

# REACTION AND MECHANISM

1.

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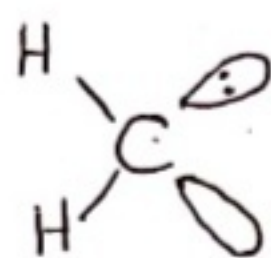
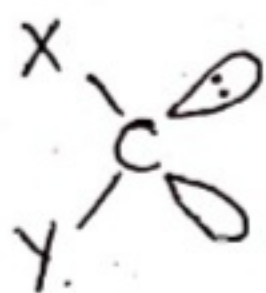
( Lecture -10 )

Deg-II (SUB.)  
Chapter-5  
Group-C

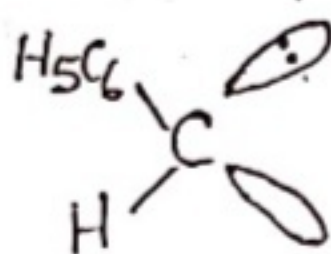
TOPIC - " CARBENES "

## ~ CARBENES ~

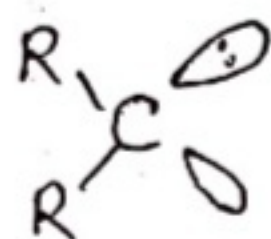
Neutral covalent compounds of carbon having two bond pairs and one lone pair of electrons known as carbene.



methylene carbene



Phenyl carbene



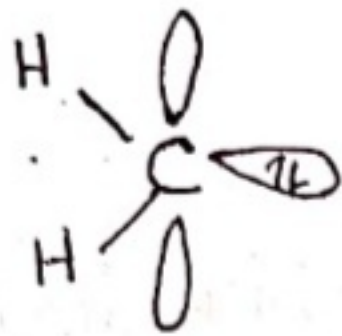
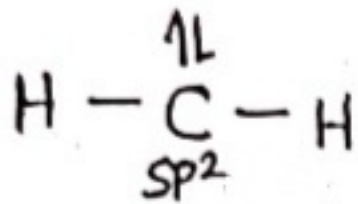
Dialkyl carbene

\* On the basis of spin of lone pair of electrons carbene are of two types,

1. Singlet carbene

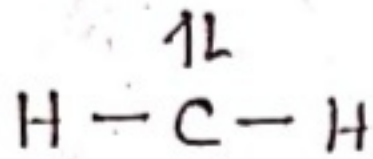
2. Triplet carbene

\* If the lone pair of electron of carbene is paired, it is known as singlet carbene, and if it is unpaired, known as Triplet carbene.

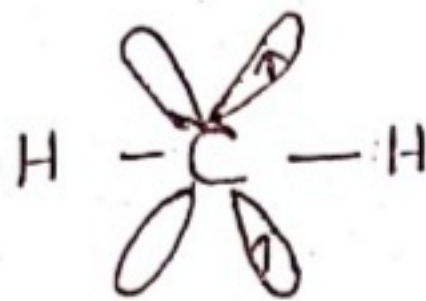


Diamagnetic bent shaped (lp-bp) repulsion behave as cation.

# TRIPLET CARBENE



sp-hybridisation



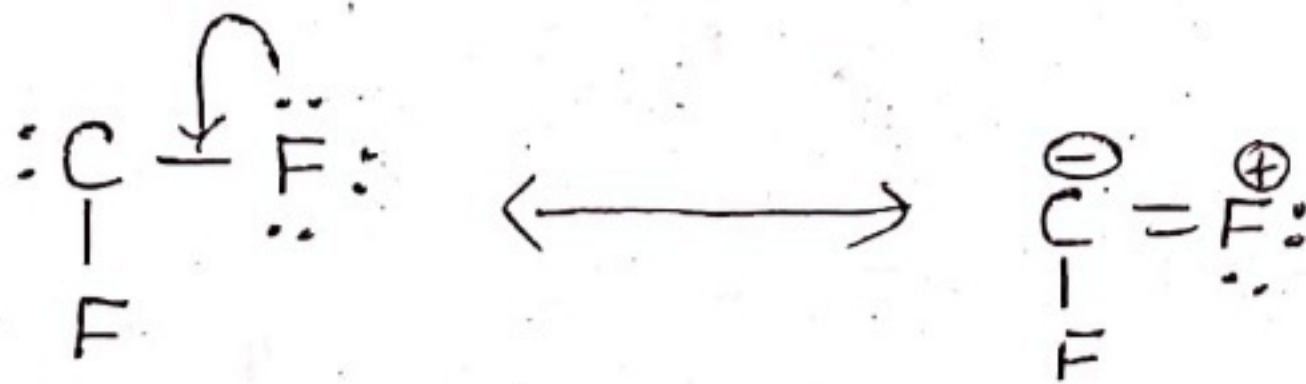
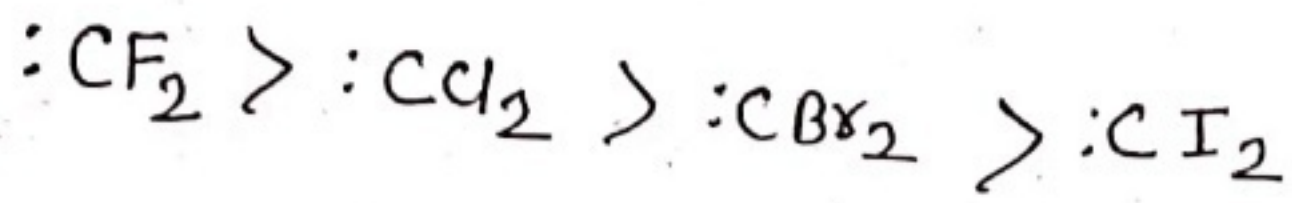
Paramagnetic

Linear, (bp-bp) repulsion behave as biradical.

\* Triplet carbene is more stabilize than singlet because of less (bp-bp) repulsion.



Halocarbenes are more stabilised in singlet state rather than triplet.

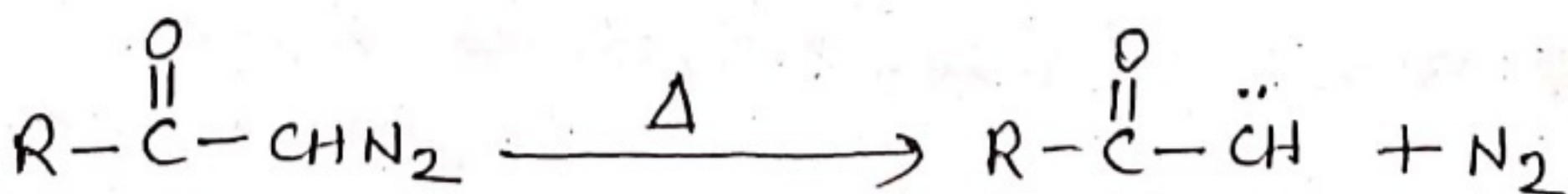
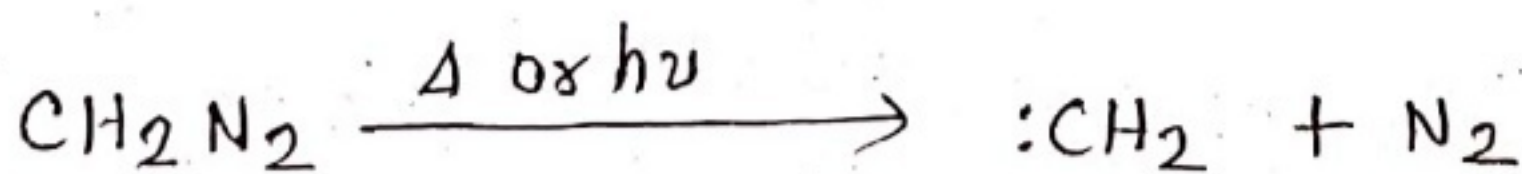


Due to presence of vacant 'p' orbital in singlet carbenes backbonding occurs.

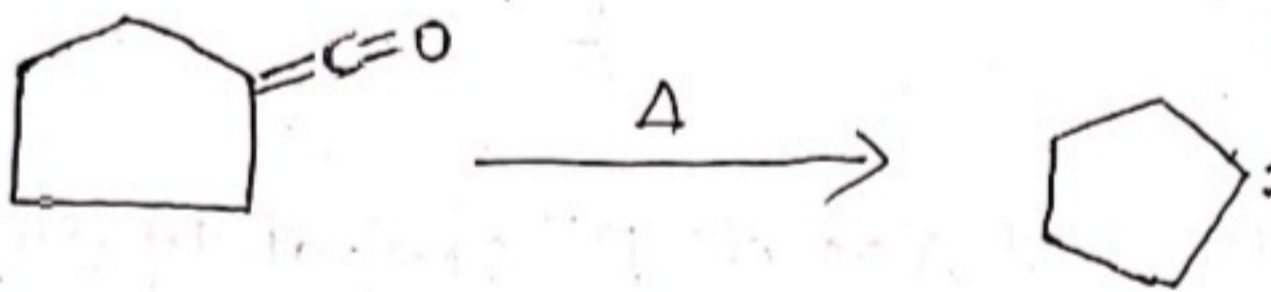
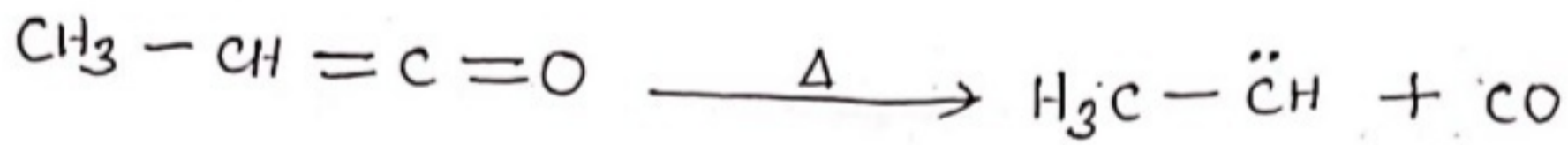
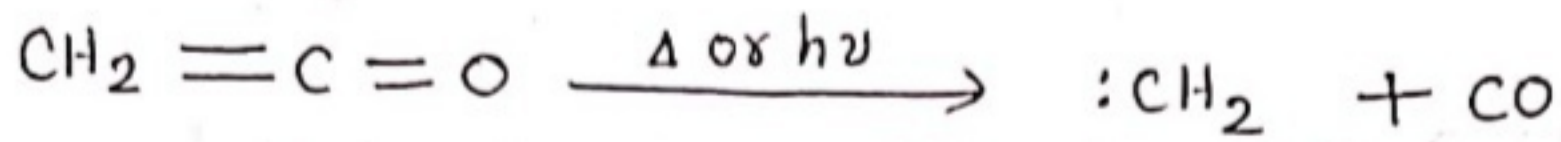
As the size of halogen increases backbonding decreases and stability decreases.

## ~FORMATION OF CARBENES~

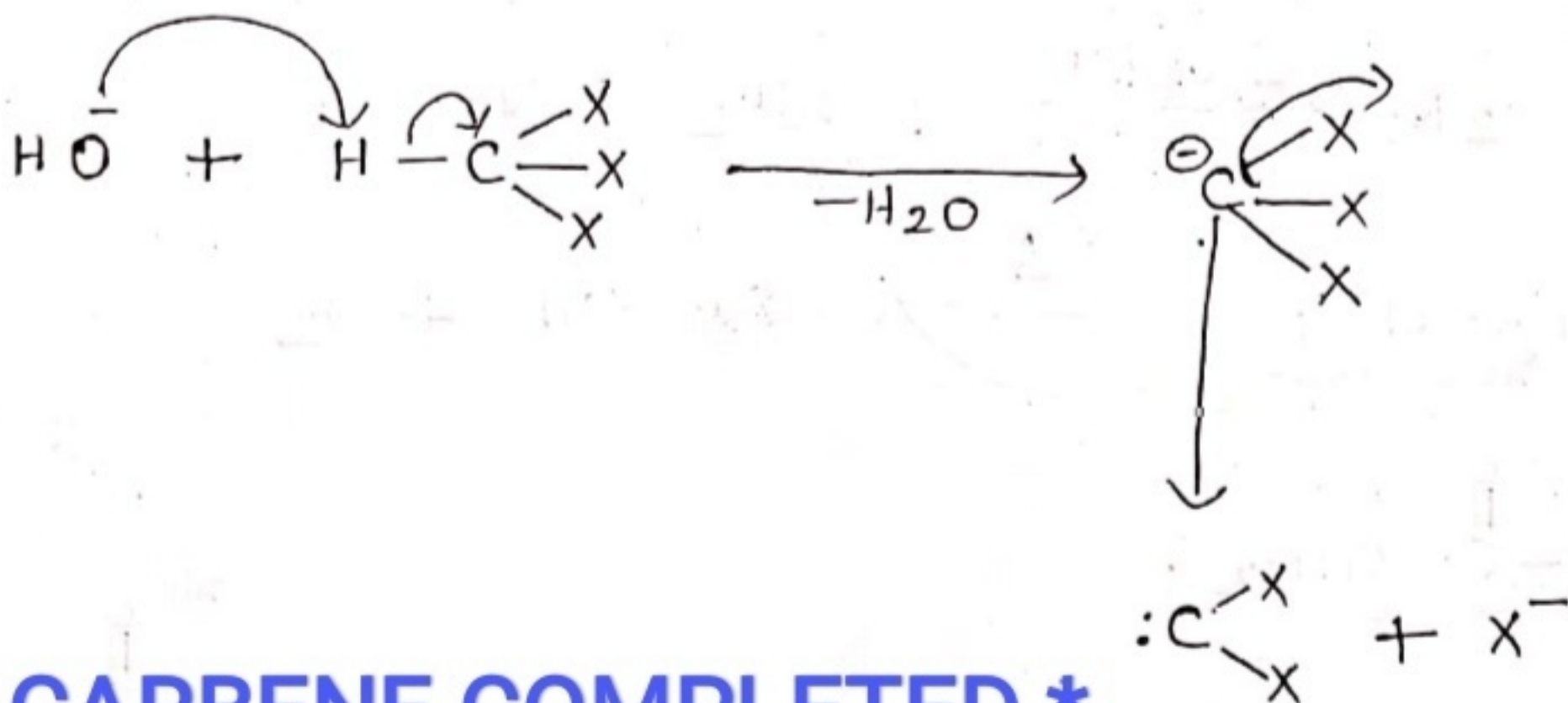
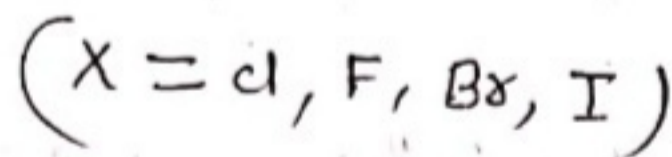
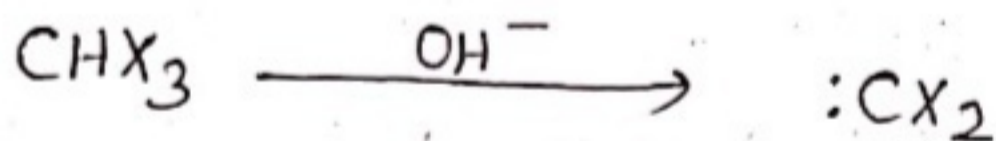
### A. By diazomethane and its derivative



## B. By Ketene and it's derivatives



## C. By Haloform (CHX<sub>3</sub>)



**\* CARBENE COMPLETED \***