GENERAL CONCEPTS OF HYBRIDISATION

DEG-1 (SUB.) ,DATE 12/12/2020

CHAPTER-1 ,GROUP-C,LECTURE-8 ,SESSION 2020-23

HYPERCONJUGATION

* The +I effect of alkyl groups when attached to a saturated 'C' atom is in the order.

$$Me_3C \rightarrow Me_2CH \rightarrow MeCH_2 \rightarrow CH_3-$$

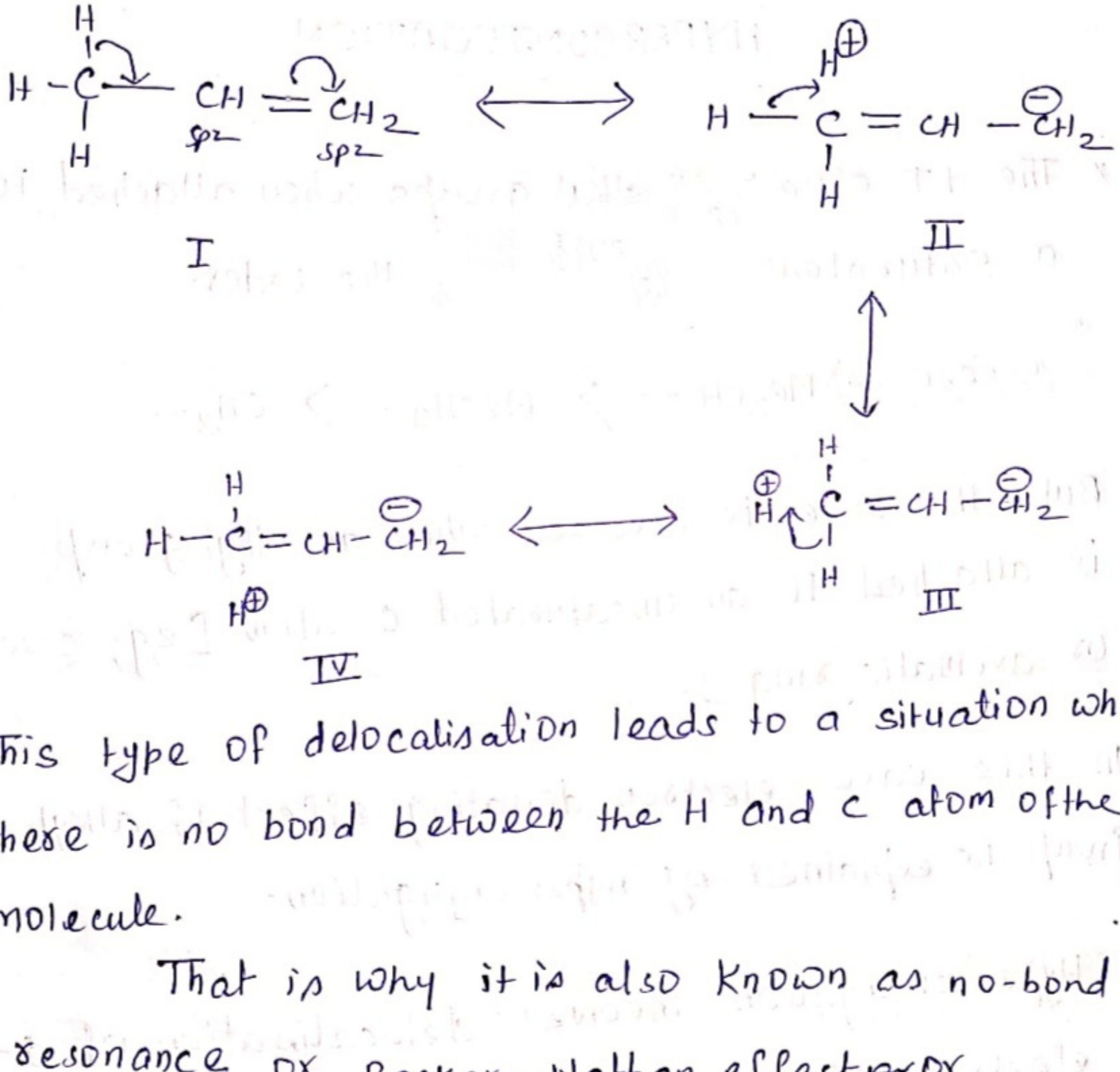
But, the order is reversed when an alkyl group is attached to an unsaturated C-atom [eg; (C=C) or aromatic ring].

In this case, electron donating effect of alkyl group is explained by hyperconjugation.

* Hyperconjugation involves delocalisation of σ-electron of the (C-H) bond of an alkyl group directly attached to an atom with an unshared P-orbital.

* The σ-electron of the (C-H) bond of the alkyl group enter into partial conjugation with the attached unsaturaled system or with the unshared p-orbital-

For example;

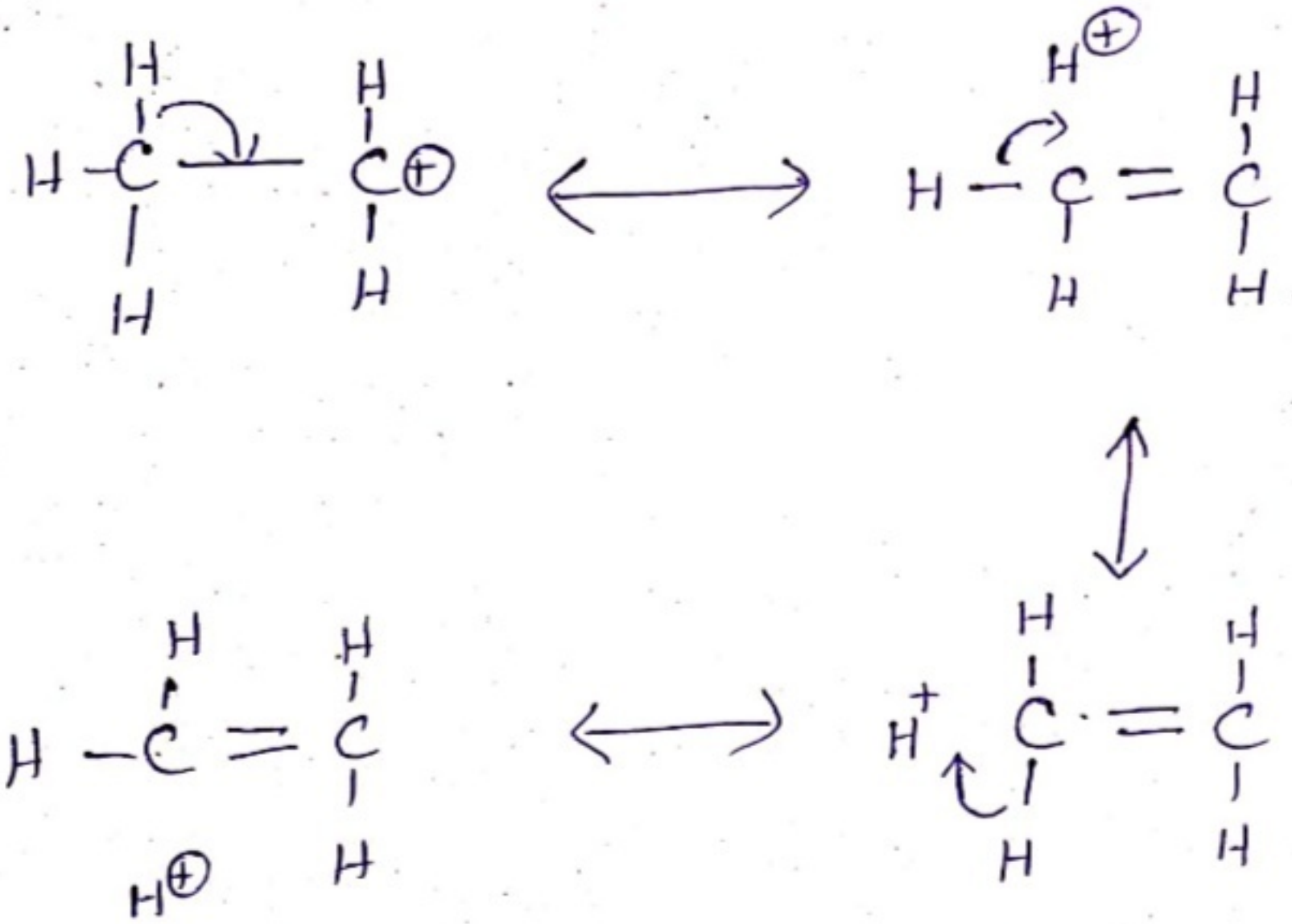


This type of delocalisation leads to a situation where there is no bond between the H and C atom of the molecule.

That is why it is also known as no-bond resonance or Baker-Nathan effect or or hetero covalent resonance.

* The overlap of σ-electron of α-(C-H) bond with the adjacent π-electron or vacant p-orbital is called Hyperconjugation.

Hyperconjugation in Ethyl Carbocation ($C_2H_5^{\oplus}$)



Application of Hyperconjugation

1. Stabilities of Carbocation and free radicals
2. Stabilities of alkene.

Completed