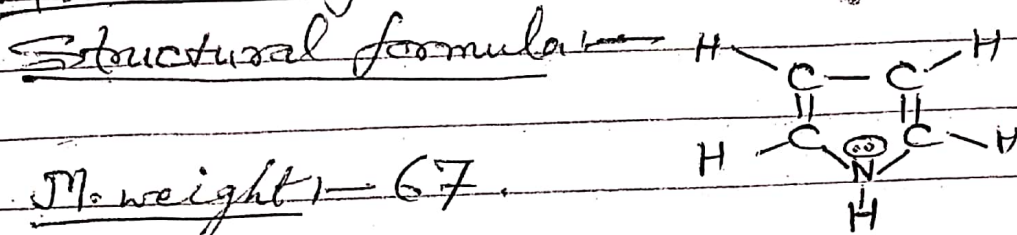


For B.Sc-III, Paper VII (C)
PYRROLE

By Dr. Sarwat Tauheed
Oriental college

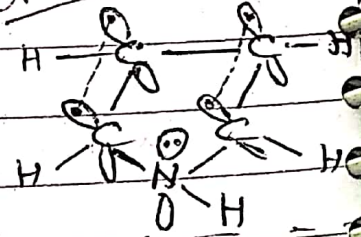
3 PYRROLE

Molecular formula — C_4H_5N



M. weight — 67.

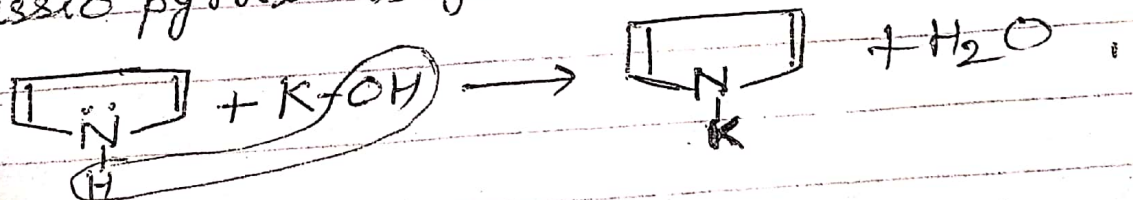
orbital picture —



Occurrence — It occurs in coaltar and bone oil (Dippel's oil).

Isolation — It may be isolated from bone oil. Bone oil is first washed with dil. H_2SO_4 acid to remove basic impurities and next with dil. alkali to remove acidic impurities. It is then fractionated and the fraction obtained at $100-150^\circ$ contains pyrrole.

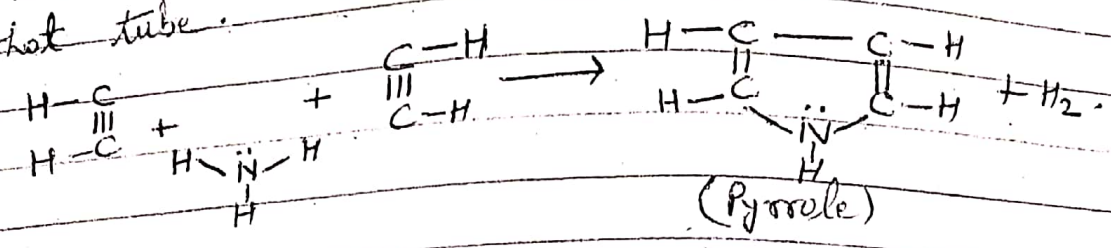
The distillate is now treated with (or fused) with KOH (solid). When potassio pyrrole is formed and separated.



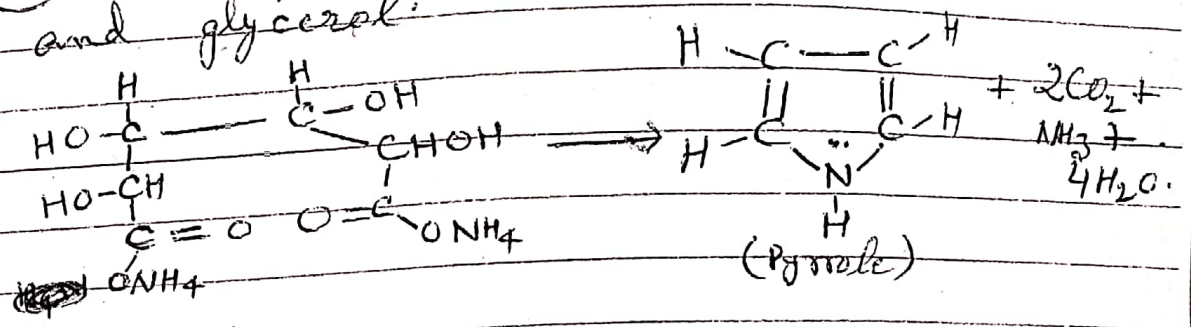
This on steam distillation results pyrrole

$$\text{K} \left[\begin{array}{c} \text{N} \\ | \\ \text{H} \end{array} \right] + \text{H}-\text{OH} \longrightarrow \begin{array}{c} \text{H} \\ | \\ \text{C}=\text{C} \\ | \quad | \\ \text{H}-\text{C} \quad \text{N} \quad \text{C}-\text{H} \\ | \\ \text{H} \end{array} + \text{KOH}$$

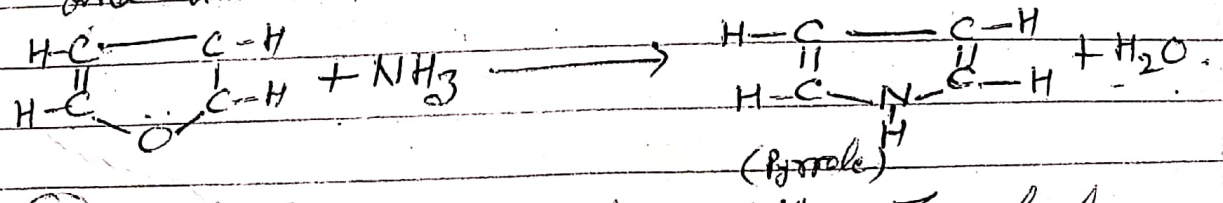
Synthesis → (1) It is prepared by passing a mixture of acetylene & ammonia (2:1) through red hot tube.



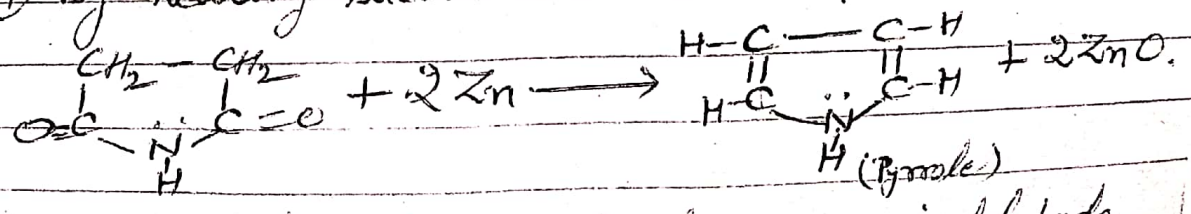
(2) It is prepared by distilling ammonium mucate and glycerol.



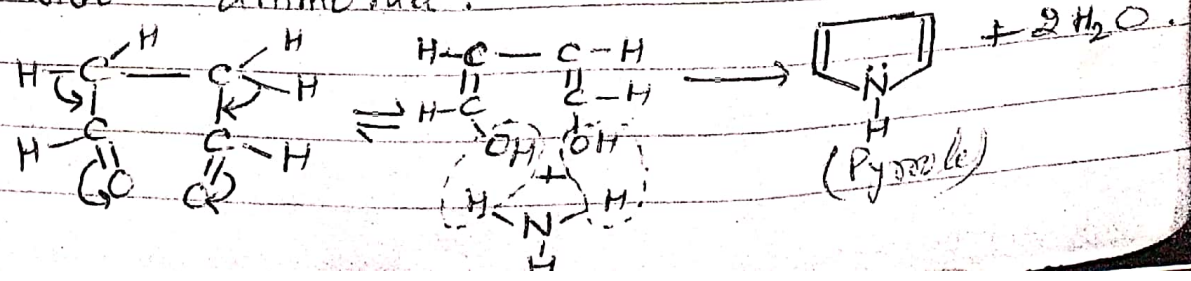
(3) It is prepared by passing a mixture of furan and ammonia over heated alumina at 480-490°C.



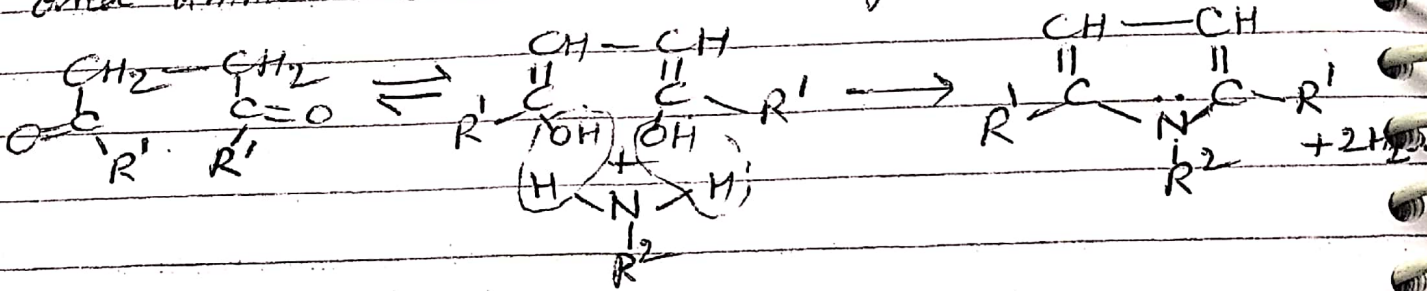
(4) By heating succinimide with Zn dust.



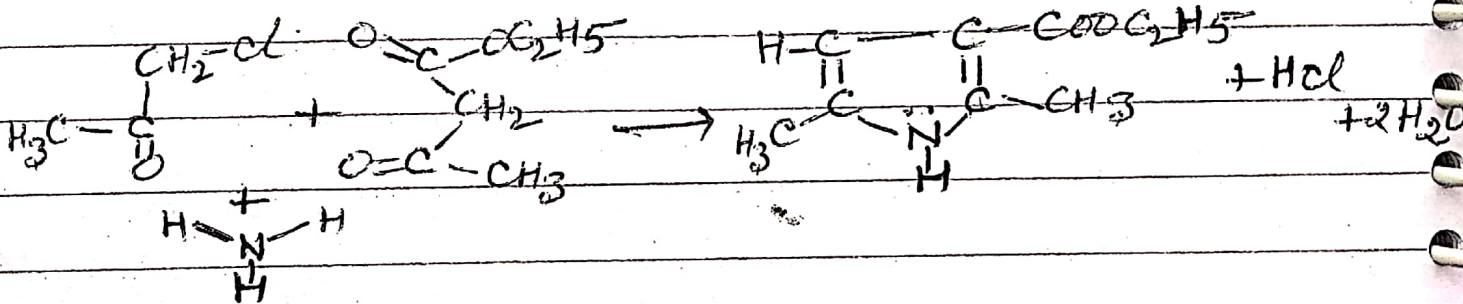
(5) It is prepared by heating succinaldehyde with ammonia.



⑥ Paul-Knorr synthesis \rightarrow Pyrrole derivatives are prepared by the interaction of 1,4-diketone and ammonia or 1° amine or hydrazine.



⑦ Hantzsch synthesis \rightarrow Pyrrole derivative is prepared by the condensation of between monochloroacetone, Ethylacetoacetate and ammonia.



⑧ Knorr-synthesis \rightarrow It is prepared by condensation of α -amino acid or ketone with β -keto acid (EAA).

