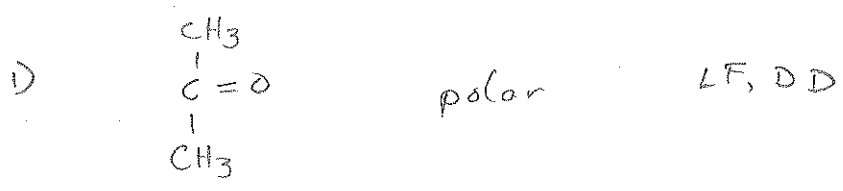
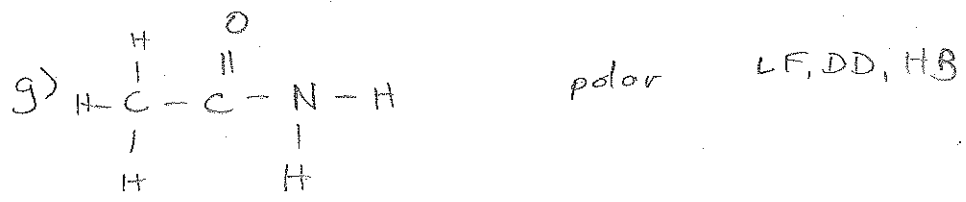
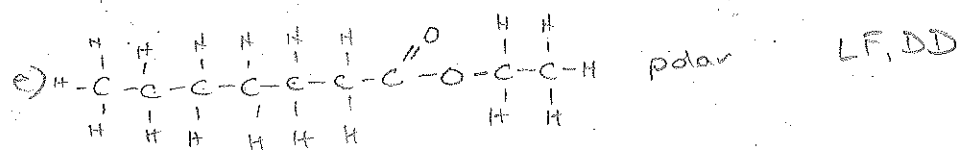
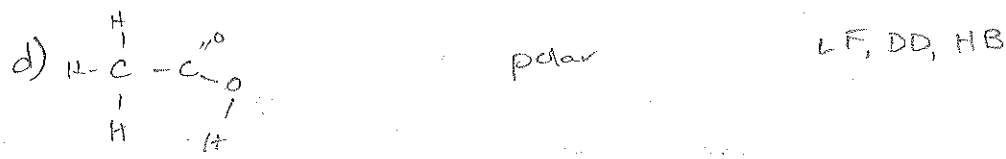
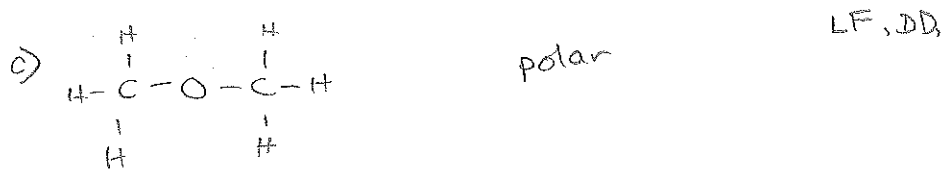
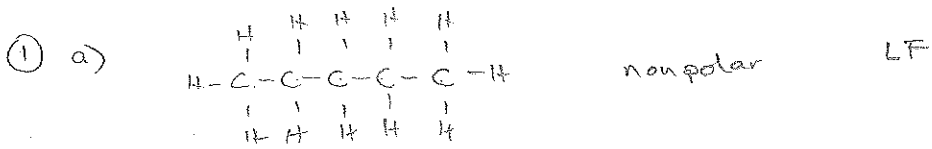
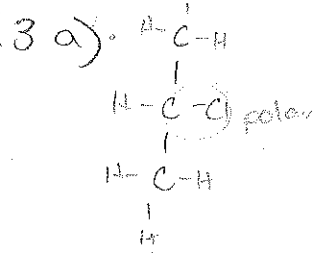
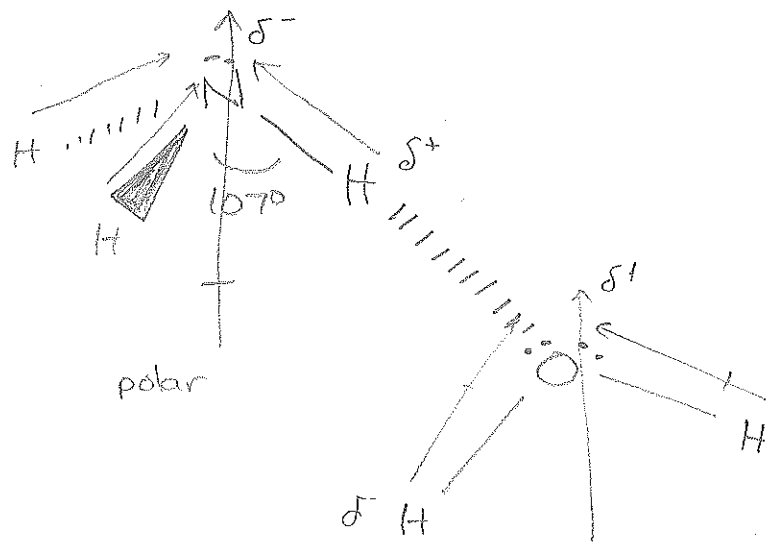


# Intermolecular Forces

(A)

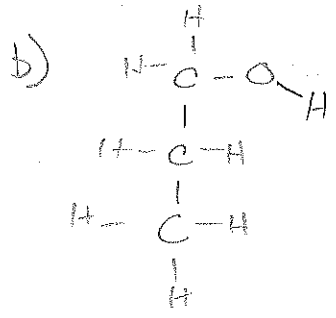


2.



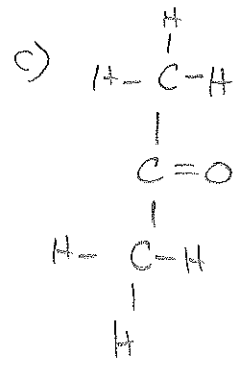
IMF - LF, DD

medium solubility  
 - contains a weakly polar bond  
 so it can form LF + DD w H<sub>2</sub>O



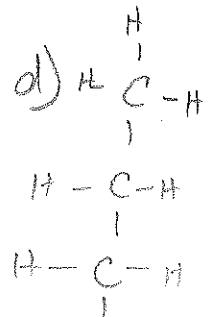
IMF - LF, DD, HB

high solubility as  
 + propanol will form LF, DD, HB w water



IMF - LF, DD

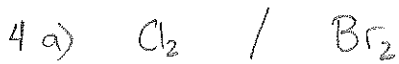
high solubility  
 can form LF < DD with H<sub>2</sub>O  
 and H<sub>2</sub>O can form 1 way HB w it as it contains an O.



IMF - LF

low solubility bcz H<sub>2</sub>O will be more attracted to itself as it will only form LF w propane

(C)

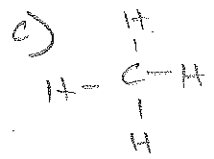


↑  
greater IMF (LF) as it is a larger molecule  $\approx$  more protons & electrons

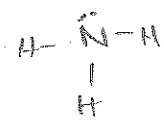


MM  $\rightarrow$  18 g/mol      18 g/mol

$\rightarrow$  LF is approximately equal  
 $\rightarrow$  H to Cl bond is polar  
 $\therefore$  IMF in  $HCl$  is greater

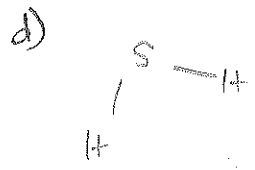


nonpolar  
LF



polar  
LF  
DD  
HB

LF is same  
ammonia is greater bcz it has more IMF

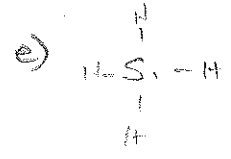


34 g/mol  
LF

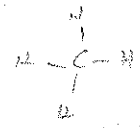


18 g/mol  
LF  
DD  
HB

although the LF in  $H_2S$  is greater (higher MM)  $H_2O$  has LF, DD, and HB  
DB & HB is stronger than LF

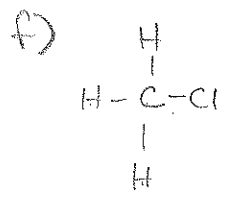


32 g/mol

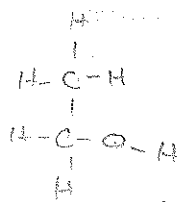


16 g/mol

bcz  $SiH_4$  has a greater MM its LF is stronger



50 g/mol



46 g/mol

although chloromethane has a slightly stronger LF, the C-Cl bond is only slightly polar  
the polar bond in ethanol is stronger giving it a higher DD  
also ethanol can have H-bonds

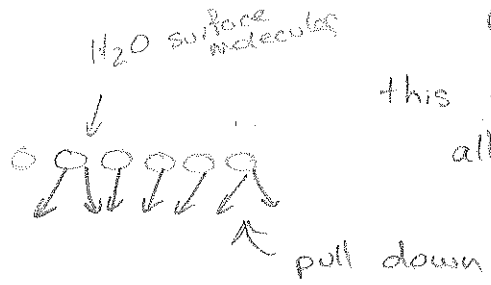
LF  
weak DD

LF  
DD  
HB

5. ethanol will have stronger surface tension bcz it has stronger IMF (LF, DD, HB) than ethane's IMF (LF)

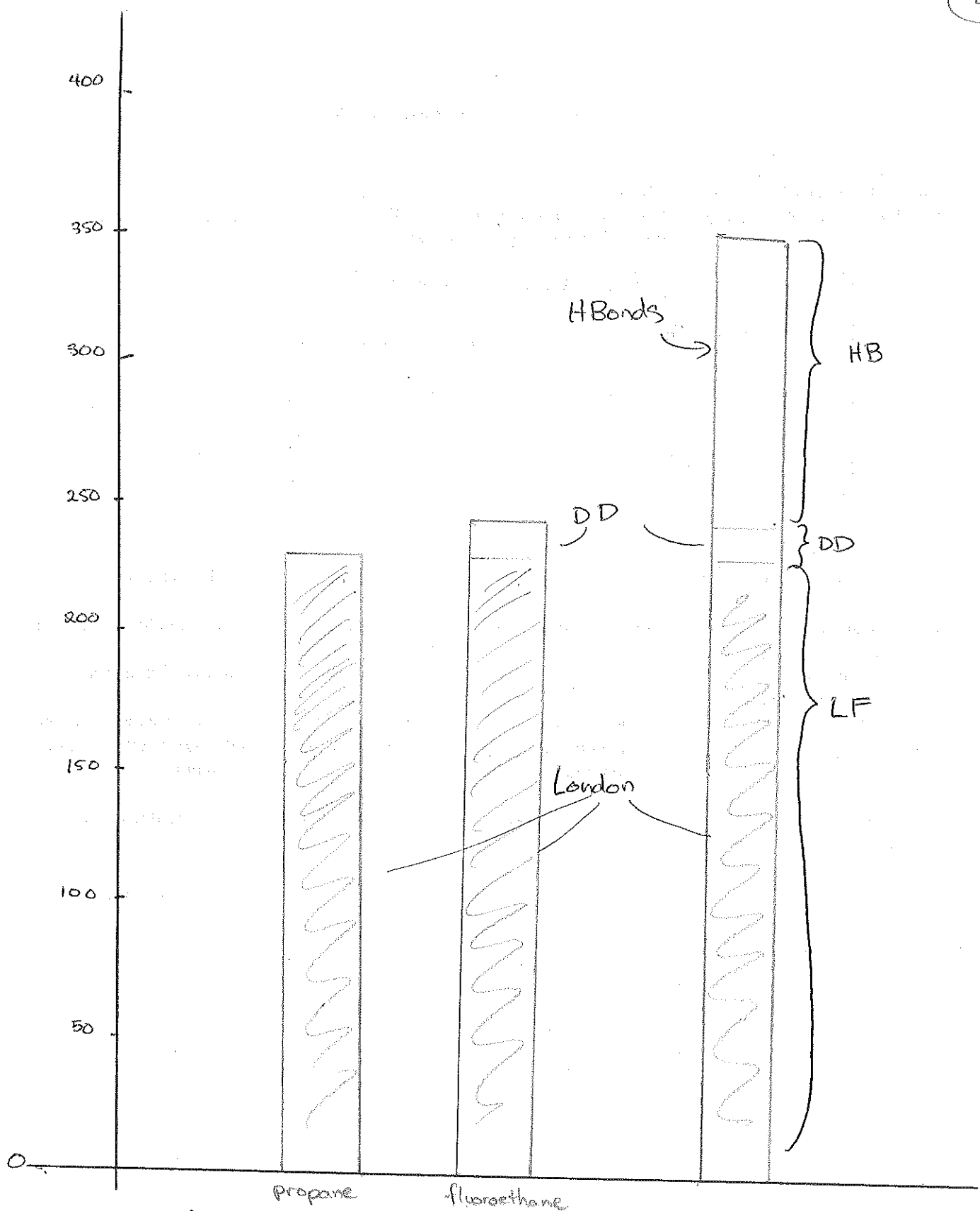
6.  dome of water

this is due to the surface tension (downward pull of surface molecules) that occurs as a result of water's high cohesion (LF, DD, HB)



this unbalanced attraction acts as a skin allowing H<sub>2</sub>O to rise above surface

7. Le Roy Radius → theoretical boundary which shows where intramolecular and intermolecular forces would dominate



propane  $\rightarrow 273 + (-42) = 231\text{ K}$   
fluoroethane  $\rightarrow 273 + (-38) = 245\text{ K}$   
ethanol  $\rightarrow 273 + 78 = 351\text{ K}$

Based on Results LF is most important, DD is least important