

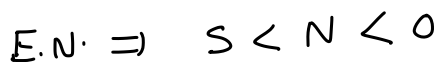
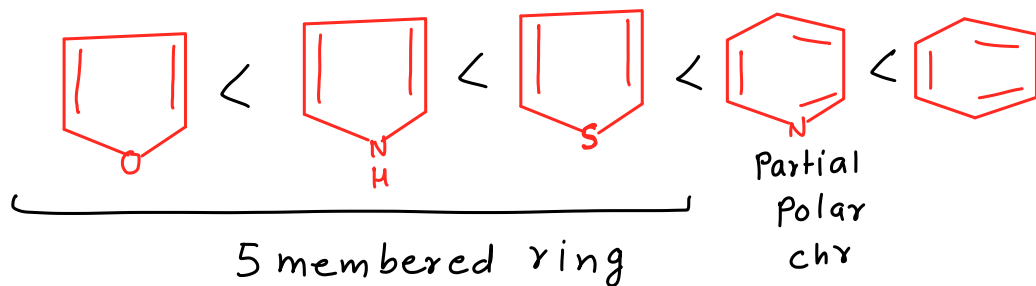
Introduction to organic chemistry.

IOC

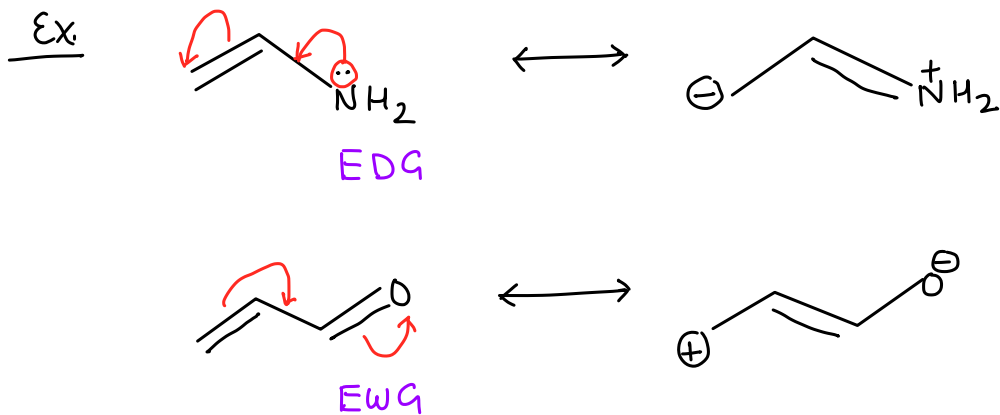
Topics included:

- (1) Nomenclature
- (2) GOC-I (Electronic displacement effects)
- (3) GOC- II (Stability of intermediates)
- (3) GOC-III (Acidity & Basicity)
- (4) Isomerism

Q. Compare R.E. of



Mesomeric effect \rightarrow Polarity produced in molecule due to resonance is called mesomeric effect.

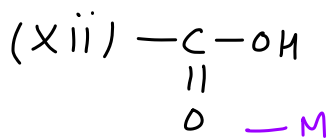
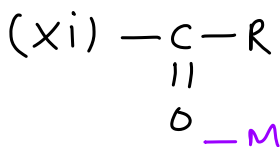
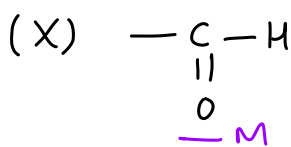
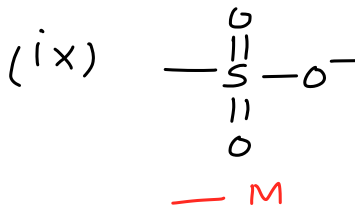
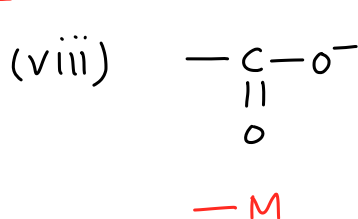
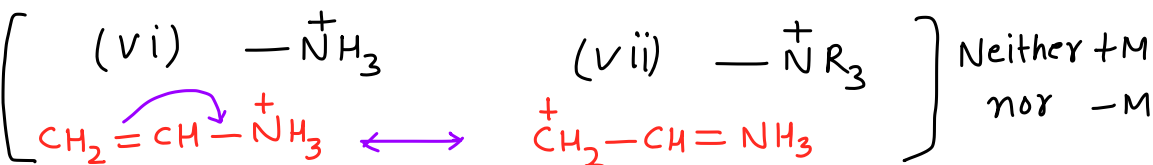
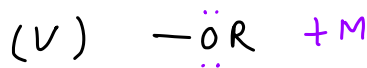
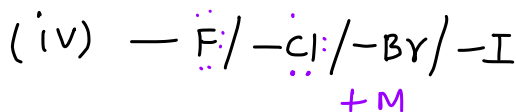
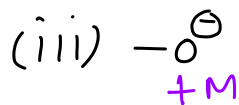
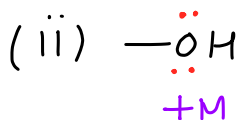
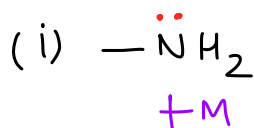


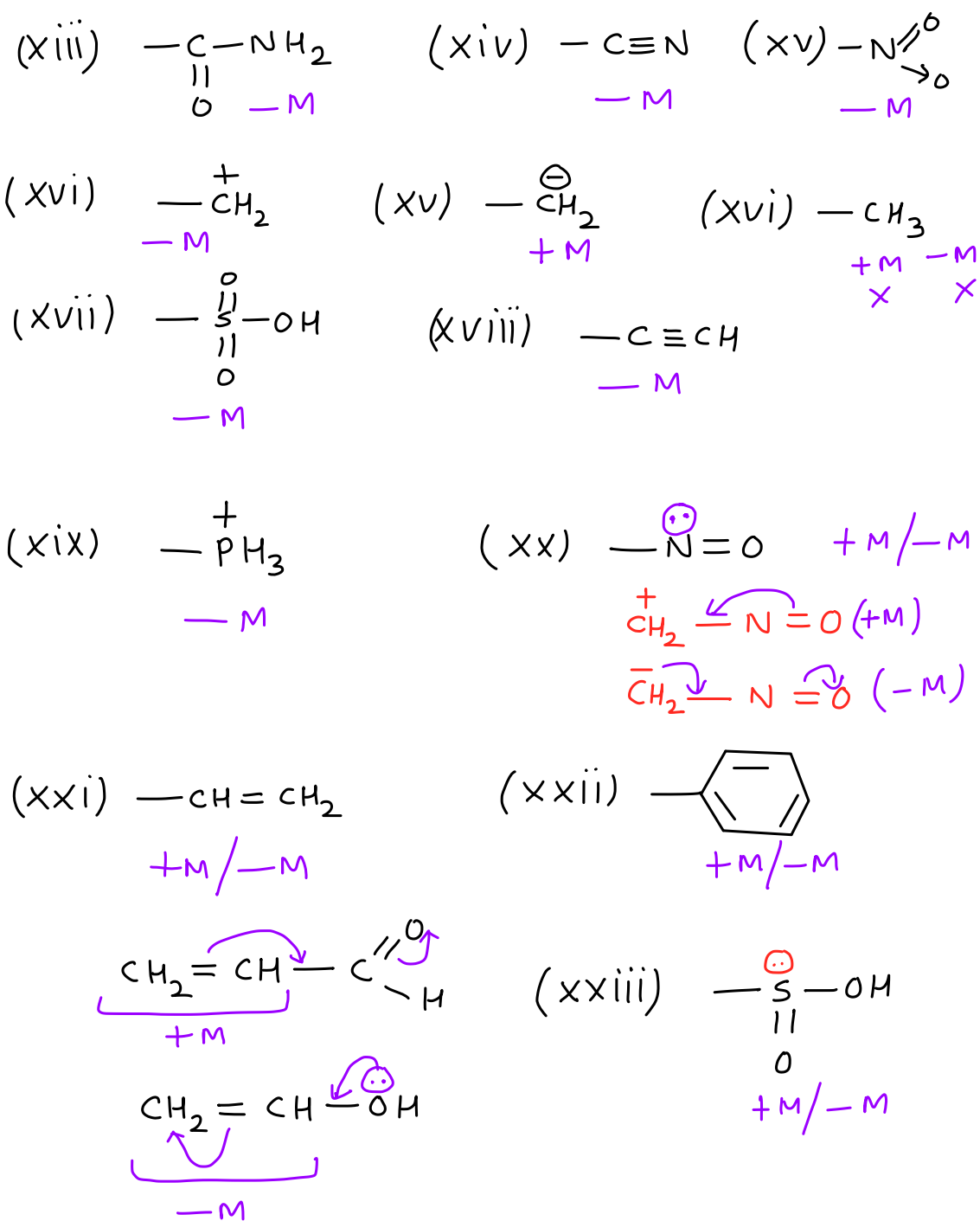
- * It is permanent effect
- * It doesn't depend on distance.
- * m-effect dominates over Inductive effect Except to the halogens.

Types \rightarrow $+M$ (E_{DG}/ERG)
 $\rightarrow -M$ (E_{WG})

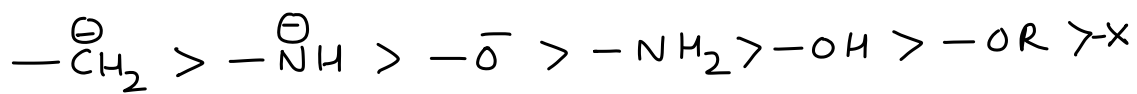
	charge at 1 st atom	If charge is not at 1 st atom
$+M$	$-ve$	lp at 1 st atom
$-M$	$+ve$	(i) vacant orbital at 1 st atom (ii) double bond or Triple bond made by 1 st atom

Q. Identify $+m$, $-M$ groups.

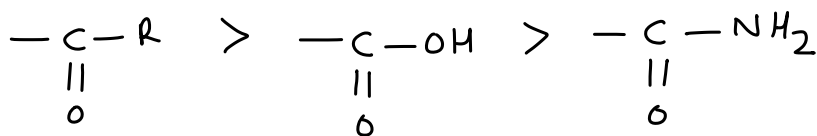
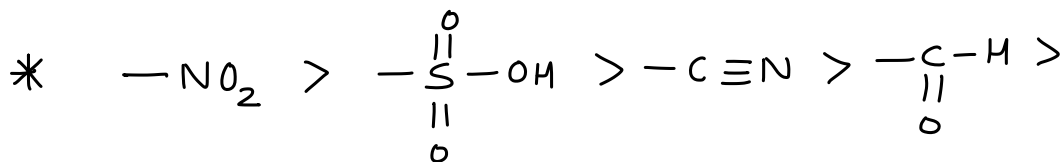
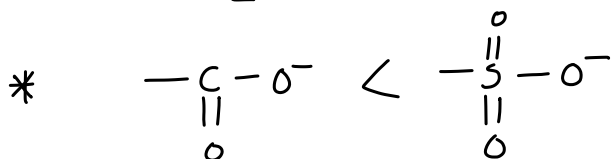
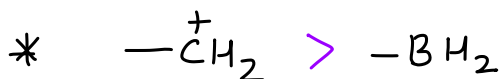




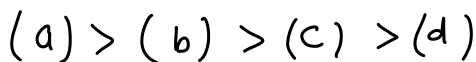
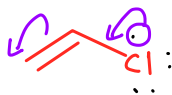
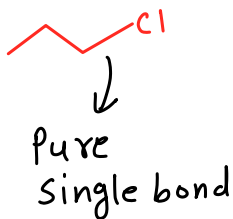
Strength of +M groups \rightarrow



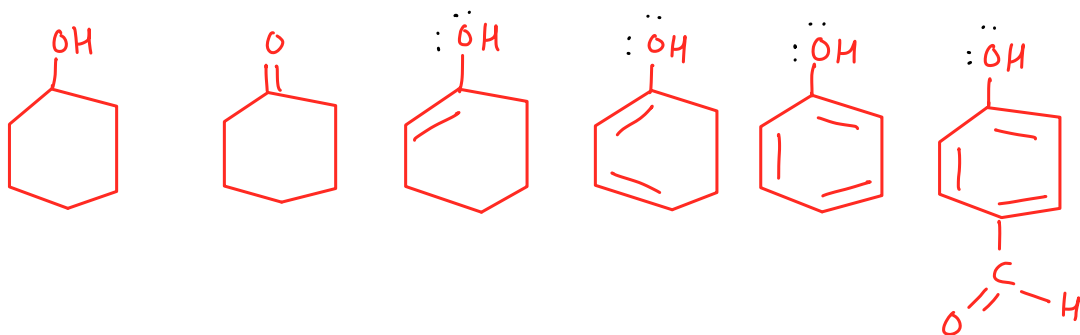
Strength of -M groups \rightarrow



Q. write the order of C-Cl Bond length ?

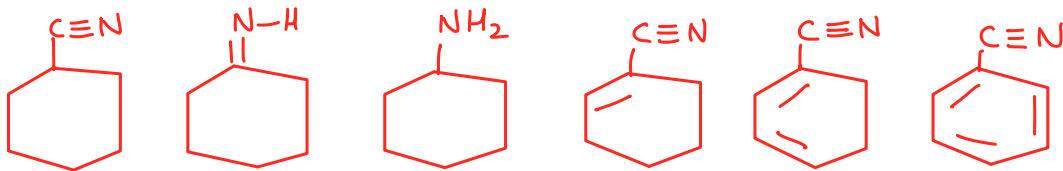


Q. write the order of C-O Bond length?



(a) > c > d > e > f > (b)

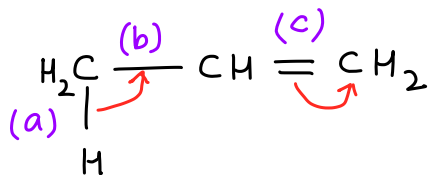
Q. write the order of C-N bond length?



$c > b > f > e > d > a$
 ↙ Pure S.B. ↓ Pure D.B. ↘ Pure T.B.
 $2 < B.O. < 3$

HyperConjugation \rightarrow It is a type of

Conjugation in which σ electrons are found to be in conjugation with π -es or p-orbital.



B.L. \Rightarrow

a : Actual > Expected

b : Actual < Expected

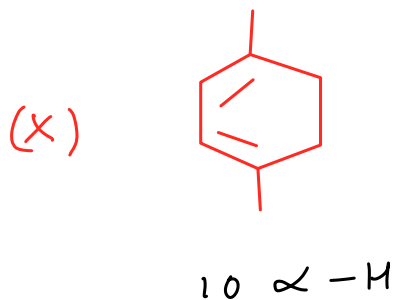
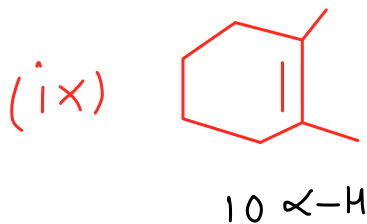
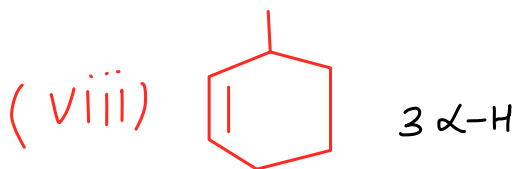
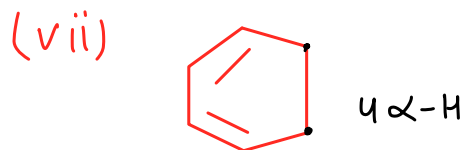
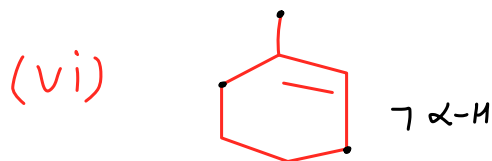
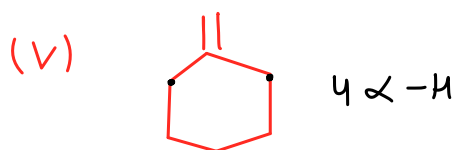
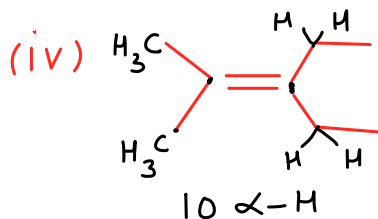
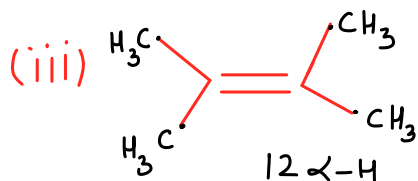
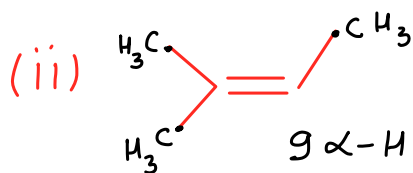
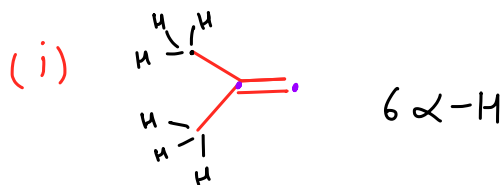
c : Actual > Expected

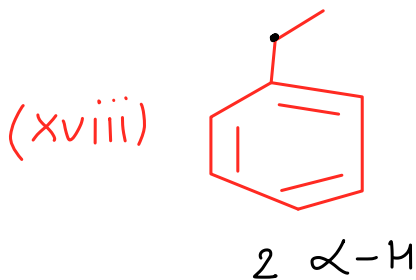
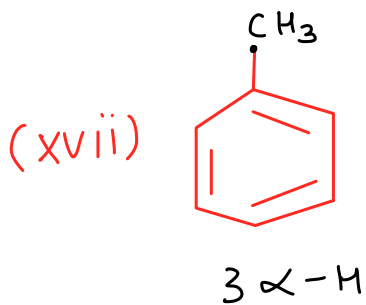
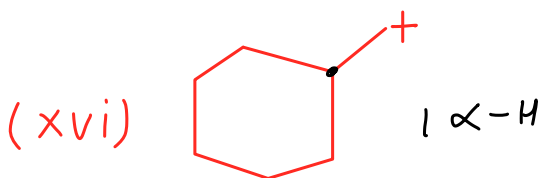
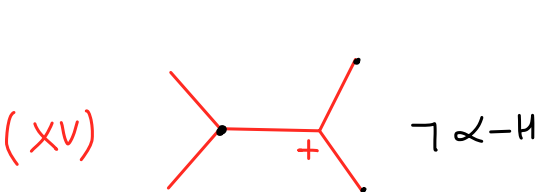
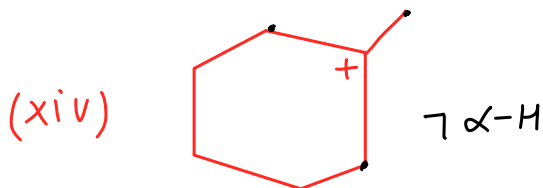
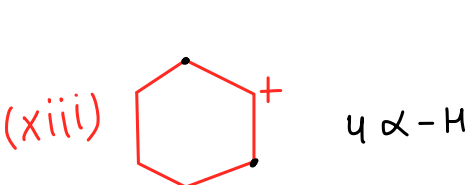
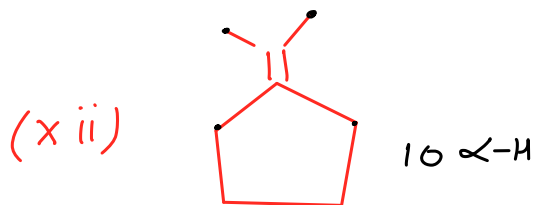
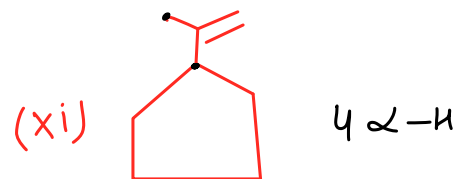
- * It is a Permanent effect
- * It doesn't depend on distance.
- * It is also K/a Baker-Nathan effect or No bond resonance.

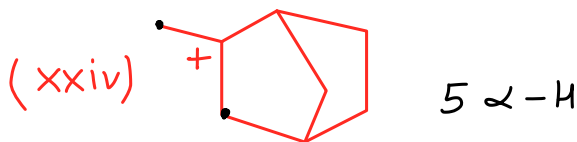
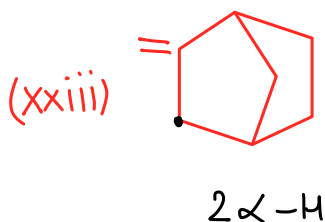
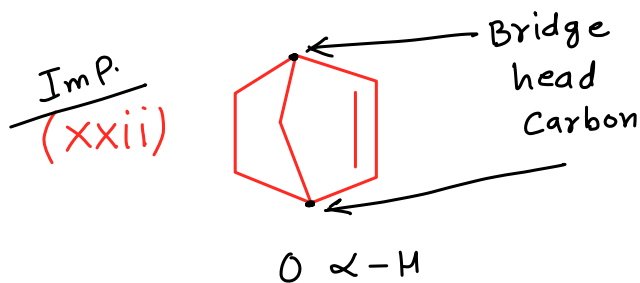
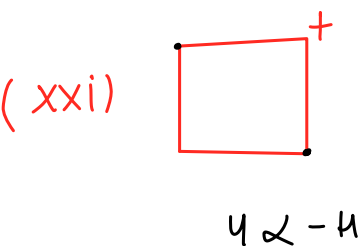
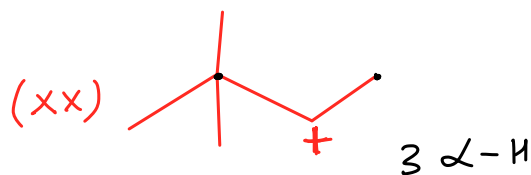
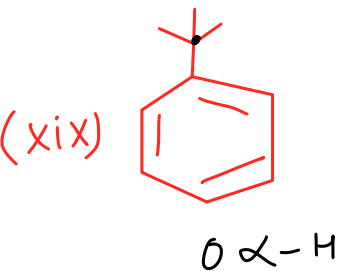
Conditions for hyperconjugation \rightarrow

- (1) Atleast one atom must be sp^2/sp hybridised which contains either π /odd e^- bond.
- (2) Adjacent atom must be sp^3 hyb. and it must have atleast 1 hydrogen (α -H).

Q. calculate total no. of α -H ?



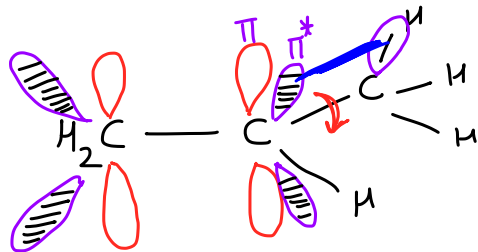
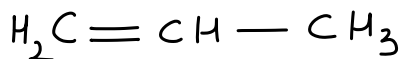




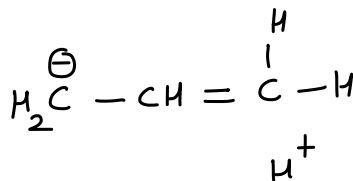
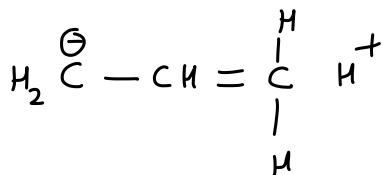
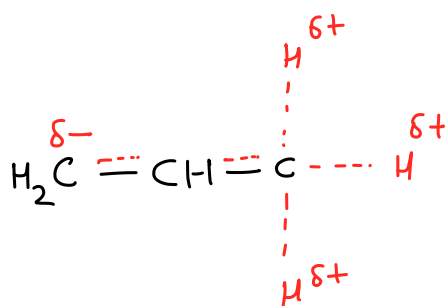
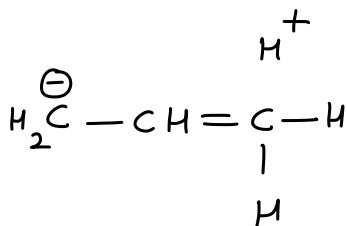
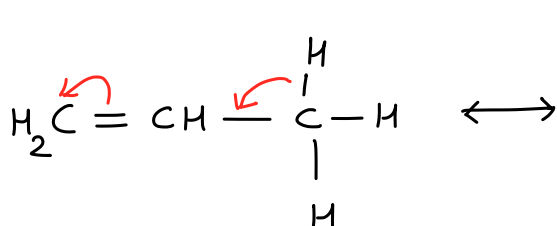
Bredt's Rule \rightarrow Acc. to this rule, +ve charge or π bond cannot be present at bridge head carbon of bridged bicyclo comp.

Types of Hyperconjugation \rightarrow

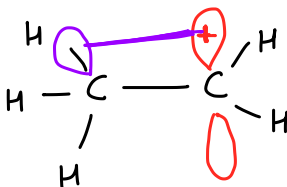
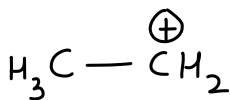




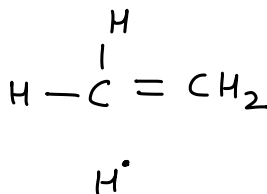
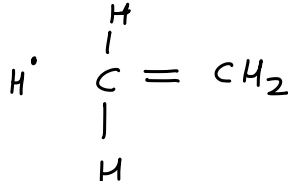
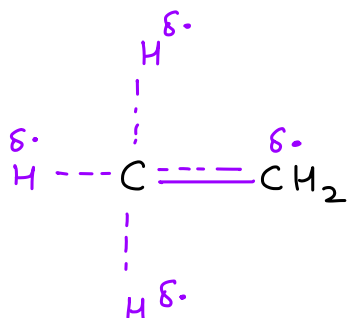
overlapping of orbital
of C-H σ bond
with π^* of alkene



(2) $\sigma - \oplus$ Hyperconjugation \rightarrow



* overlapping of orbital of C-H σ bond with



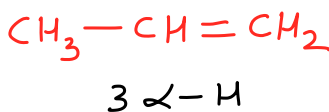
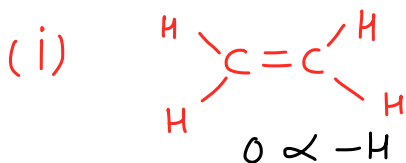
Applications of H.C. \rightarrow

(I) stab. of alkene \rightarrow

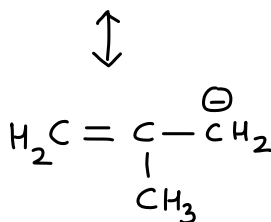
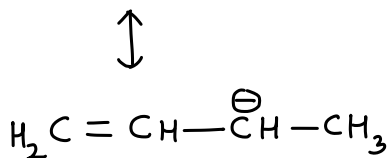
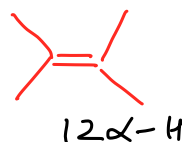
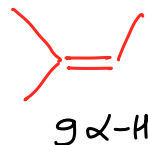
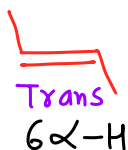
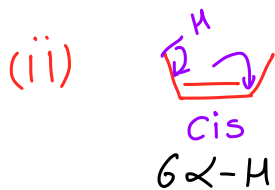
(i) stab. of alkene \propto Resonance

(ii) \propto No. of α -H

Q. compare the stab. of alkenes?

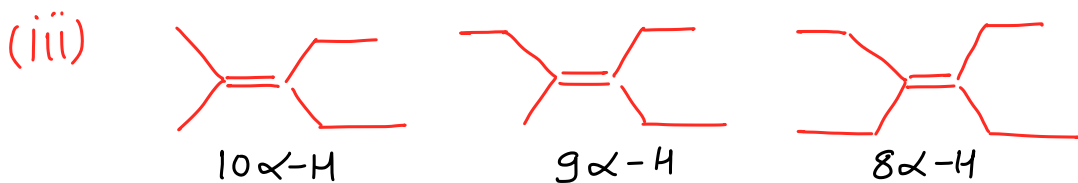


$b > a$

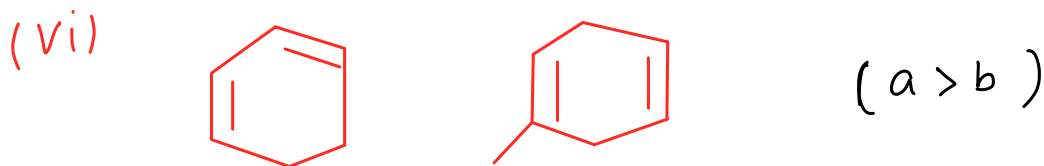
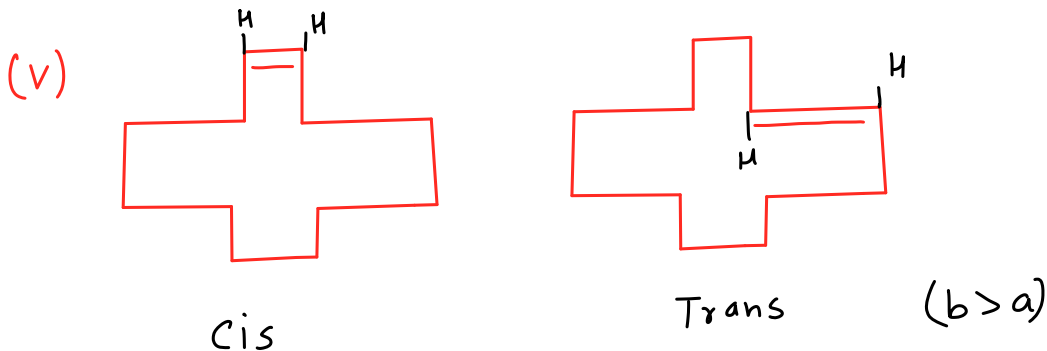
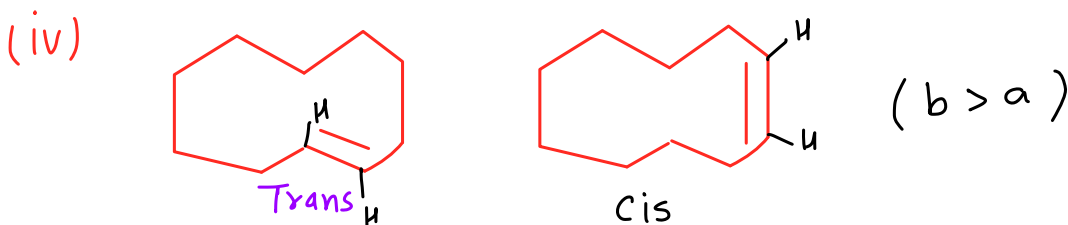


1° C.A. > 2° C.A.

$$e > d > c > b > a$$



$$a > b > c$$



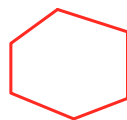
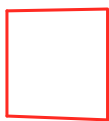
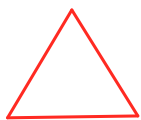
(2) Heat of combustion (HOC) \rightarrow

(i) $HOC \propto \text{No. of carbon atoms}$

(ii) If no. of C-atoms $\Rightarrow HOC \propto \frac{1}{\text{stab. of alkene/comp.}}$

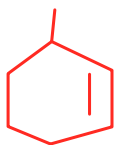
Q. write the order of HOC ?

(i)

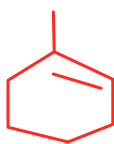


$d > c > b > a$

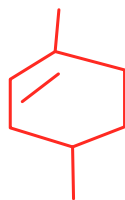
(ii)



3 α -H

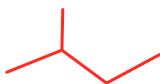


7 α -H



$c > a > b$

(iii)

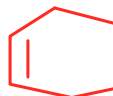
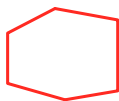
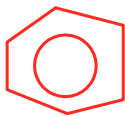


Branching Increases stab.

stab. $\rightarrow c > b > a$

HOC $\rightarrow a > b > c$

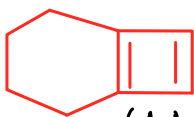
(iv)



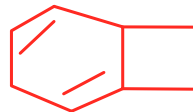
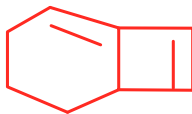
$b > c > a$

HOC \propto No. of hydrogen atoms

(v)



(A.A.)



stab. $\rightarrow b > c > a$

HOC $\rightarrow a > c > b$

Homework

Module- IN CHAPTER EXERCISE-C

Workbook DTS-1-11 Q. 53

JEE MAIN ARCHIVE : Q.44,72

JEE ADVANCED - Q. 31,35,62,72,75