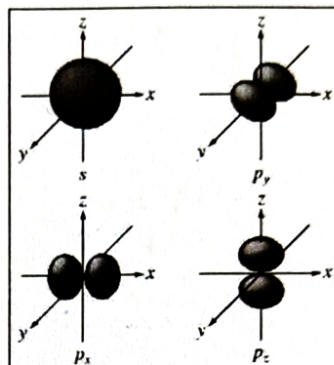
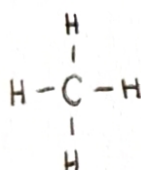


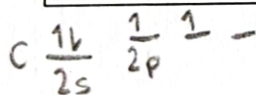
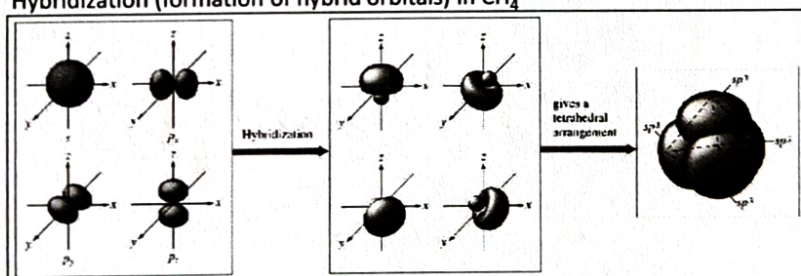
Orbitals and Covalent Bonding

Bonds form when orbitals overlap.

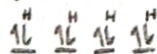
Methane CH_4



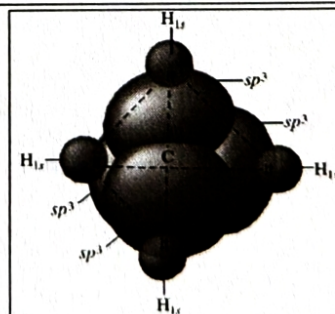
Hybridization (formation of hybrid orbitals) in CH_4



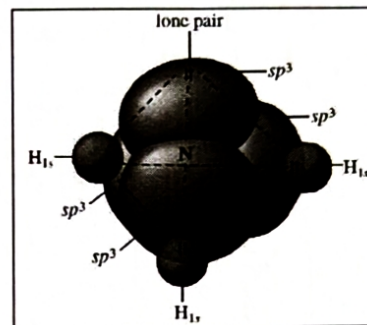
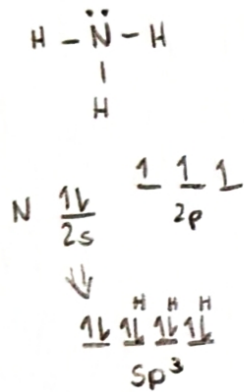
↓



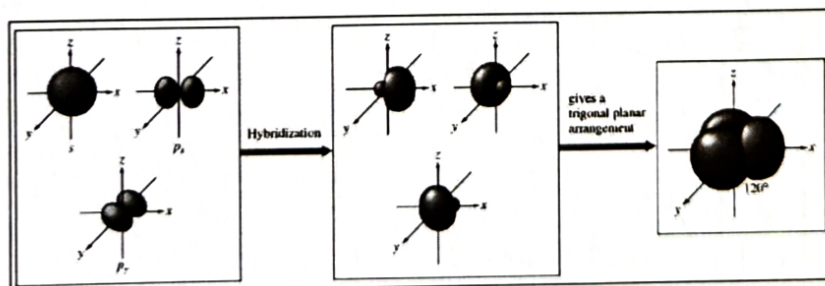
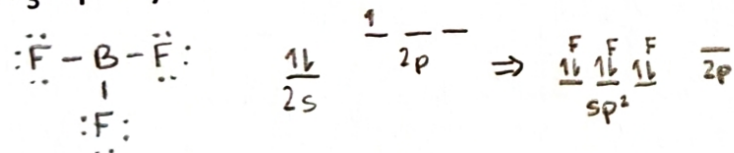
sp^3 hybridized orbitals



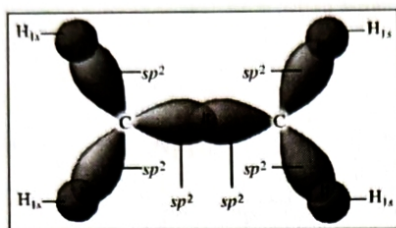
Ammonia NH_3



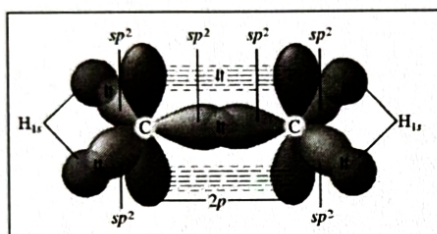
BF_3 : sp^2 Hybridization



Ethylene (C_2H_4)



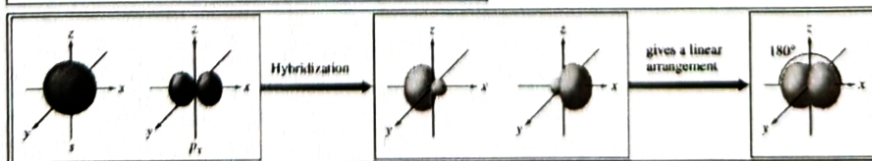
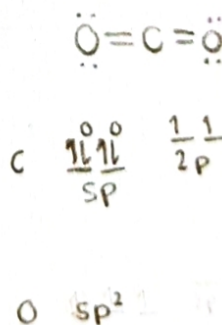
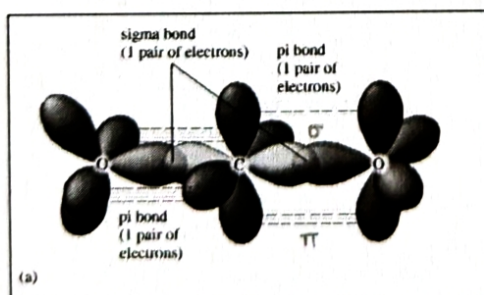
+ p orbitals



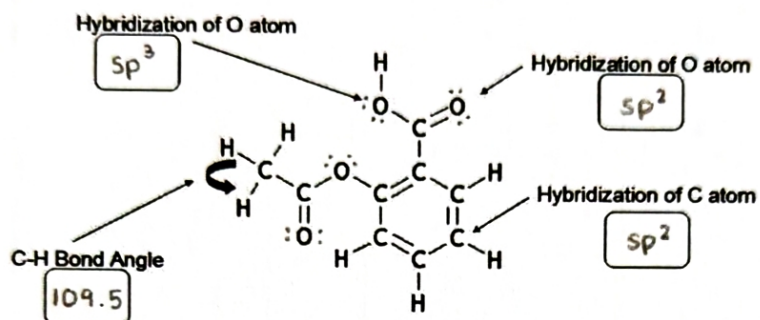
Single Bond = Sigma (σ) Bond
Double Bond = Sigma (σ) Bond + Pi (π) Bond

Overlap of p orbitals

CO_2 : sp Hybridization



The structural formula for aspirin is shown below. State the hybridization and/or bond angle for all that are selected. (Note: **nonbonding electrons** are not included in the structure.)



Number of sigma bonds present = 21

Number of pi bonds present = 5