

16

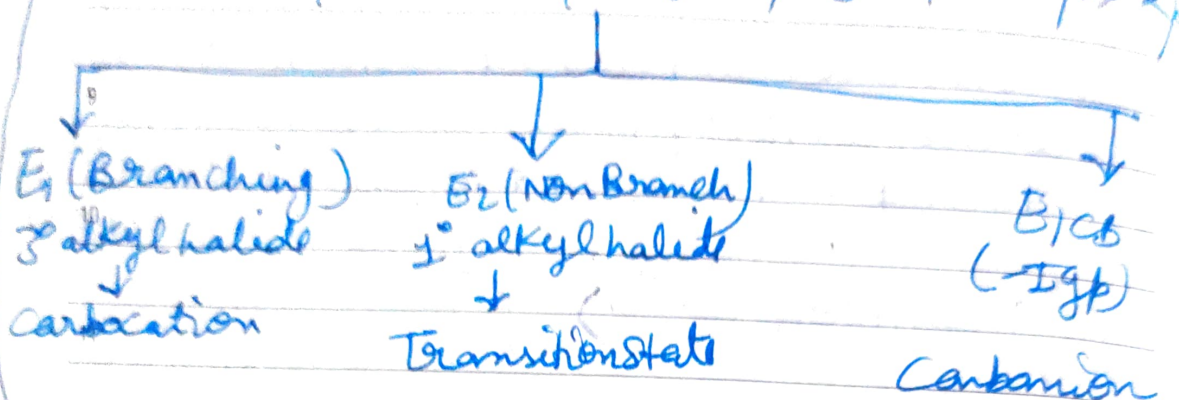
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2015

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12	16	17	18	19	20	21	22	23	24
13	23	24	25	26	27	28	29	30	31
Wk	M	T	W	T	F	S	S		

Elimination Reaction

alc KOH / alc NaOH / $\text{C}_2\text{H}_5\text{O}^-$ / $\text{C}_2\text{H}_5\text{OK}$ / ROH^- / ROK

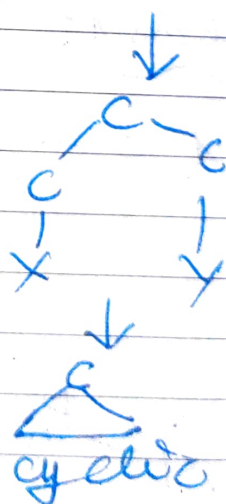
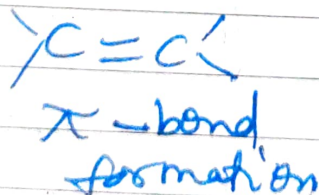
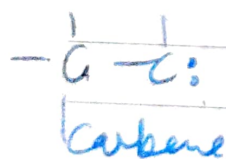
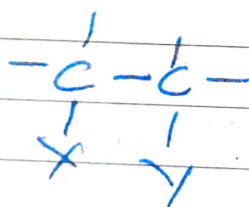
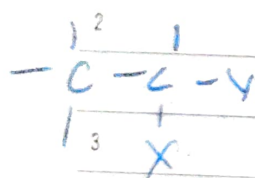


Removal of two atom or group $\xrightarrow{\beta\text{-elimination}}$ formation of π -bond

α -elimination

β -elimination

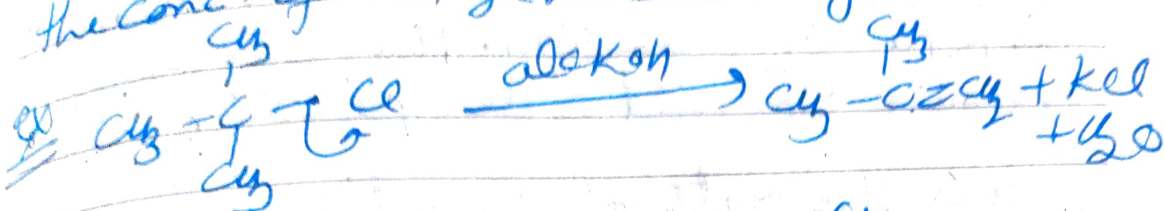
γ -elimination



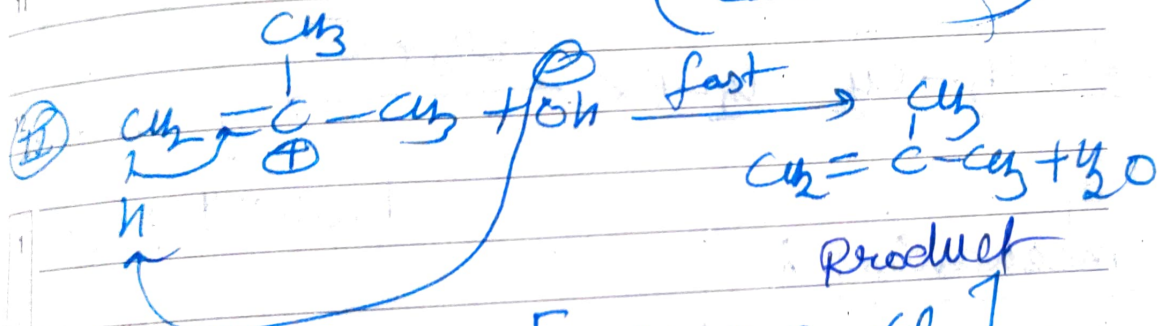
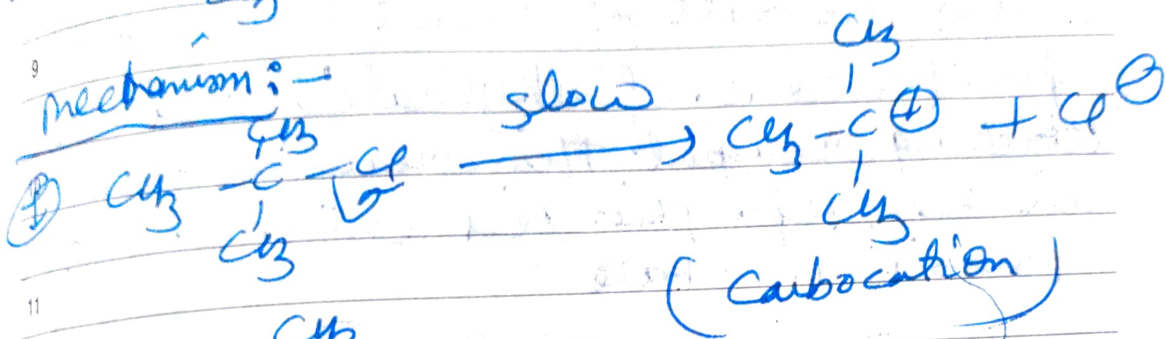
E₁ (Unimolecular Elimination Reaction)

Unimolecular elimination reaction is 1st order reaction. This reaction follow 1st order kinetics b/c the rate of reaction depends upon

the conc. of 'alkyl halides only'



Mechanism:-



$$\text{Thus } \frac{dn}{dt} = k [(\text{CH}_3)_3\text{C}-\text{Cl}]$$

depend on carbocation Stability

3° alcohol > 2° > 1°

more Stable alkene

major (Saytzeff Product)

more Substituted alkene
will be formed

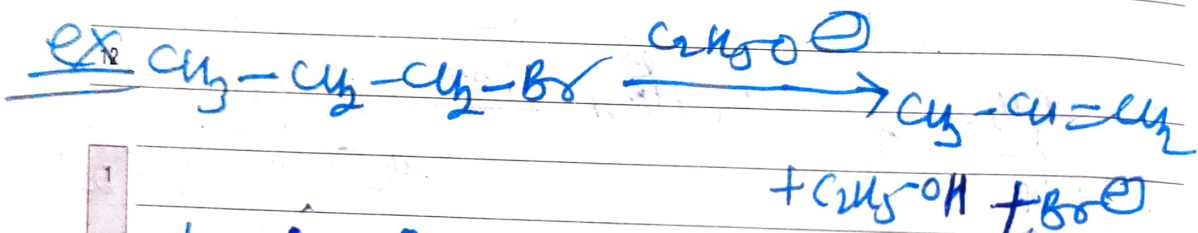
18

MAR
WEDNESDAY
Wk 12 077-288

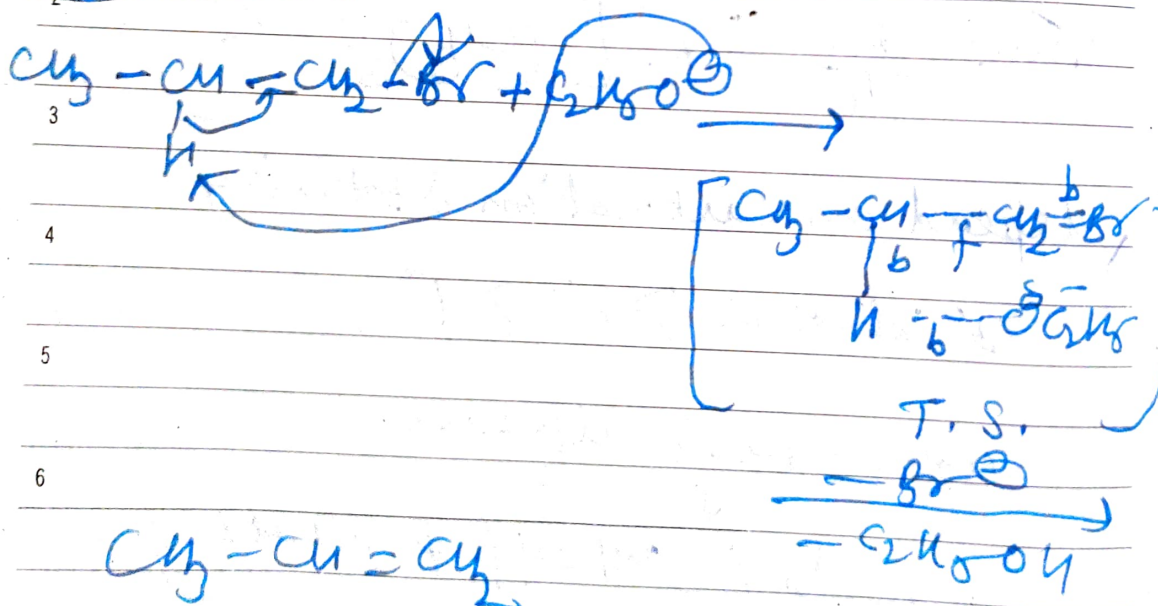
2015

03	MARCH 2015						
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12	16	17	18	19	20	21	22
13	23	24	25	26	27	28	29
Wk	M	T	W	T	F	S	S

E₂ Reaction :- Bimolecular elimination reaction is K_{1a} E₂ reaction. This reaction follows Second order kinetics it means the rate of reaction is depends upon the conc. of alkyl halide and the attacking reagent. This reaction occurs in one step. This via intermediate transition State -



mechanism :-



$$\frac{dn}{dt} = k [\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}] [\text{CH}_3\text{COO}^-]$$

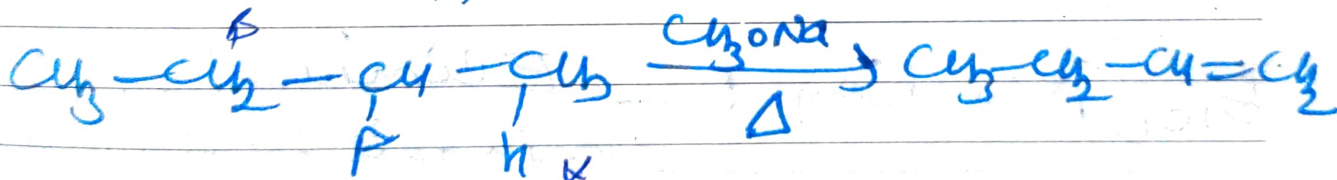
$\text{R-I} > \text{R-Br} > \text{R-Cl} > \text{R-F}$ Better leaving group
fast the reaction

$\text{CH}_3 - \underset{\substack{| \\ \times}}{\text{CH}} - \text{CH}_2 - \text{CH}_3 \xrightarrow[\text{- HX}]{\text{алекон}} \begin{cases} \text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3 \\ \text{major} \\ \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ \text{minor} \end{cases}$

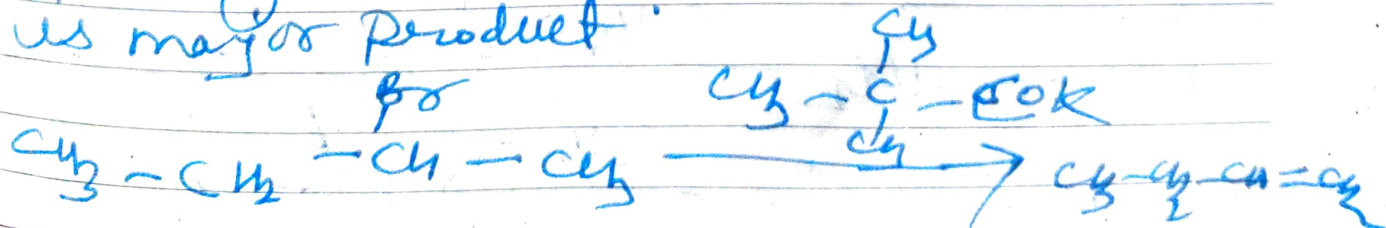
Hoffmann Elimination Reaction:

According to this rule less substituted alkene is less stable and less stable alkene is formed as major product

Case I:- If the leaving gp. is very poor in nature then product formation takes place via Hoffmann elimination.



Case II If base (attacking reagent) is bulky in nature then Hoffmann product is major product.



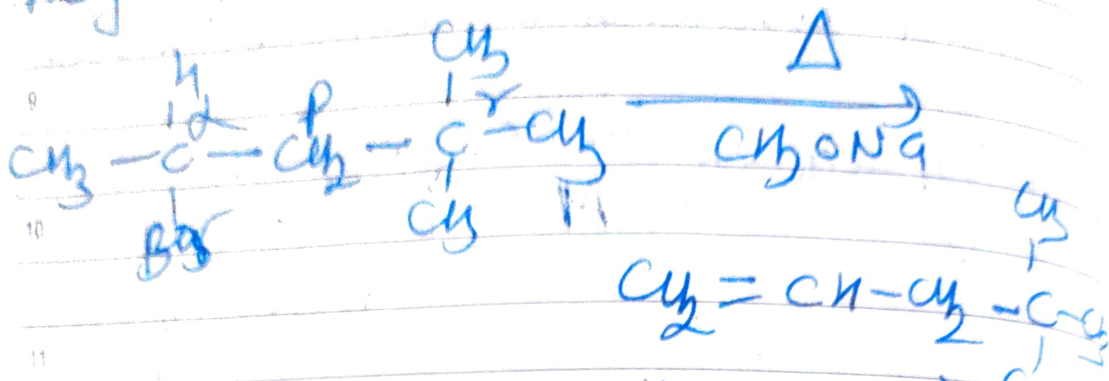
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MAR
FRIDAY
Wk 12 079-286

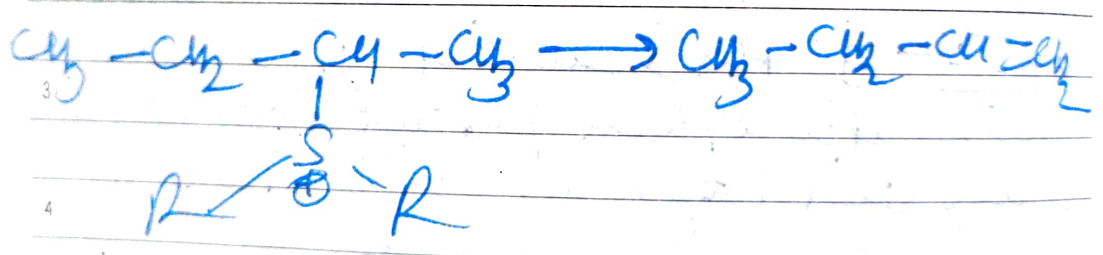
2015

9/14	30	31	MARCH 2015						
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13	23	24	25	26	27	28	29	30	31
Wk	M	T	W	T	F	S	S		

Case III If γ -carbon have no hydrogen atom then the Hofmann product is major product.

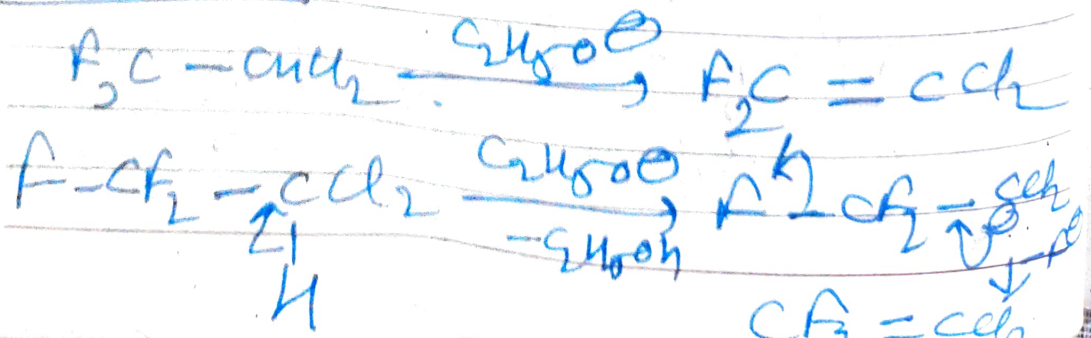


Case IV If the leaving gp is bulky in nature the product formation takes place via Hoffmann elimination.



E1cB Reaction : — Elimination Unimolecular conjugate base reaction is K/a E1cB reaction.

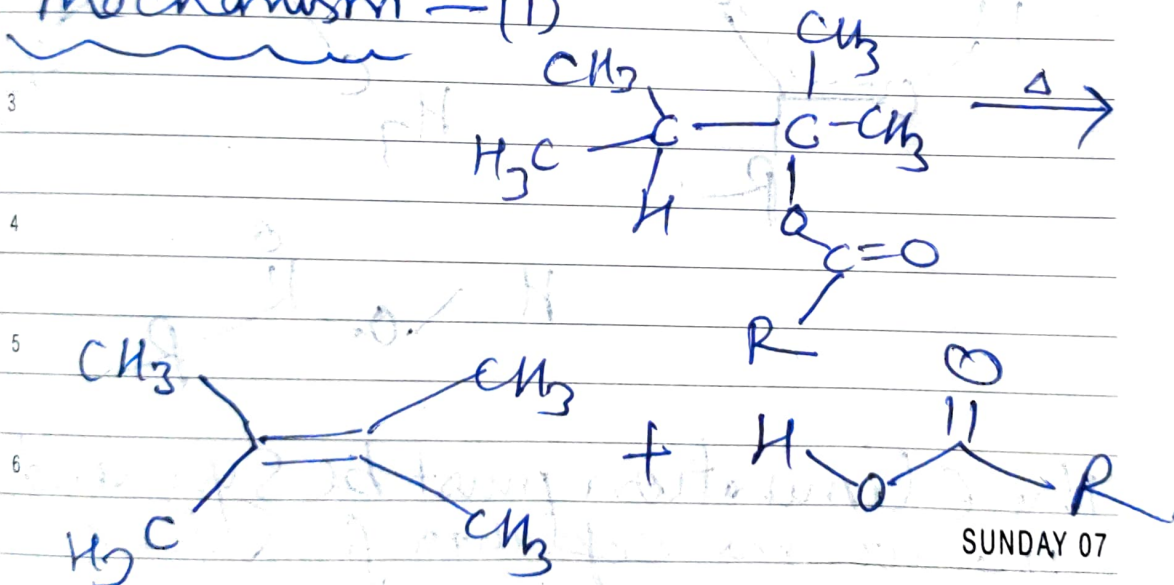
Mechanism :



mechanism and orientation in Pyrolytic Elimination —

The Pyrolytic elimination or E_i (elimination internal / intramolecular) mechanism is a special kind of elimination reaction where two vicinal groups on an alkane framework leave simultaneously through a cyclic transition state to form an alkene with a syn-elimination and that is why they also called as Pericyclic Syn or thermal syn elimination.

mechanism — (1)



SUNDAY 07

The proposed mechanism for the reaction given involved one step which must be discussed before we give

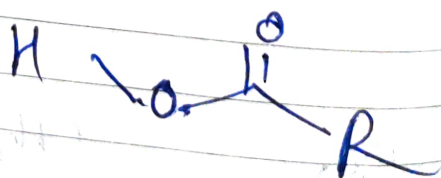
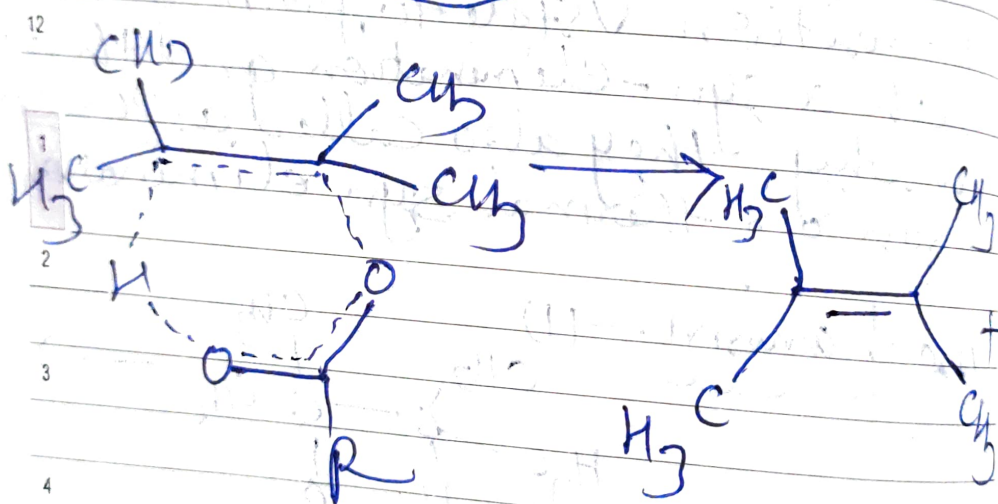
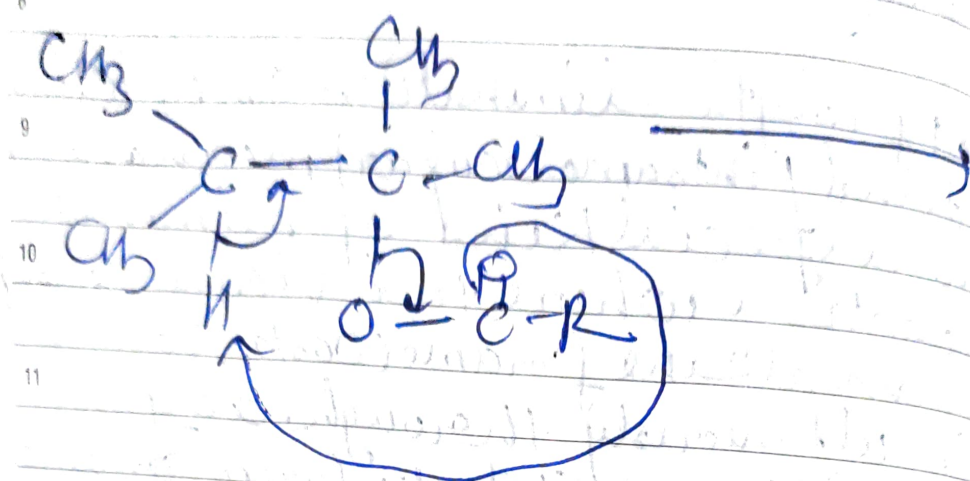
08

JUN
MONDAY
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2015

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26	22	23	24	25	26
27	29	30			
WK	M	T	W	T	F

Salient features of the same



The elimination must be syn and the atoms coplanar for five and four-membered transition states but coplanarity is not needed in case where six-membered

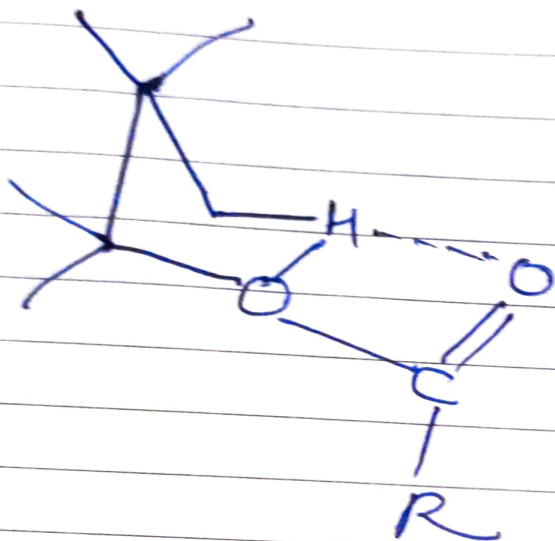
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29	30	31					31
M	T	W	T	F	S	S	Wk

2015

JUN
TUESDAY
160-205 Wk 24

09

transition states are involved



Coplanarity is not
needed in 6-membered
transition state.