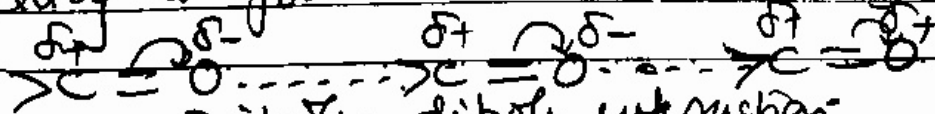


Physical properties of Aldehyde & Ketone.

1. State: lower member of aldehyde like 1st member i.e. formaldehyde is in Gaseous state. C_2 to C_{11} are in liquid state and further it becomes in Solid state.
2. Smell: lower member of aldehyde have unpleasant smell but as molecular mass increases or size of R increases it's smell becomes less pungent. Ketone have pleasant smell.
3. Solubility: $\rightarrow$ lower member of Carbonyl compound can form hydrogen bond with water so they are soluble in water, but as molecular mass increases or size of R increases it's probability to form H-bond with water decreases and hence it becomes insoluble in water.
4. Boiling point: $\rightarrow$ In Aldehyde & Ketone there is presence of Carbonyl Group ($C=O$) which is polar, so due to dipole-dipole interaction carbonyl compound get associated hence the boiling point of aldehyde & ketone are more than hydrocarbon having comparable molecular masses. Although aldehyde & ketone can not form intermolecular hydrogen bond so the boiling point of Aldehyde & ketone are lower than that of Alcohol (which have ability to form intermolecular hydrogen bond).



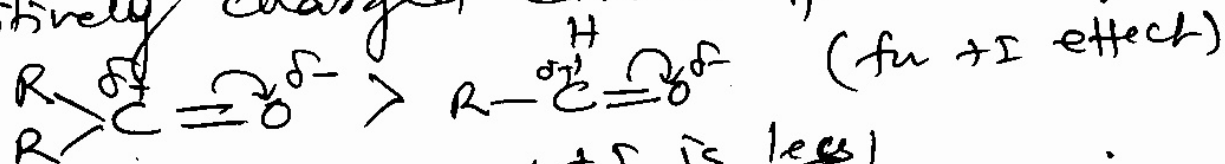
Teacher's Signature:

Dipole-dipole interaction is weaker than intermolecular Hydrogen bond.

So the boiling of the following class of compound having comparable molecular mass will be:

Alcohol > Aldehyde & ketone > Hydrocarbon

If Aldehyde and Ketones isomeric forms are available then the boiling point of Ketone will be slightly more than that of Aldehyde it is due to more electron releasing group (alkyl) is bonded with positively charged carbon of Carbonyl group.



(+I is more dominant)

(+I is less dominant)

So Ketone group becomes more stable with respect to Aldehyde, & the boiling point of Ketone becomes slightly more than that of Aldehyde.

✓

