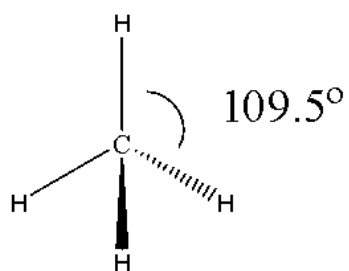
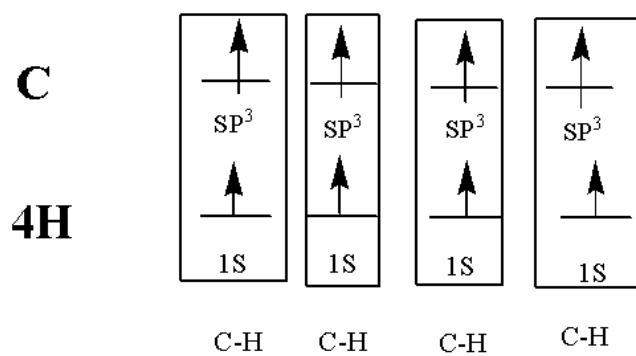
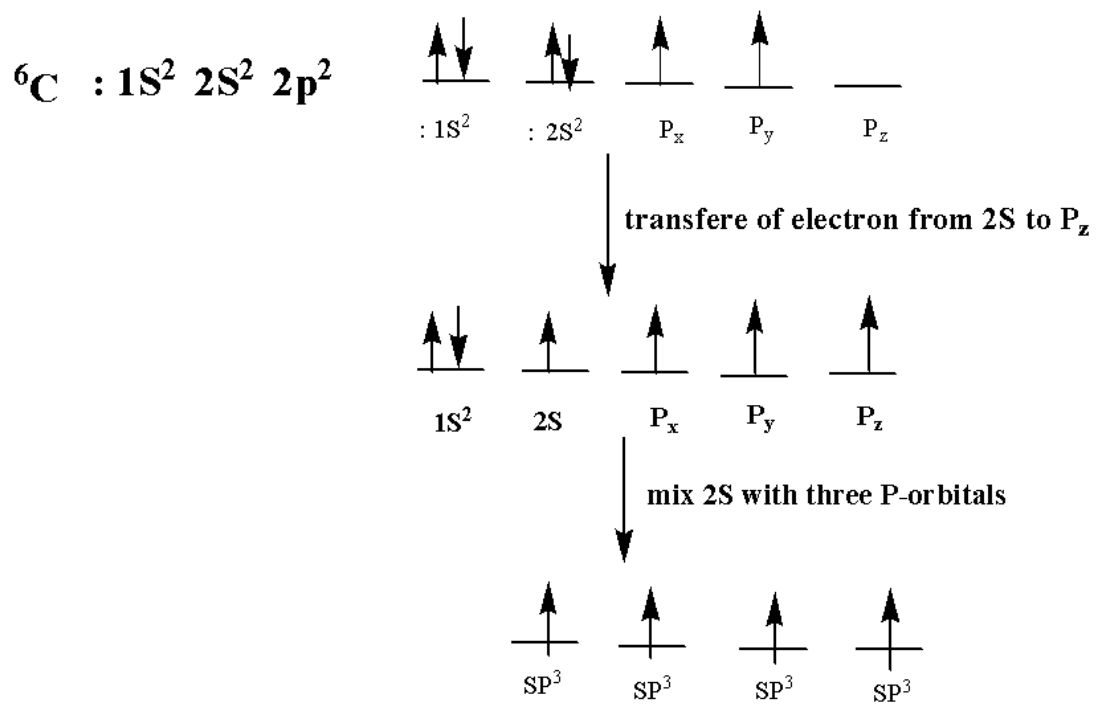
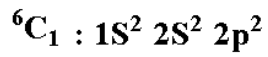


SP³ hybridization (Example: Methane: CH₄)

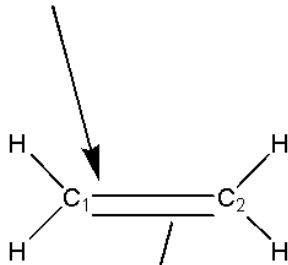


Tetrahedral

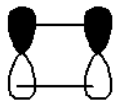
SP² hybridization (Example: Ethaene: CH₂=CH₂)



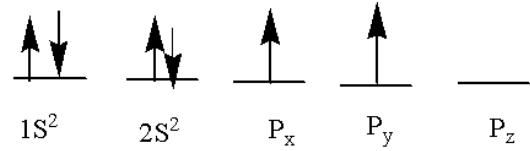
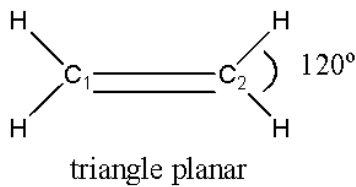
sigma bond (overlapping of two sp² orbitals)



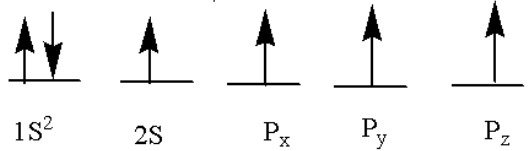
Pi-bond [results from overlapping between 2-P- orbitals side-by side]



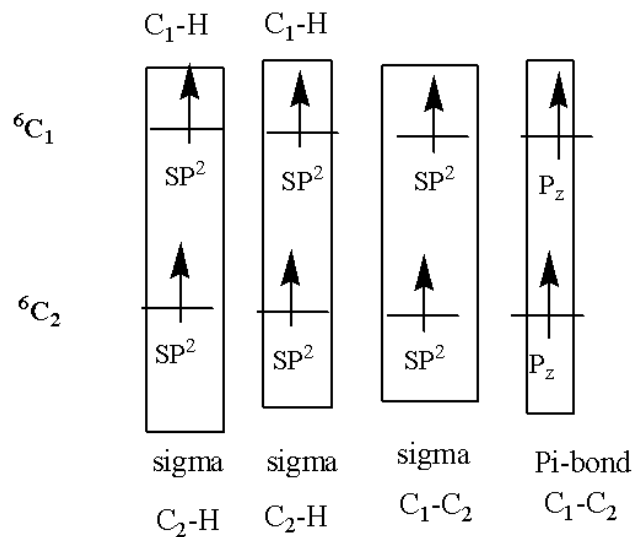
pi-bond



transfere of electron from 2S to P_z



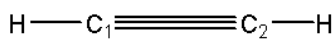
mix S with two P-orbitals



SP hybridization (Example: Ethyne: CH₃CH)

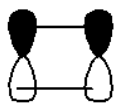
${}^6\text{C}_1 : 1\text{S}^2 2\text{S}^2 2\text{P}^2$

sigma bond (overlapping of two sp orbitals from two carbon atoms)

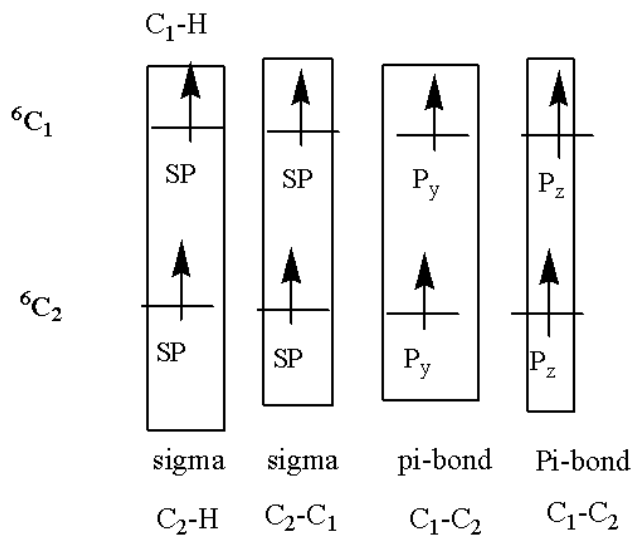
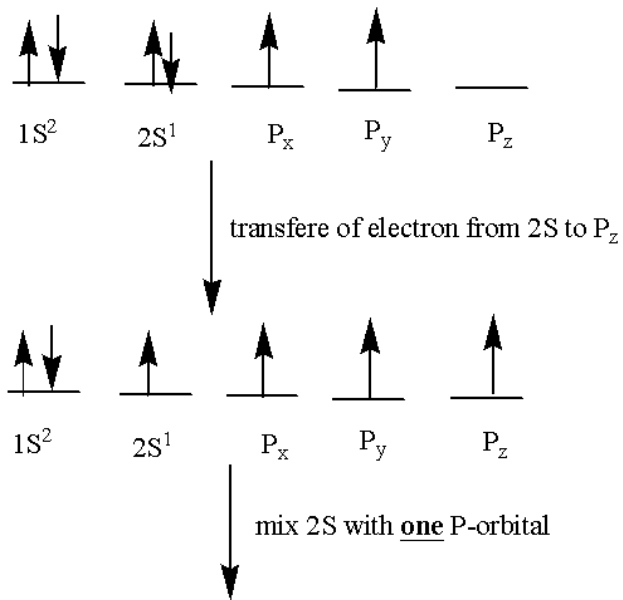
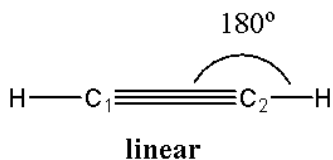


2 Pi-bond

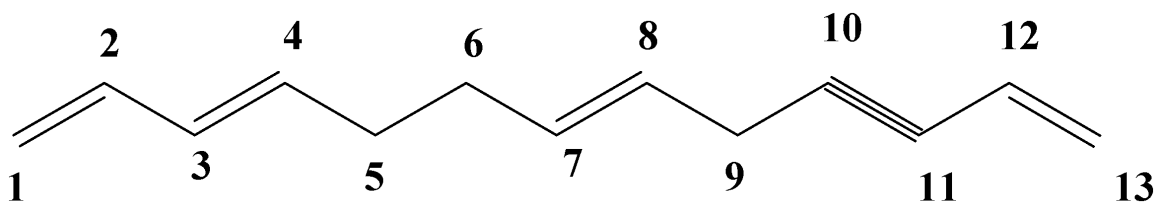
results from overlaoting between 4-P- orbitals side-by side



pi-bond



Example



Answer the following Questions:

1- Assign the type of hybridization for all atoms.

2- Assign type of hybridized orbitals that form the indicated sigma- bonds:

C1-C2

C2-C3

C4-C5

C5-C6

C6-C7

C9-C10

C10-C11

C11-C13