CHAPTER - 21
CARBOXYLIC ACIDS

1. 2 Tertiary alkyl side chain is not oxidised by $KMnO_4$

2. 3 $A = CH_3 - C \equiv C - MgBr,\ B = CH_3 - C \equiv C - COOH$

3. 1 $RCH_2CH_2OH \xrightarrow{PBr_3} RCH_2CH_2Br \xrightarrow{KCN} RCH_2CH_2CN \xrightarrow{H_2O/H^+} RCH_2CH_2COOH$

4. 4 It is due to the decrease in the double bond character by resonance.

5. 1 Carbonate and bicarbonate react with acids and liberate CO_2 and H_2O

6. 1 Rate of esterification decreases with increase in steric effect

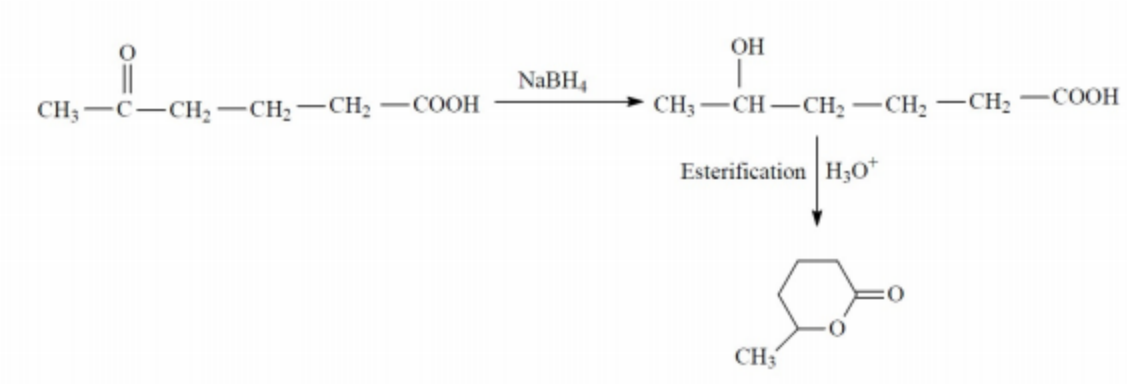
7. 1 HVZ reaction followed by dehydrohalogenation

8. 1 Aldehydes are easily oxidised to carboxylic acids

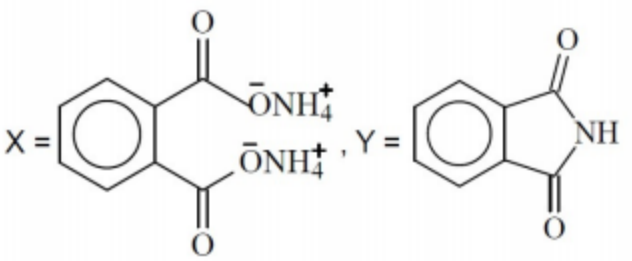
9. 4 Electron richer ring is brominated at para-position

10. 4 –COOH is m-directing

11. 1



12. 3



13. 6

$$146 \times \frac{493}{100} = 72 \left(\therefore 6 \text{ carbon atoms}\right)$$

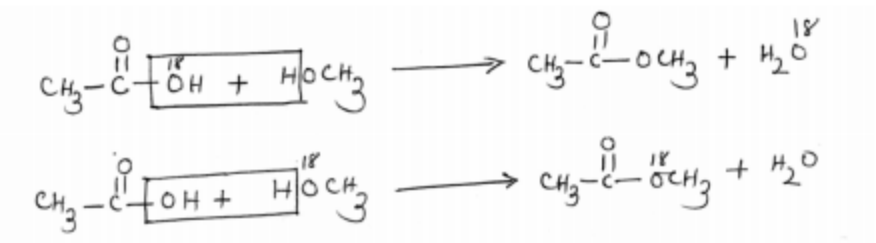
14. 4

Phenol, carboxylic acid, sulphonic acid and imide are deprotonated with NaOH

15. 4

Compounds 1, 2, 3 and 6 do not have $\alpha - H$, thus do not undergo HVZ reaction

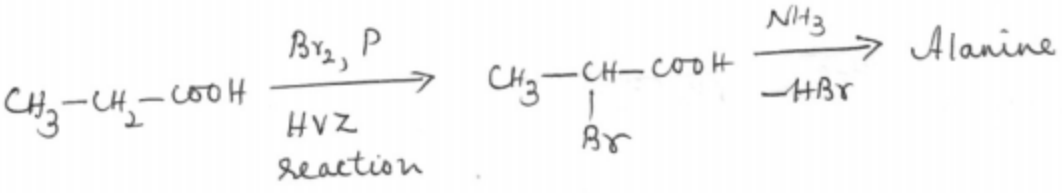
16. D



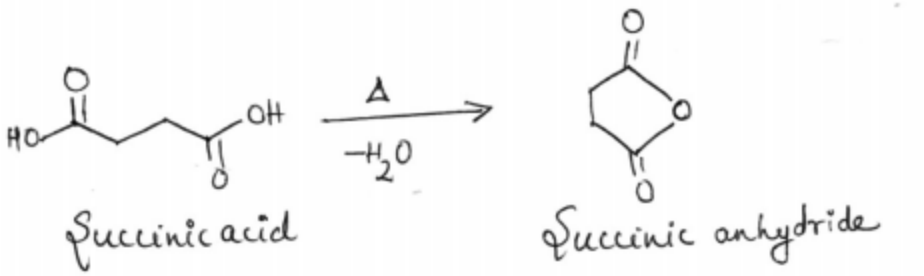
17. A

I has only resonance, II has no resonance
III has resonance with releasing group &
IV has resonance with electron withdrawing group

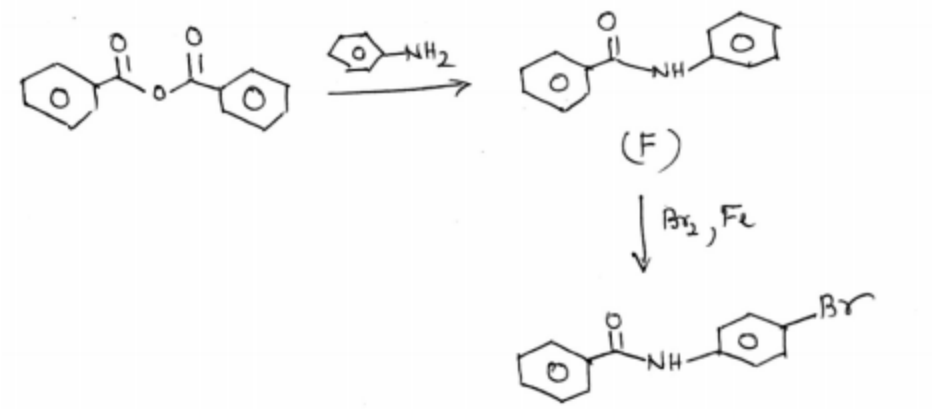
18. C



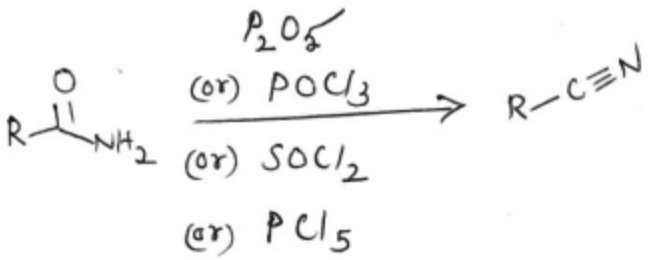
19. B



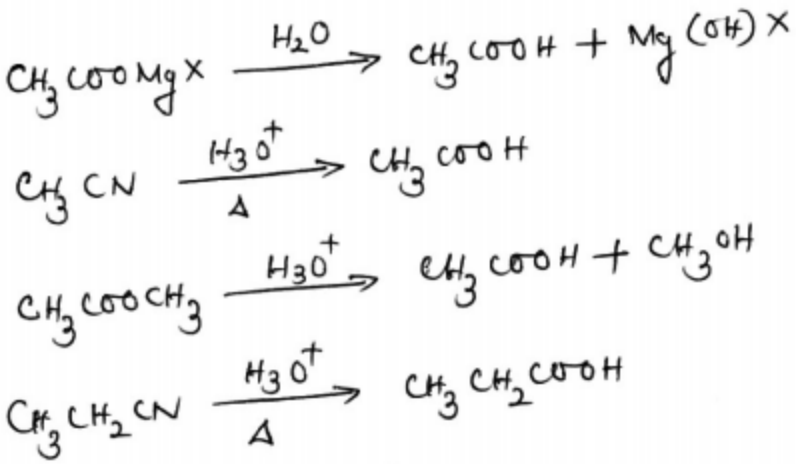
20. D



21. ABCD



22. ABC

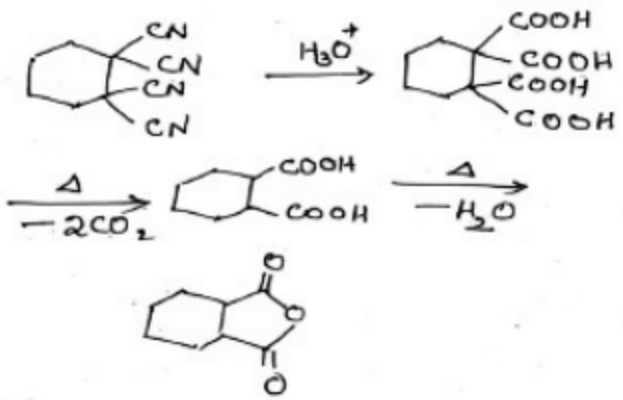


23. D

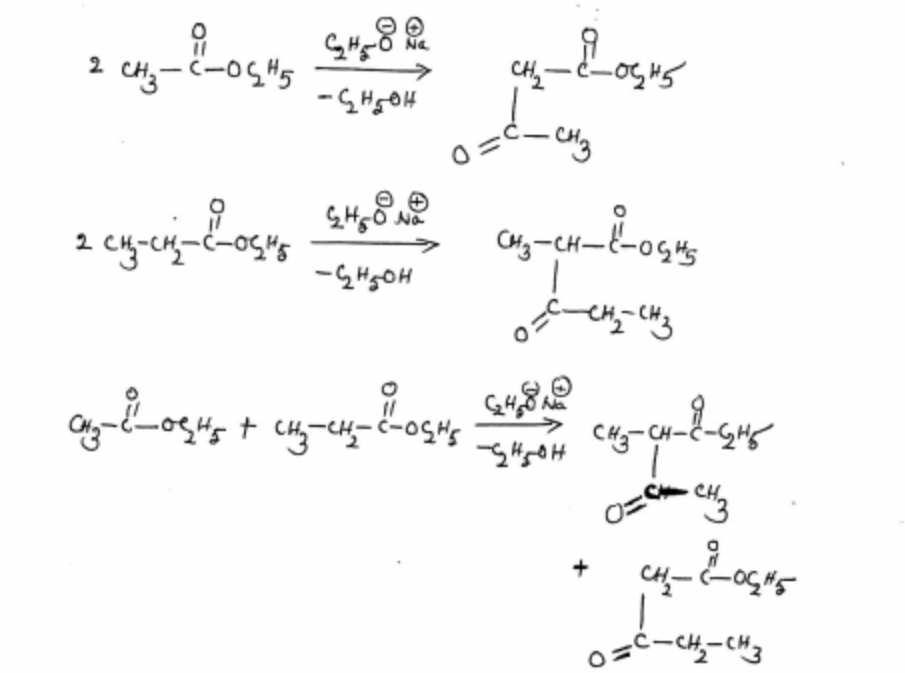
24. BC

The H-bond in acid is stronger due to high polarity of –O–H bond in acids

25. 1.00

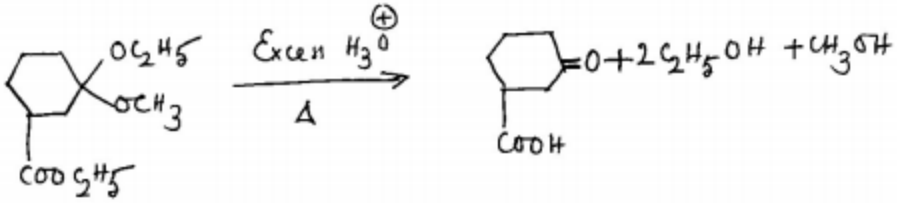


26. 4.00

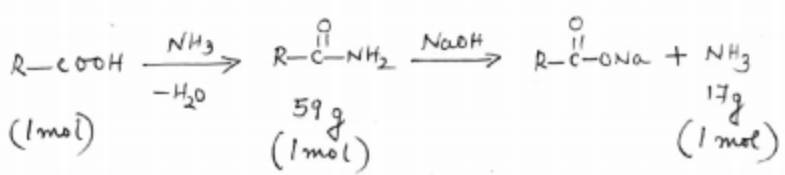


Thus, a total of four condensation products are obtained.

27. 3.00



28. 2.00



$\therefore$ Molar mass of R–COOH must be, $59 - 16 + 17 = 60\ g\ mol^{-1}$

($-NH_2$, $-OH$)

Structure of R–COOH is, CH_3-COOH

29. C

Order of reactivity of carbonyl compounds is, Acid halide > Aldehyde > Ketone > acid anhydride ≈ ester > Carboxylic acid > amide > Carboxylate

30. C