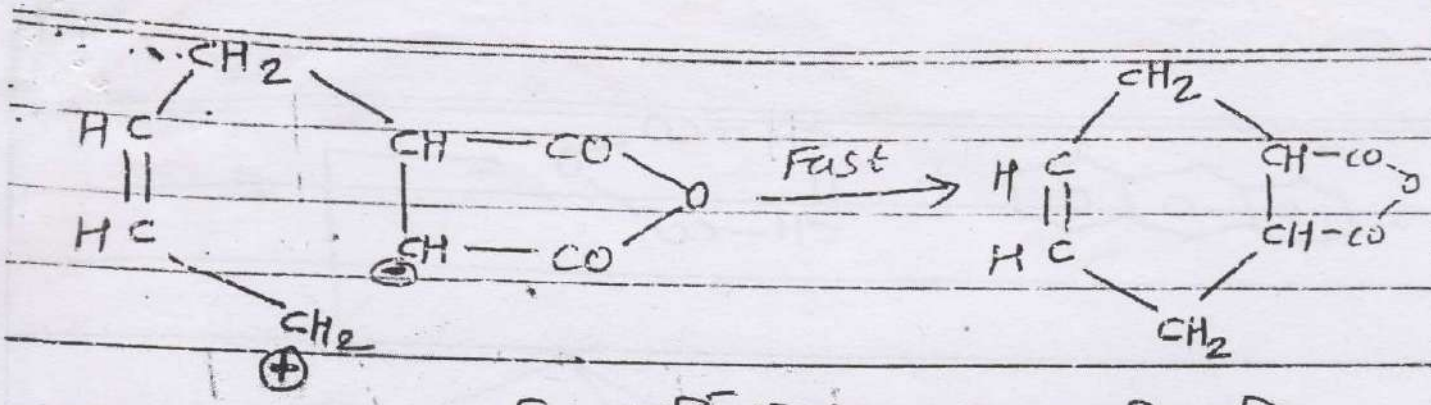


Ionic Complex Comp.

(III)



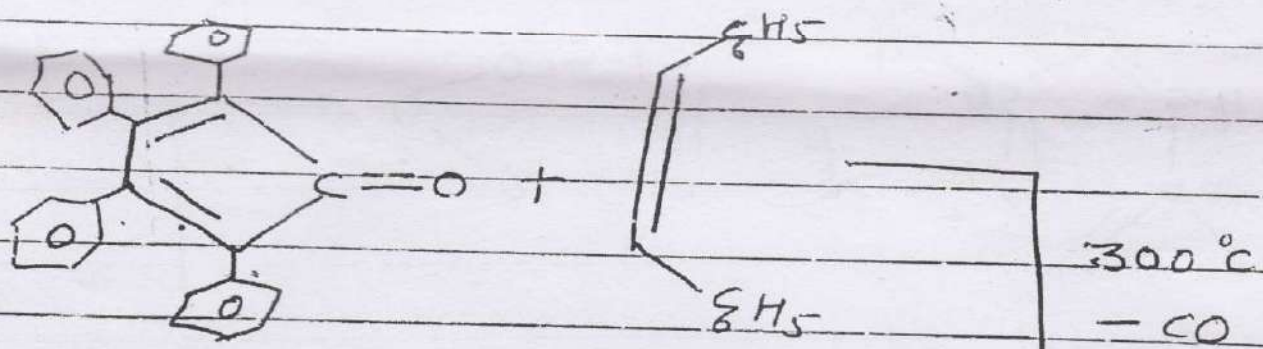
(211801)



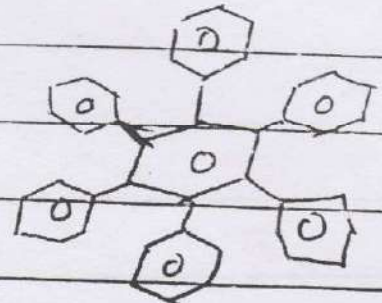
દ્રા ડાઈડ્રા યાહાં સભાયા ઇદ્રા ઇડ

- * આ પ્રક્રિયા સરળ & ઝડપી
- * આ પ્રક્રિયા વખરાવા ડાઈ ડાઈ ડેટલાં પ્રક્રિયામાં વખરાવા છે
- * તે સક્રિય દ્રાવણમાં ઘાટા છે
- * તે ઉચ્ચાંતરિત છે

* Uses : (1) For preparation of ^{Hexa} ~~Tetra~~phenyl Benzene

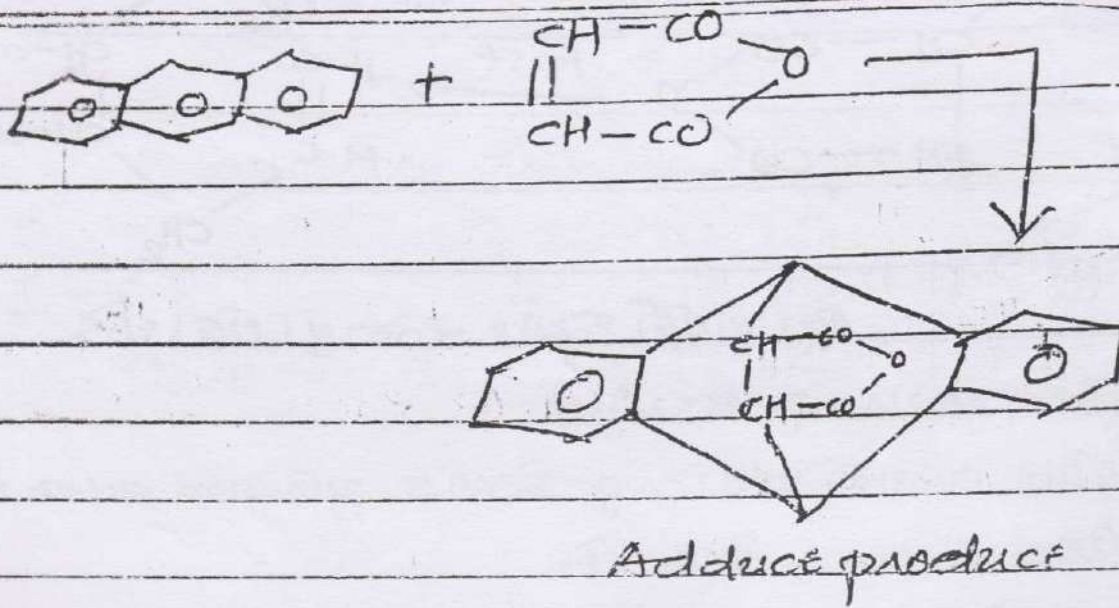


Tetraphenyl pentadienone

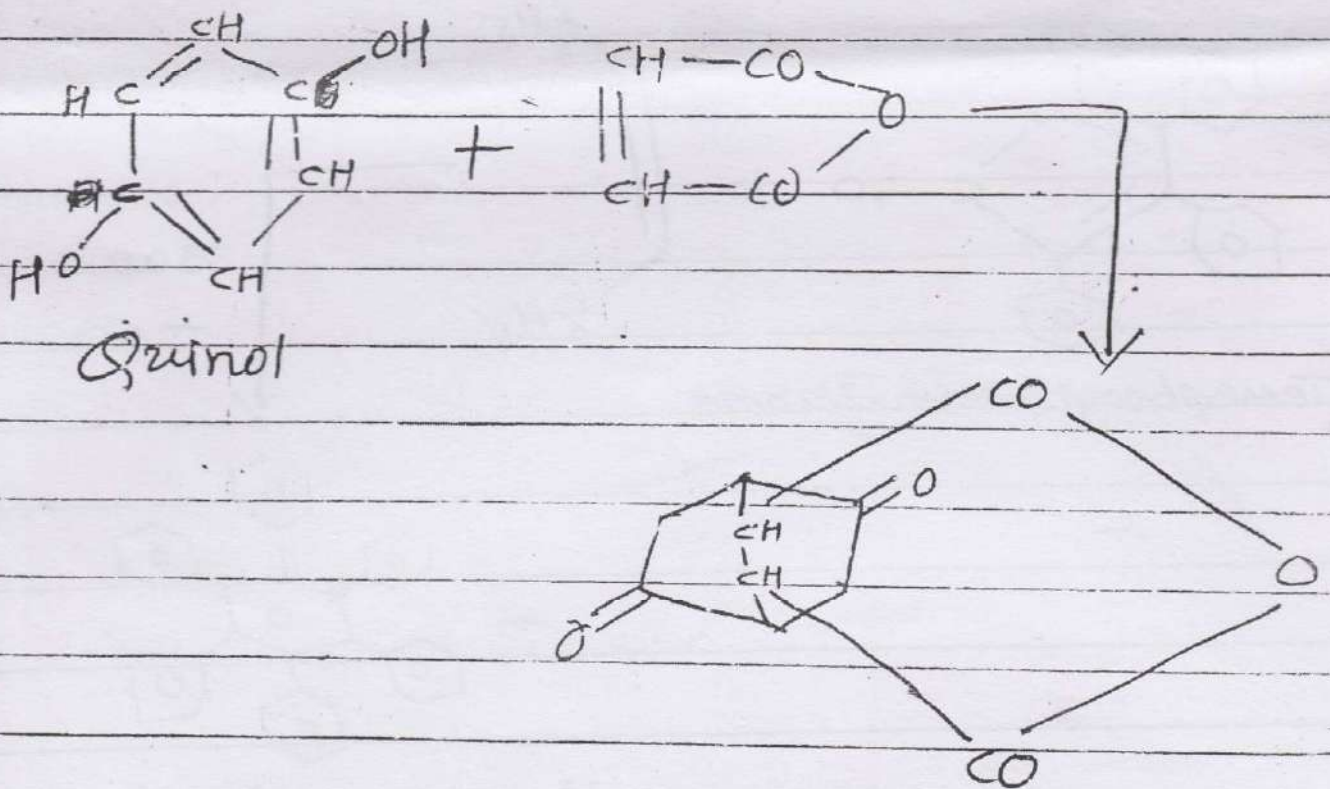


Hexa phenyl Benzene

(2) સમર્થન & મોલિકુલર ડાઈડ્રા ઇડ → Adduce product



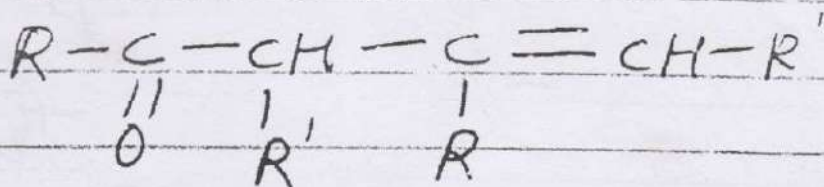
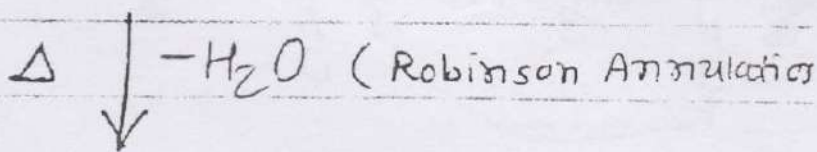
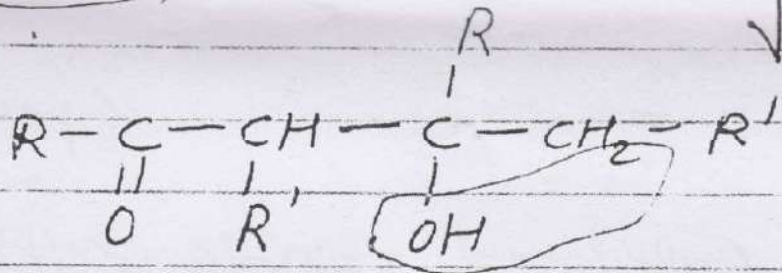
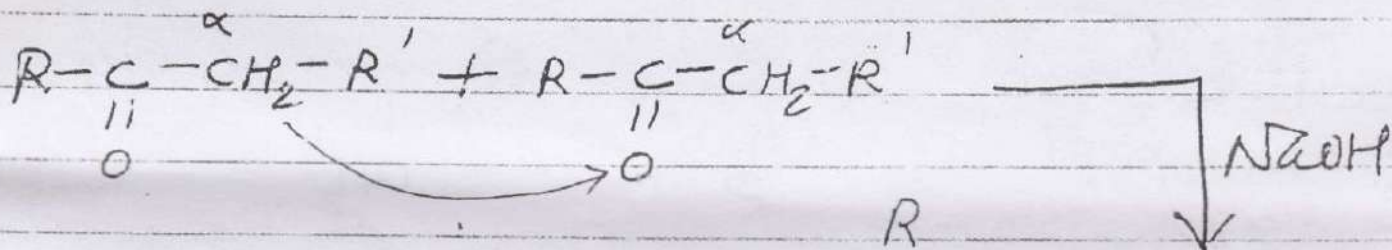
(III) $\text{Quinone} + \text{Maleic anhydride} \longrightarrow \text{Adduct product}$
 (2:1:1:2 ratio)



4) Aldol Condensation: Base = NaOH, Na₂CO₃, Ba(OH)₂
 जैसेमान / जैसेमान / जैसेआलिडहाईड / जैसेआलिडहाईड
 साहिदाईड / डिटाणे / फेअड डिटाणे
 (केमां α "C" पर जैसे "H" ठळरी)

β-हाइड्रॉक्सि / β-हाइड्रॉक्सि → आलिड
 साहिडहाईड / डिटाणे -H₂O → सेडराज जीअर
 (आलिडले जीअर) OR Ketol

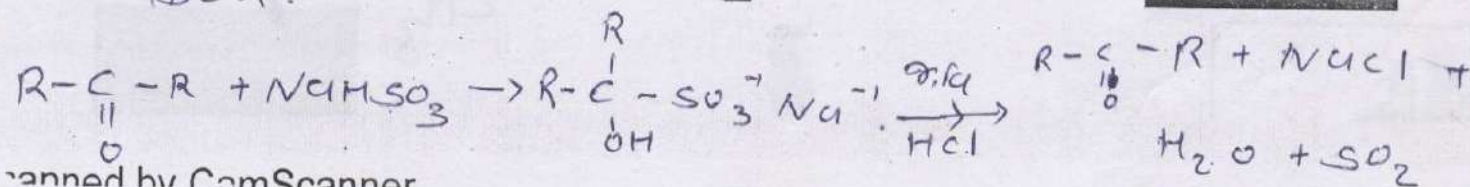
युक्तिः



(Aldol condensation product)

~~Aldol~~
 Aldehyde + Alcohol
 Ketone + Alcohol

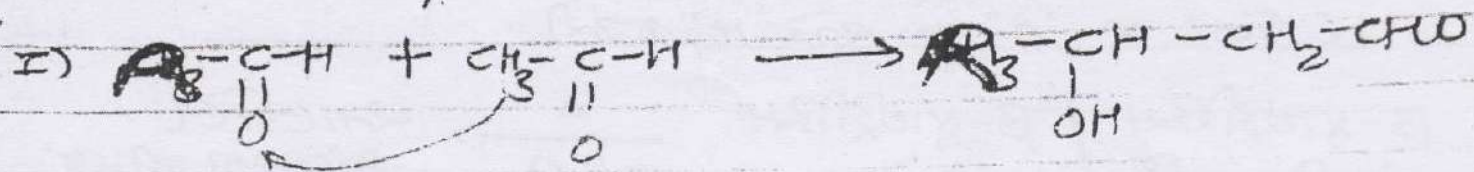
किरणः



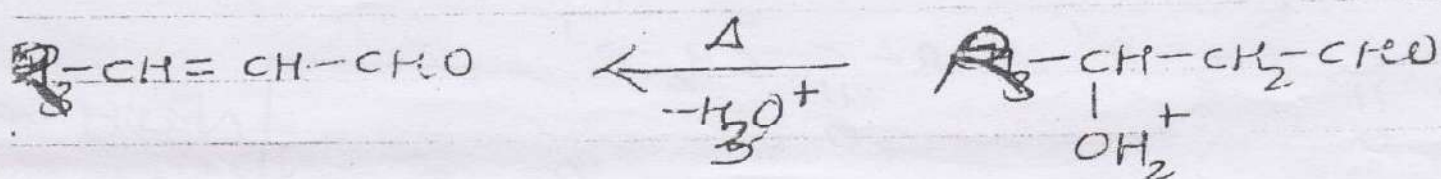
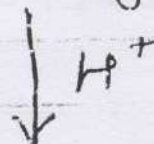
Estimate

Mechanism:

A) Acid catalysed condensation:

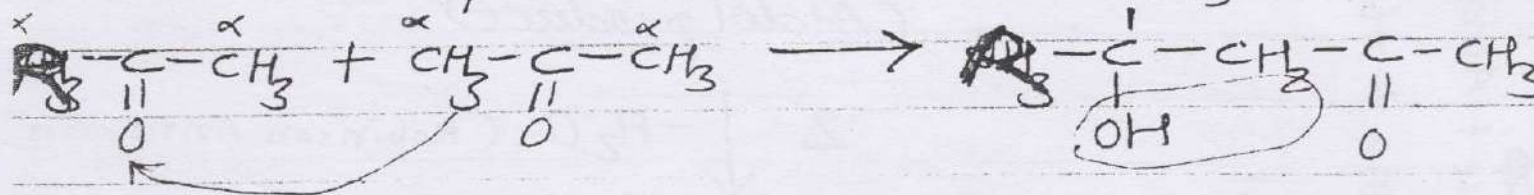


β -hydroxy Aldehyde

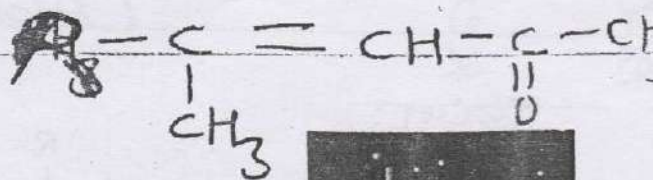


(protonium ion)

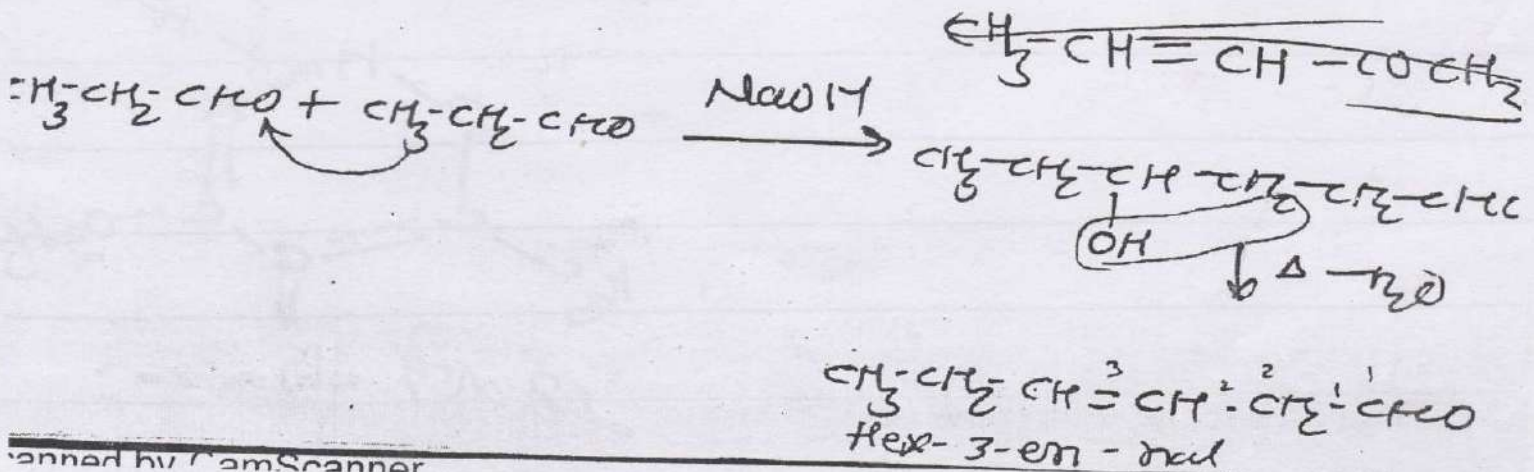
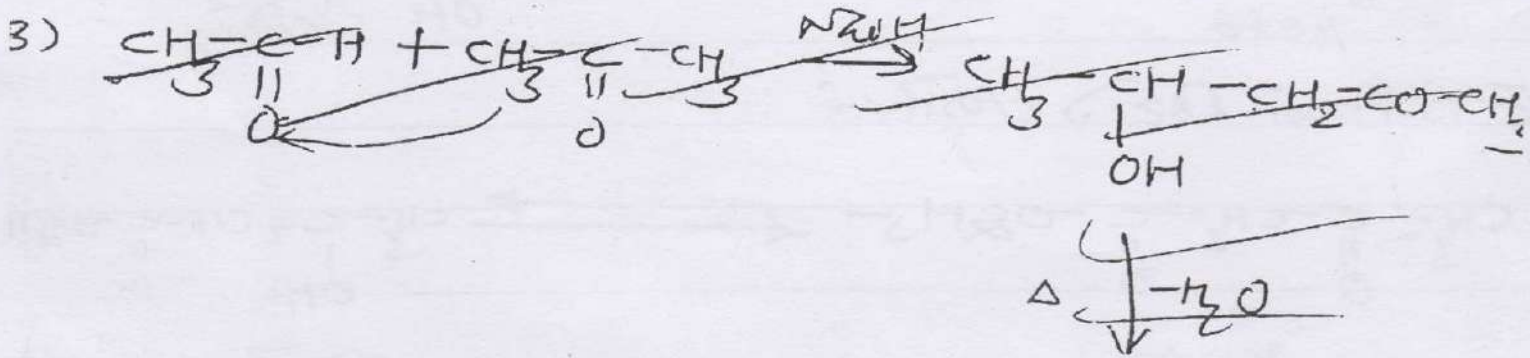
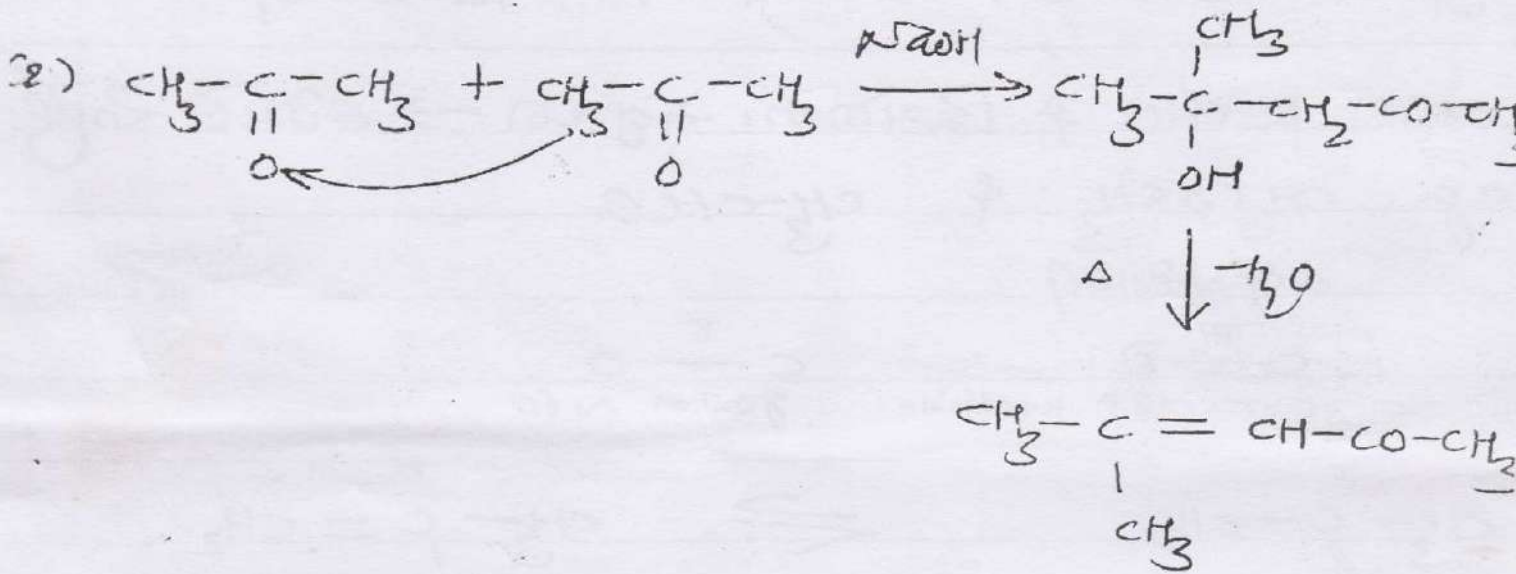
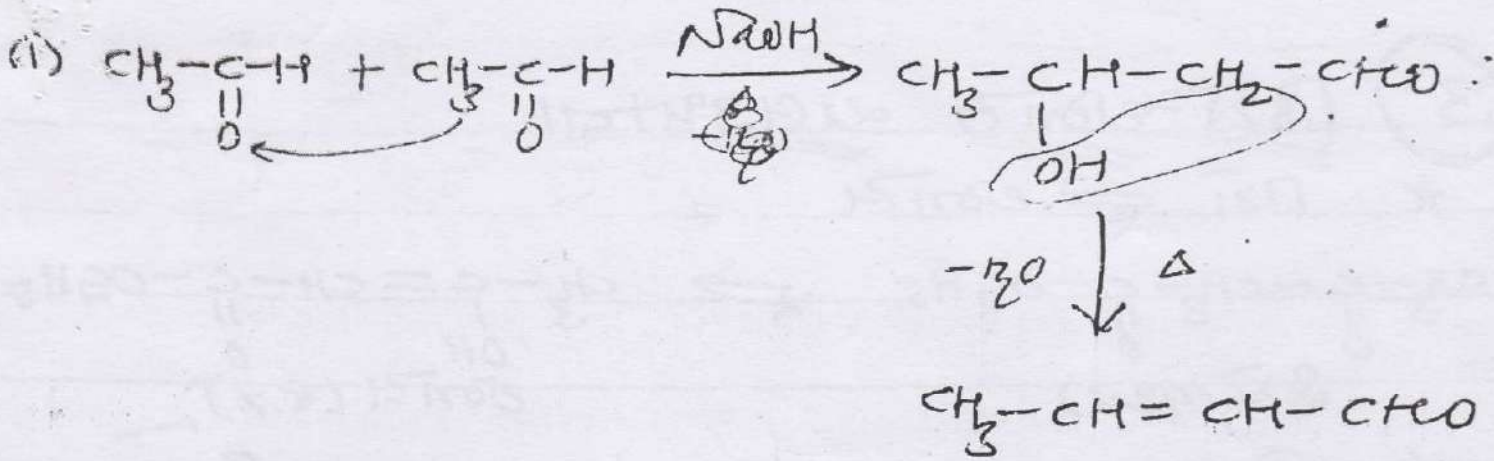
II) Base Catalysed condensation



β -hydroxy ketone



* Application:



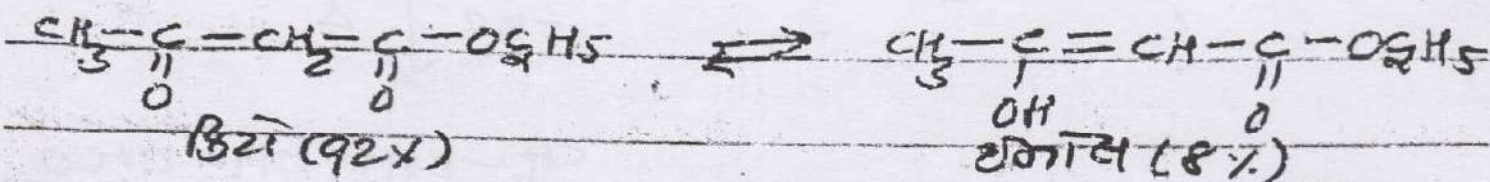


<https://youtu.be/FuS51DIbig8>

<https://youtu.be/Pc0kDBc8fEg>

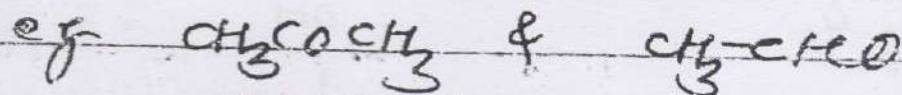
3. કિટો-ઇનોલ સંતુલન

★ કિટો \rightleftharpoons ઇનોલ

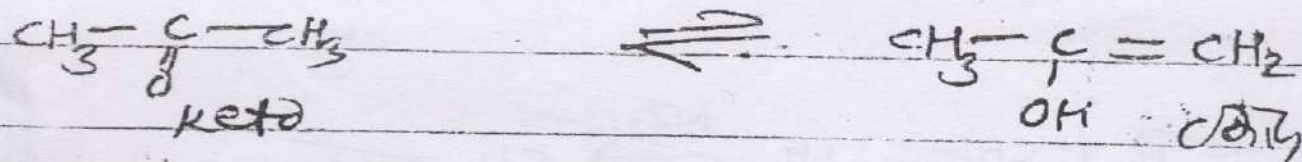
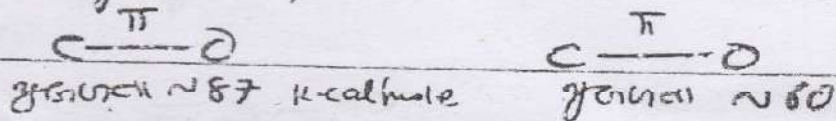


આઈસોસ્ટર 8% ઇનોલ + 92% કિટો

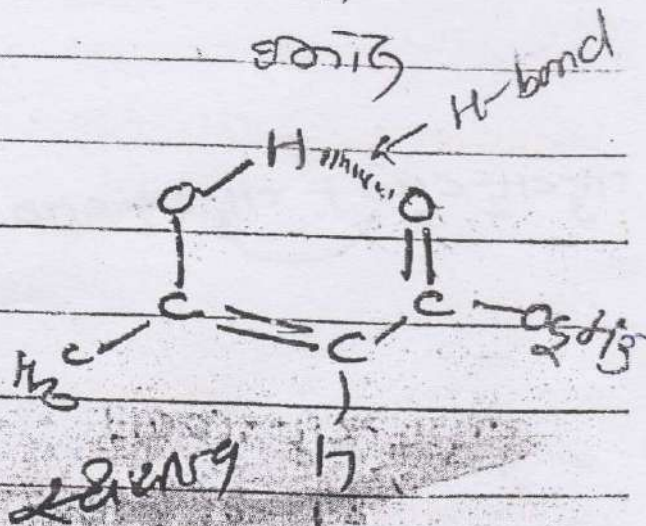
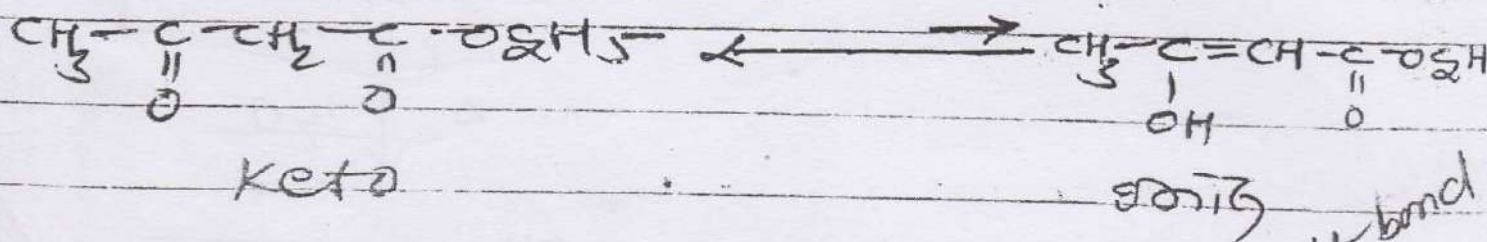
બીજા R-CHO ની કિટો-ઇનોલ સંતુલન \rightarrow ઇનોલ-કોઈ



અથવા

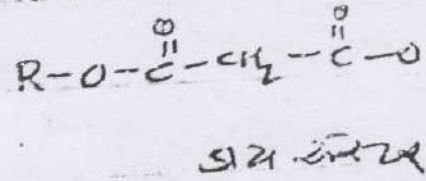
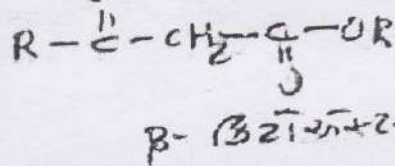
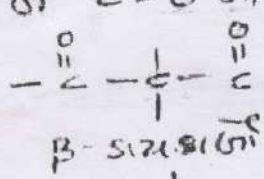


આથી કિટો-કોઈ :



2 (2a) (1) -CH₂ की डिजाइनाइजेशन:

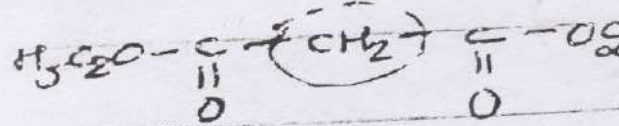
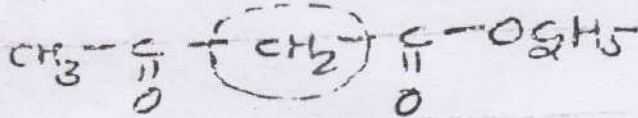
जो C=O का कार्बो ऑक्सीजन "C" → β-सिटाइलेशन कहते हैं।



जिसी -CH₂ की H जोड़ती है PK_a = 10⁻¹⁴

→ -CH₂ शक्य → जो e⁻ शक्ति → एन-एस्टर → जो H जोड़ती

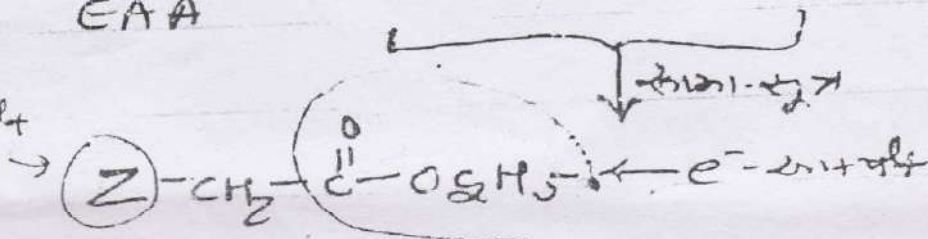
ए.ग.



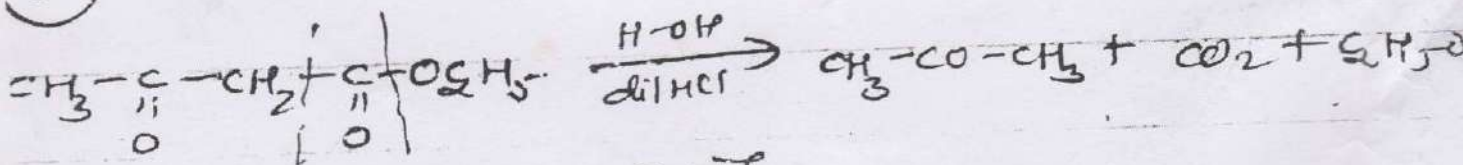
EAA

एन-एस्टर

e⁻ शक्ति

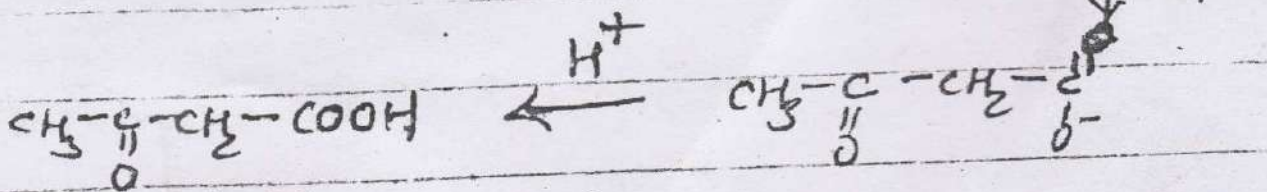
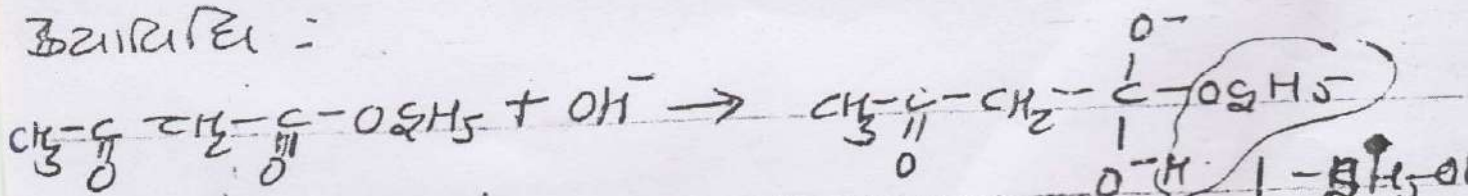


2 डिजाइनेशन के लिए:

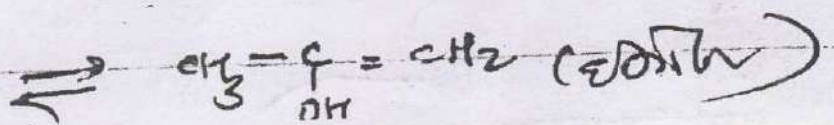
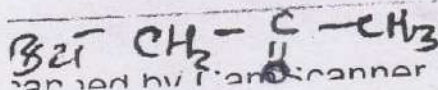


अपघटन -COOH को β-डिजाइनेशन

डिजाइनेशन:



↓ -CO₂



Thank
you

