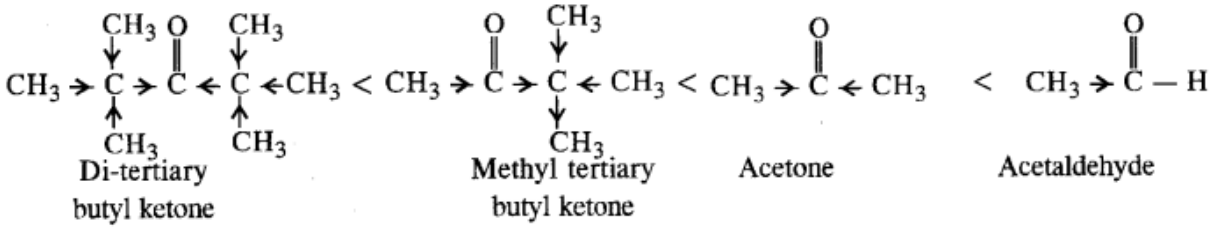
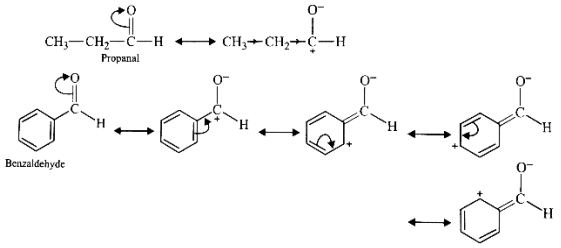
1. Aldehydes are more reactive than ketones towards nucleophilic reagents why?
2. Aldehydes and ketones give nucleophilic addition reaction why?
3. Arrange the following in increasing order of the property indicated:
4. Acetaldehyde, Acetone, Ditertbutyl ketone, Methyltertbutyl ketone (reactivity towards HCN)



5.Which is more reactive, Benzaldehyde or Propanal?



6. Arrange the following carbonyl compounds in increasing order of their reactivity in nucleophilic addition reactions :

(a) Ethanal, propanal, propanone, butanone

(b) Benzaldehyde, p-tolualdehyde, p-nitrobenzaldehyde, acetophenone

7. Is the addition of HCN in carbonyl compounds acid/base catalyzed?

8. There are two-NH_2 group in semicarbazide . However only one is involved in formation of semicarbazones. Why?

9. **Give reasons:**

(i) The α- hydrogen atoms of aldehydes and ketones are acidic in nature.

(ii) Oxidation of aldehydes is easier than ketones.

(iii) $CH_2 = CH - COOH$ **is more acidic than** $CH_3CH_2 - COOH.$

10. What happens when sodium reacts with carboxylic acid?

11. Why is carboxylic acid stronger than alcohol and phenol?

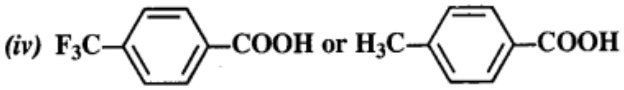
12. How will you account for the acidic nature of carboxylic acid ?

13. Which acid from each of the following pairs would you expect to be a stronger acid?

(i) CH_3COOH or CH_2FCOOH

(ii) CH_2FCOOH or $CH_2ClCOOH$

(iii) $CH_2FCH_2CH_2COOH$ or CH_3CHFCH_2COOH

(iv) 

14. (i) **$CH_3CH_2CH(Br)COOH$, $CH_3CH(Br)CH_2COOH$, $(CH_3)_2CHCOOH$, $CH_3CH_2CH_2COOH$ (acid strength)**

(ii) Benzoic acid, 4-Nitrobenzoic acid, 3, 5-Dinitrobenzoic acid, 4-Methoxybenzoic acid (acid strength)

15. Give plausible explanation for each of the following:

(i) Cyclohexanone forms cyanohydrin in good yield but 2,2, fctrimethylcyclohexanone does not

(ii)During the preparation of esters from a carboxylic acid and an alcohol in the presence of an acid catalyst, the water or the ester should be removed as soon as it is formed

16. Although phenoxide ion has more number of resonating structures than carboxylate ion, carboxylic acid is a stronger acid than on phenol. Why?

17. Carboxylic acid have higher boiling points than aldehydes, ketones and even alcohol of comparable molecular mass

18. Why lower carboxylic acids are soluble in water?

19. Arrange the following in order of increasing boiling point : Ethoxyethane, Butanal, Butanol, n-butane.

20. Carboxylic acids do not give the characteristic **nucleophilic addition reactions of the carbonyl group.**

21.Benzoic acid does not undergo Friedel-Crafts reactions (alkylation or acylation)

22. Thus, the following acids are arranged in order of increasing acidity

23.Explain acidic strength of following compounds $CF_3COOH > CCl_3COOH > CHCl_2COOH > NO_2CH_2COOH > NC\text{-}CH_2COOH > FCH_2COOH > ClCH_2COOH > BrCH_2COOH > HCOOH > ClCH2CH_2COOH > C_6H_5COOH > C_6H_5CH_2COOH > CH_3COOH > CH_3CH_2COOH$