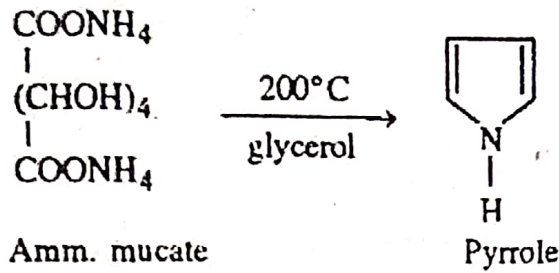
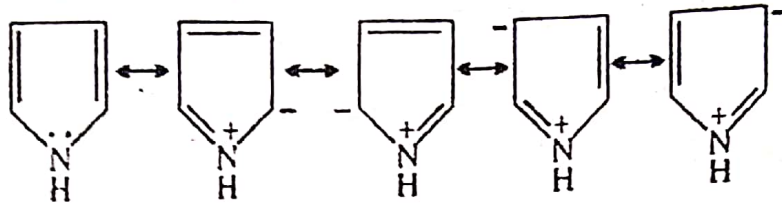


5. It is prepared by distilling ammonium mucate with glycerol—

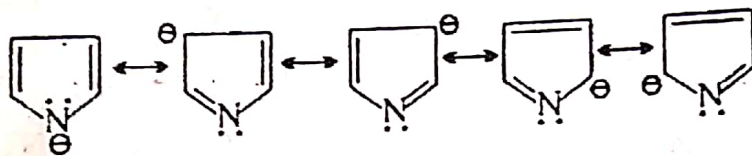


Q.16. Pyrrole is amphoteric—Why?

Ans. : Pyrrole is a feeble base because the lone pair of electrons on N-atom is not available for protonation with acids due to its involvement in resonating structures—



And pyrrole is a weak acid as its anion is more resonance stabilised than the molecule—

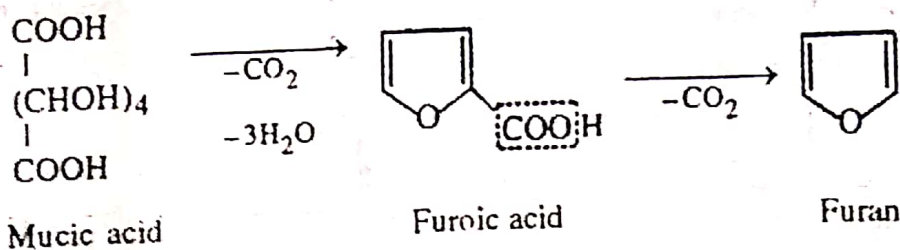


Hence it is amphoteric.

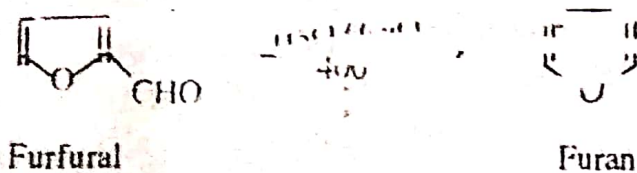
Q.17. Discuss the methods of preparation of furan.

Ans. : Preparation of furan :

1. Dry distillation of mucic acid gives furoic acid which undergoes decarboxylation ( $-\text{CO}_2$ ) at its boiling point to yield furan—

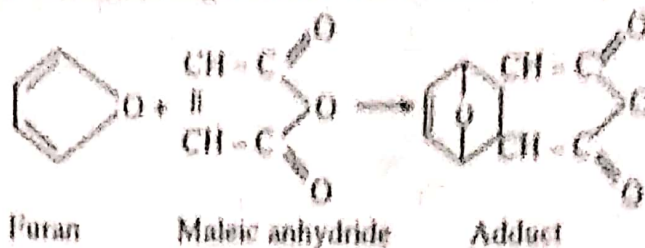


2. It is prepared by catalytic decomposition of furfural in steam—



Q.18. What happens when furan is treated with maleic anhydride?

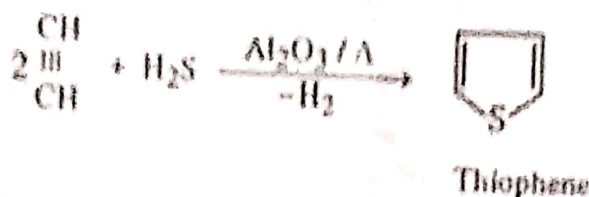
Ans. : Furan undergoes Diel-Alder reaction to yield the adduct.



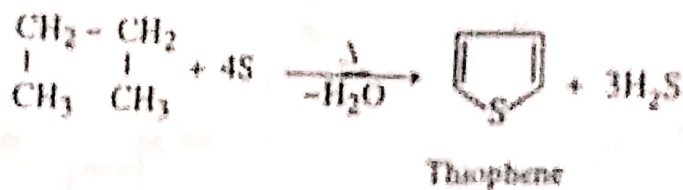
Q.19. Discuss the methods of preparation and properties of thiophene.

Ans. : Preparation of thiophene :

1. It is prepared by heating acetylene and  $H_2S$  in a tube containing  $Al_2O_3$  at  $400^\circ$ —



2. It is prepared by the action of sulphur on *n*-butane at  $650^\circ$ —



3. It is prepared by heating sodium succinate with phosphorous trisulphide—



Q.20. Furan is less reactive than thiophene so far as electrophilic substitution is concerned—Why?

Ans. :



Furan



Thiophene

As oxygen is more electronegative than sulphur, so the O-atom of furan draws the charge cloud of the ring more towards itself than the S-atom of thiophene. Thus the furan ring is slightly deactivated than the thiophene ring and electrophilic substitution reactions occur more readily on thiophene than on furan.