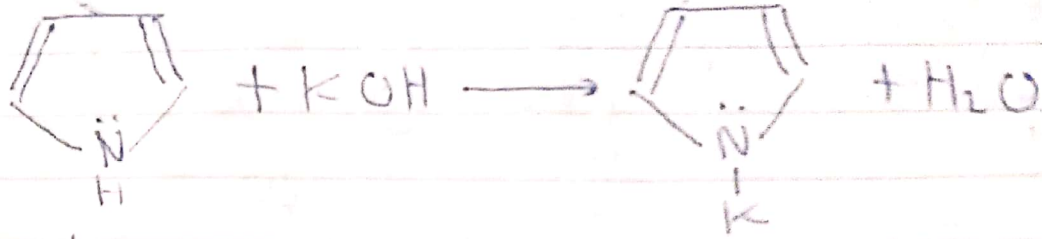


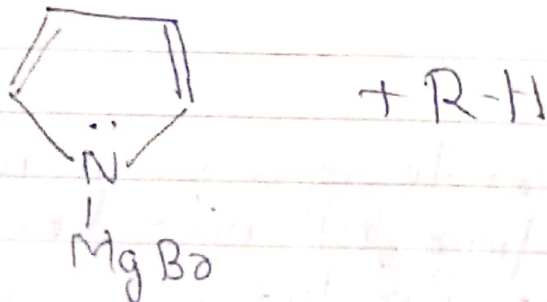
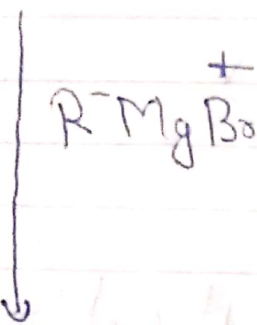
Imp.

(2). Acidic character -

Like phenol pyrazole is also a weak acid indicating on the basis of its reaction with solid KOH and Grignard reagents.



Potassium pyrazole



Pyrazole magnesium Bromide.
Aromatic character

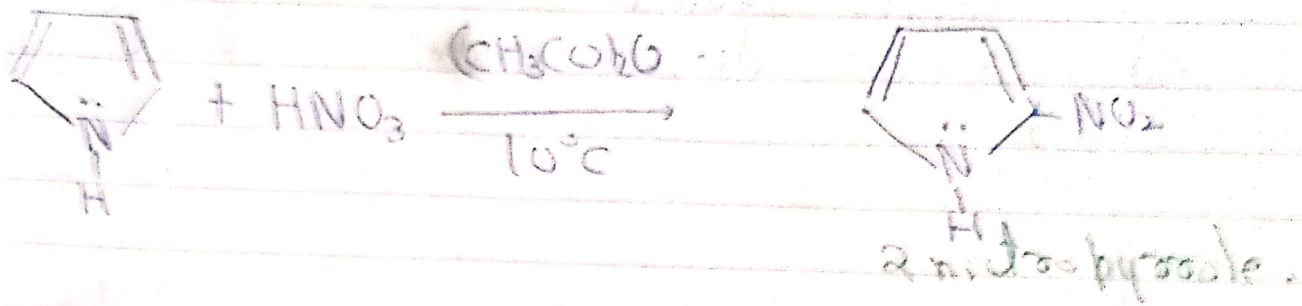
(3). Electrophilic Substitution reaction -

Pyrazole undergoes electrophilic substitution reactions mainly at C-2.

(a) Nitration -

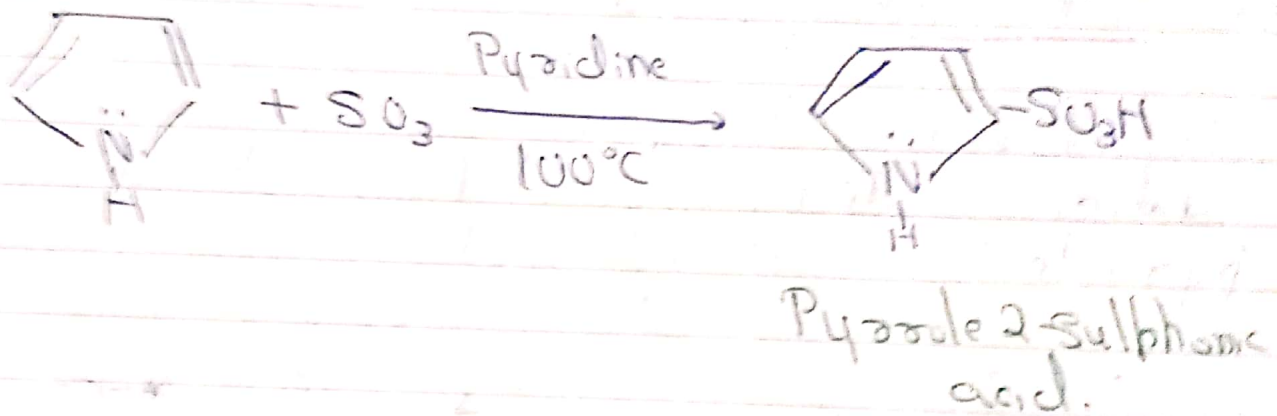
Pyrazole can be nitrated by a cold solution of nitric acid in acetic acid.

anhydride to give 2 nitro pyrazole.



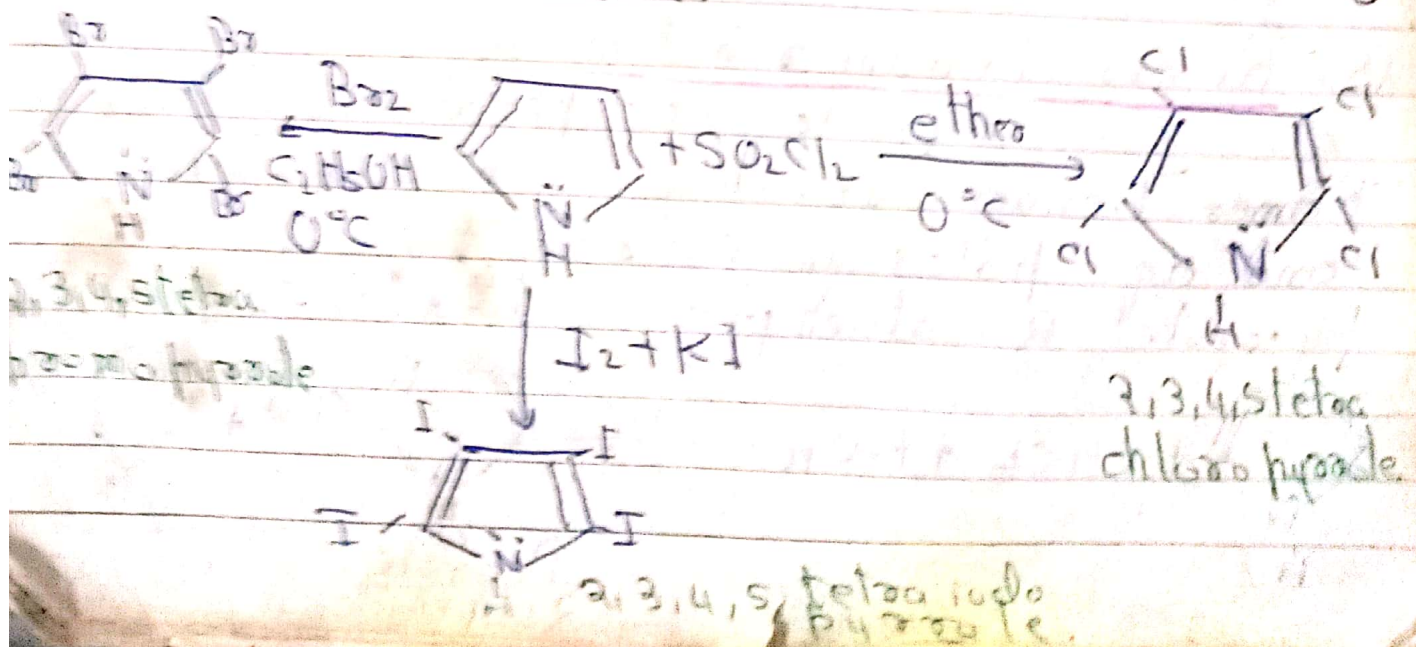
b) Sulphonation-

Pyrazole can be sulphonated with SO_3 in pyridine at 100°C to yield pyrazole 2-sulphonic acid.



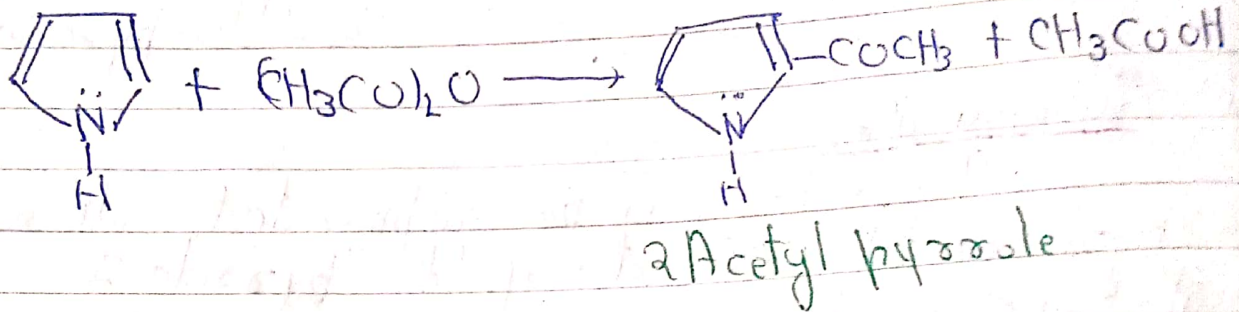
c) Halogenation-

Halogenation of pyrazole can take place with greater vigour giving corresponding tetrahalo derivative.



(d). Friedel Crafts reaction:

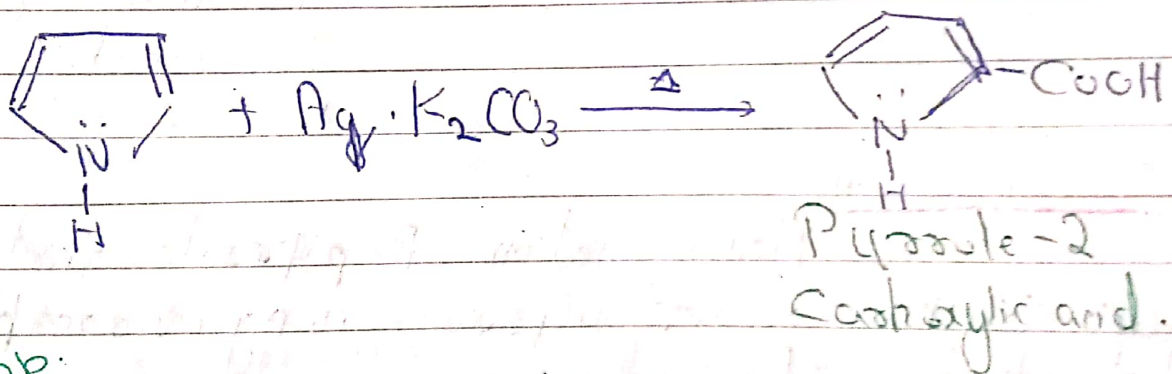
Pyrazole can be undergo Friedel crafts acylation with acetic anhydride without using catalyst.



Imp:

(4). Kolbe-Schmitt reaction-

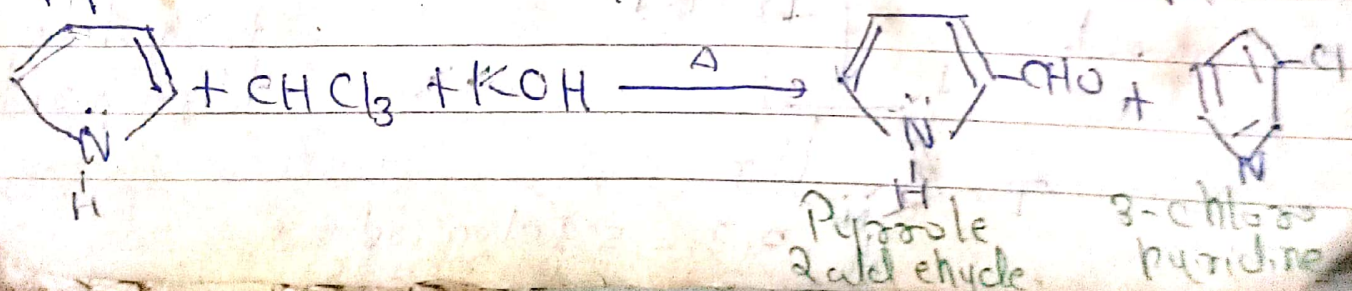
Pyrazole like phenol can undergo carboxylation with K_2CO_3 at $100^\circ C$ to give pyrazole 2-carboxylic acid.



Imp:

(5). Reimer-Tiemann reaction-

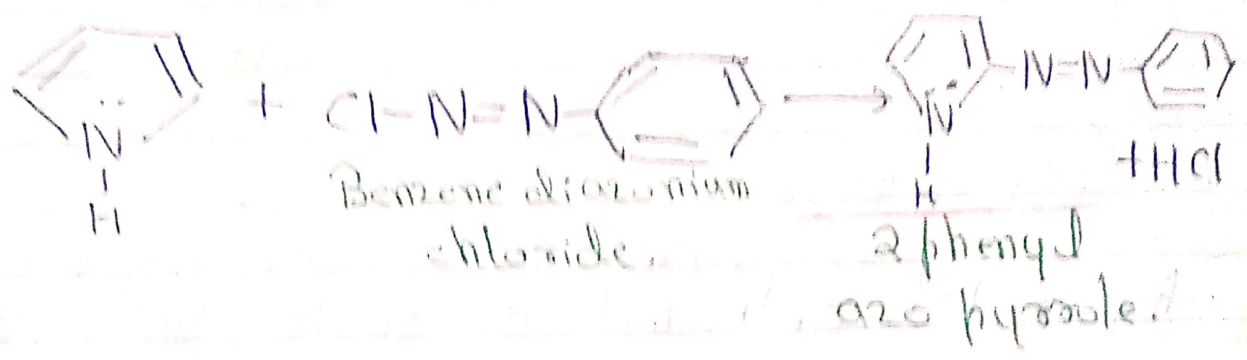
Pyrazole like phenol can undergo Reimer-Tiemann reaction with chloroform and aq. potassium hydroxide to give pyrazole 2-aldehyde and 3-chloropyridine.



Imp

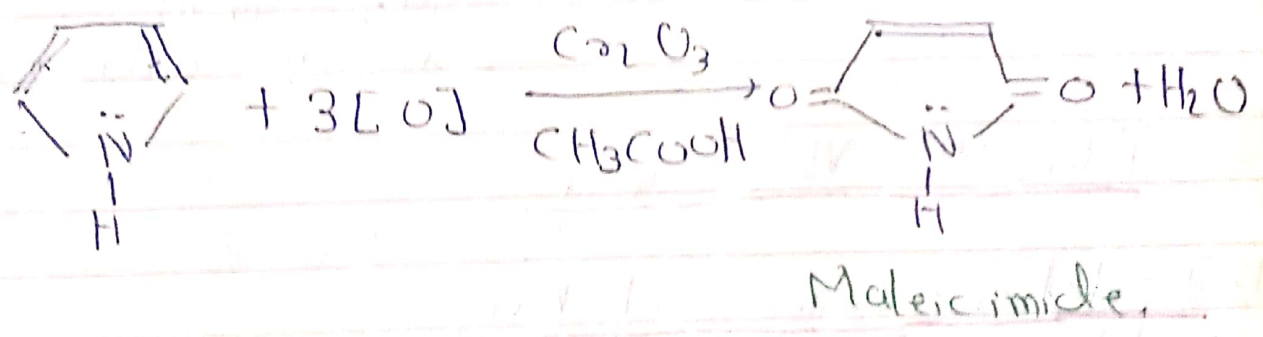
(6) Diazo Coupling

Pyrazole like phenol coupled with weakly acidic solution of benzene diazonium chloride to give 2 phenyl azopyrazole.



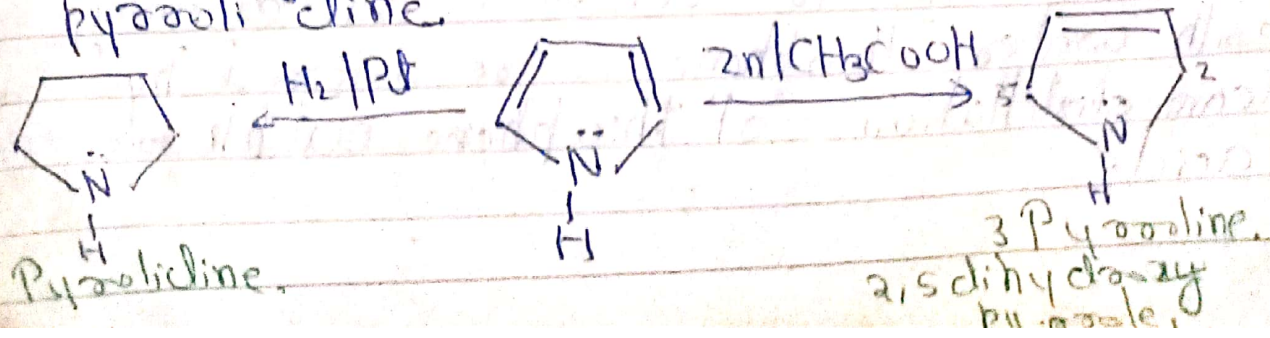
(7) Oxidation:

Pyrazole is oxidised by chromium trioxide in acetic acid to maleic imide.



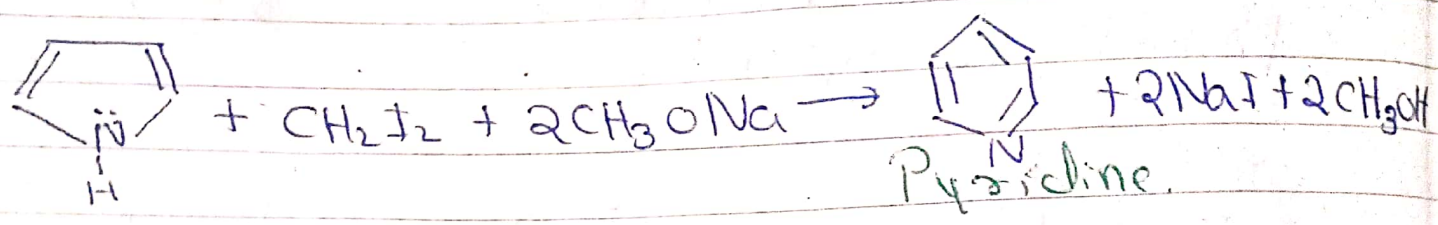
(8) Reduction

Pyrazole on reduction with Zn and acetic acid gives 2,5 dihydropyrazole but catalytic reduction (H₂/Pt) gives pyrrolidine.

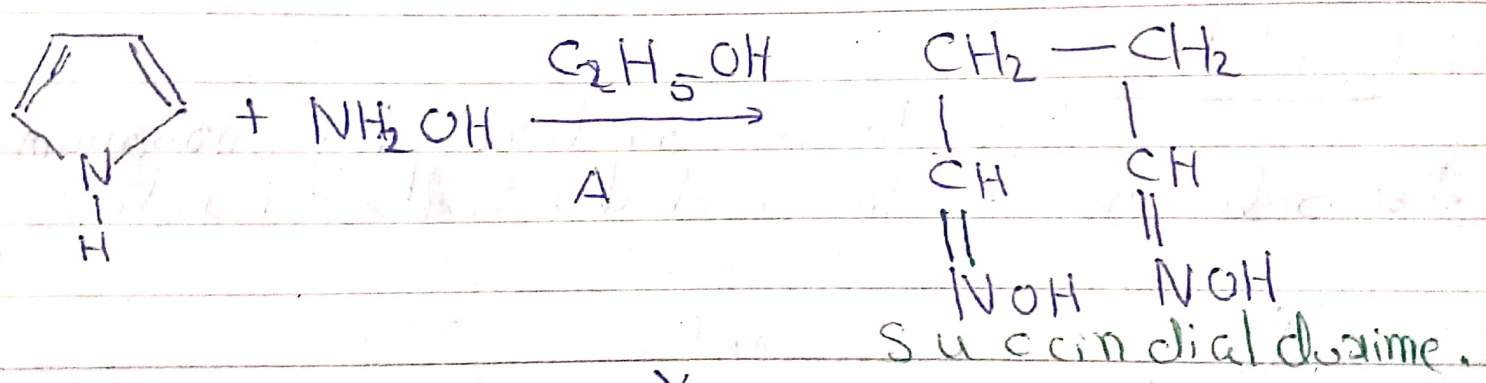


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(9) Ring expansion - Pyrazole undergoes ring expansion when heated with methylene iodide and sod. methoxide.



(10) Ring opening - Pyrazole undergoes ring opening when treated with hot ethanolic hydroxylamine.



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