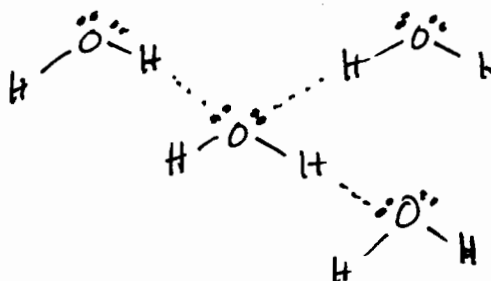
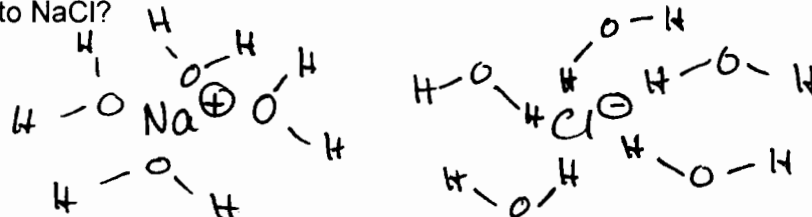


Intermolecular Forces

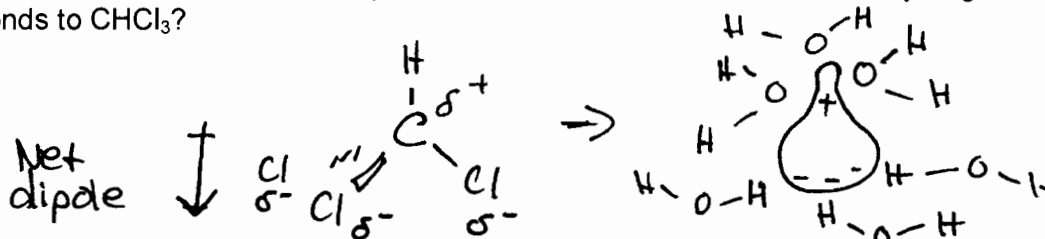
1. Draw the hydrogen bonding interaction between 5-6 water molecules



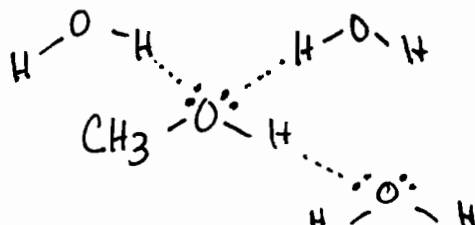
2. Show how the ionic compound NaCl is dissolved in water. Can water form hydrogen bonds to NaCl?



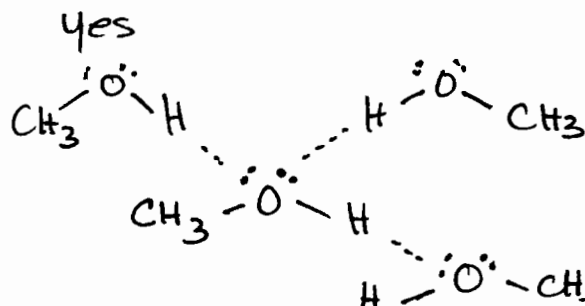
3. Show how water dissolves the polar molecule CHCl_3 . Can water form hydrogen bonds to CHCl_3 ?



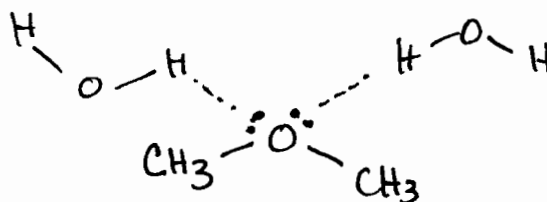
4. Show how water dissolves methanol (CH_3OH). Can water form hydrogen bonds to CH_3OH ? How many bonds can be formed?



5. Can methanol hydrogen bond to itself? If yes, show how all hydrogen bonds that can be formed?



6. Show how ether (CH_3OCH_3) can hydrogen bond to water. How many bonds can be formed?

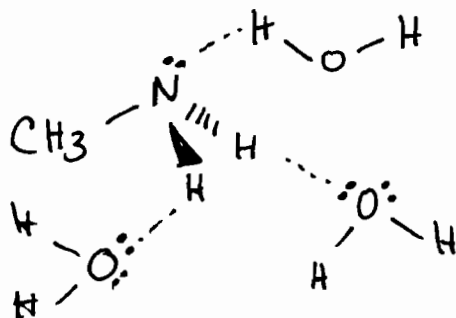


Intermolecular Forces

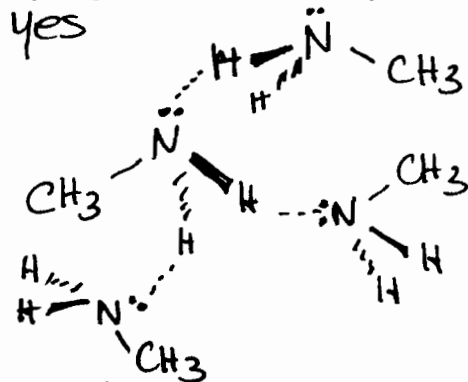
7. Can ether hydrogen bond to itself? If yes, show how all hydrogen bonds that can be formed?

No - ether has no H on an electro-negative atom

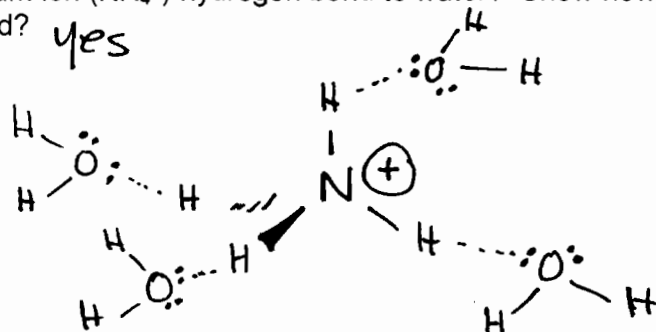
8. Show how methylamine (CH_3NH_2) can hydrogen bond to water. How many bonds can be formed?



9. Can methylamine hydrogen bond to itself? If yes, show how all hydrogen bonds that can be formed?



10. Can ammonium ion (NH_4^+) hydrogen bond to water? Show how. How many bonds can be formed?



11. Can ammonium ion hydrogen bond to itself? Show how. How many bonds can be formed?

No - there is no lone pair of electrons on ammonium.