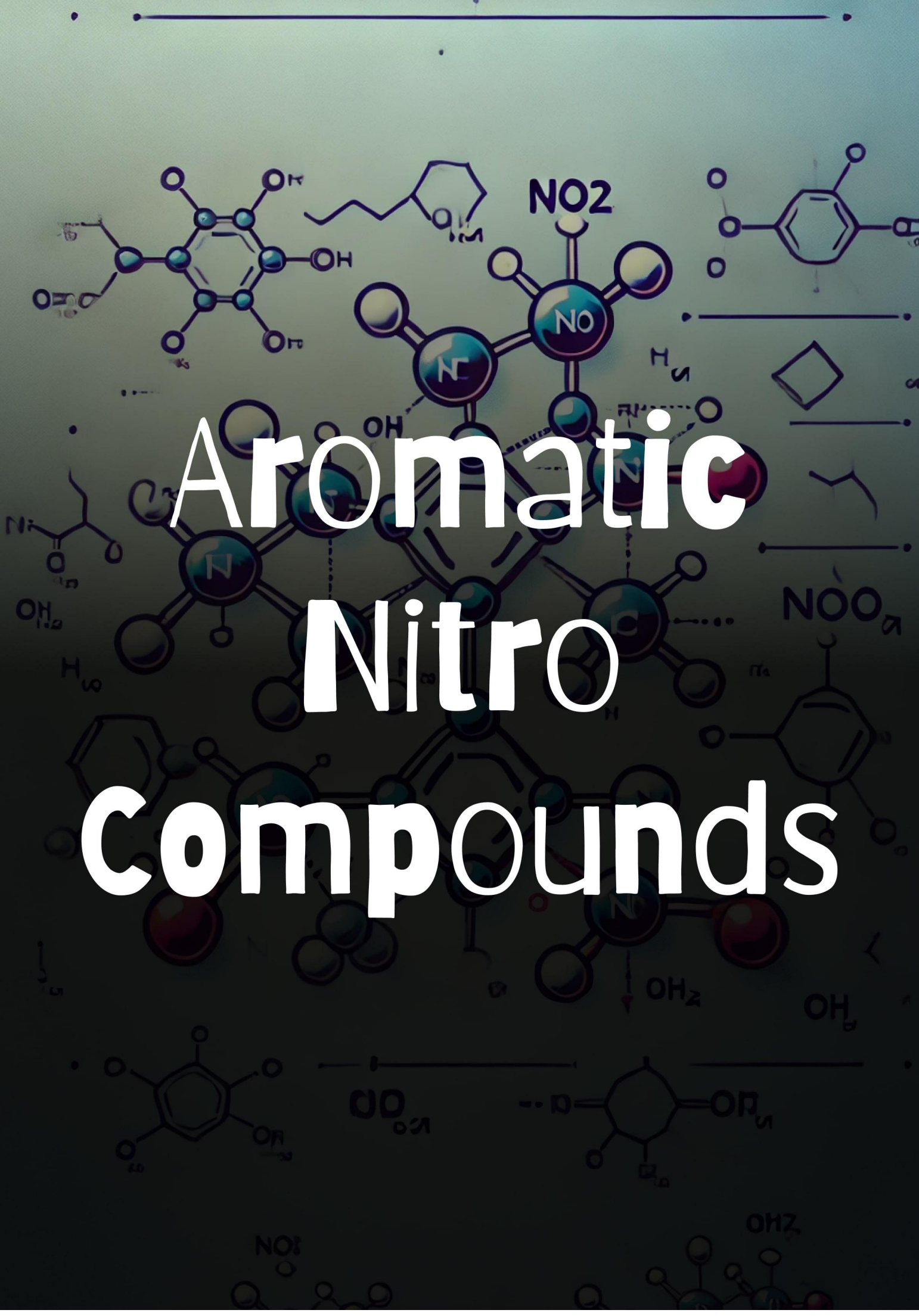
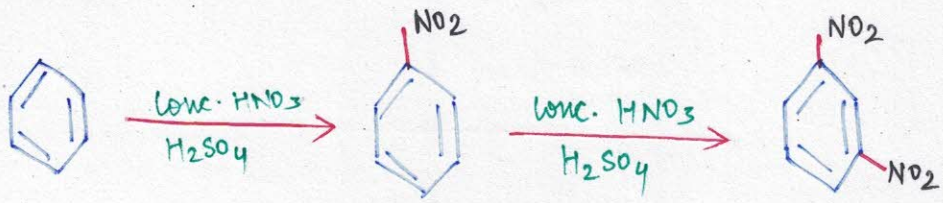
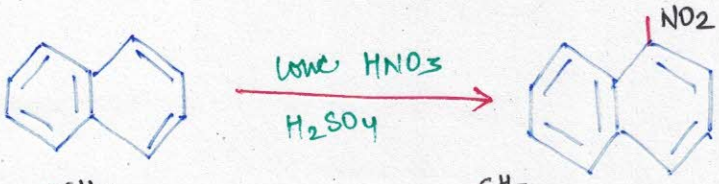
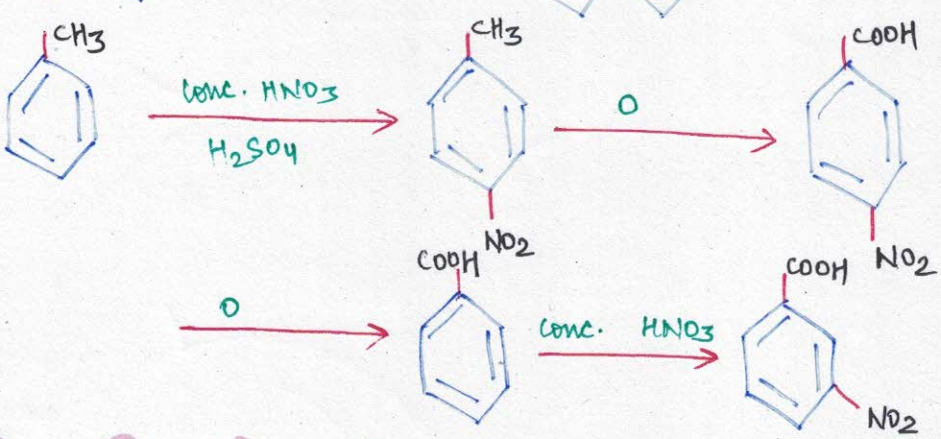


PREPARATION







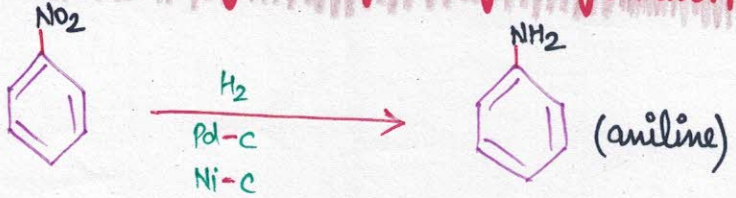
PROPERTIES

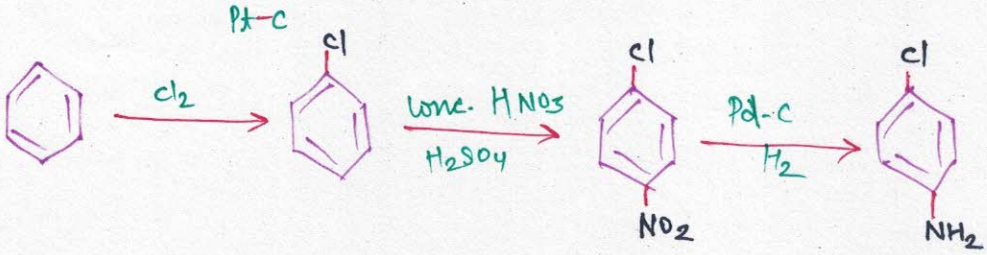
1. $Ar-\overset{+}{N}(=O)-O^{-} \longrightarrow Ar-N=O \longrightarrow Ar-\underset{H}{N}-OH \longrightarrow Ar-NH_2$

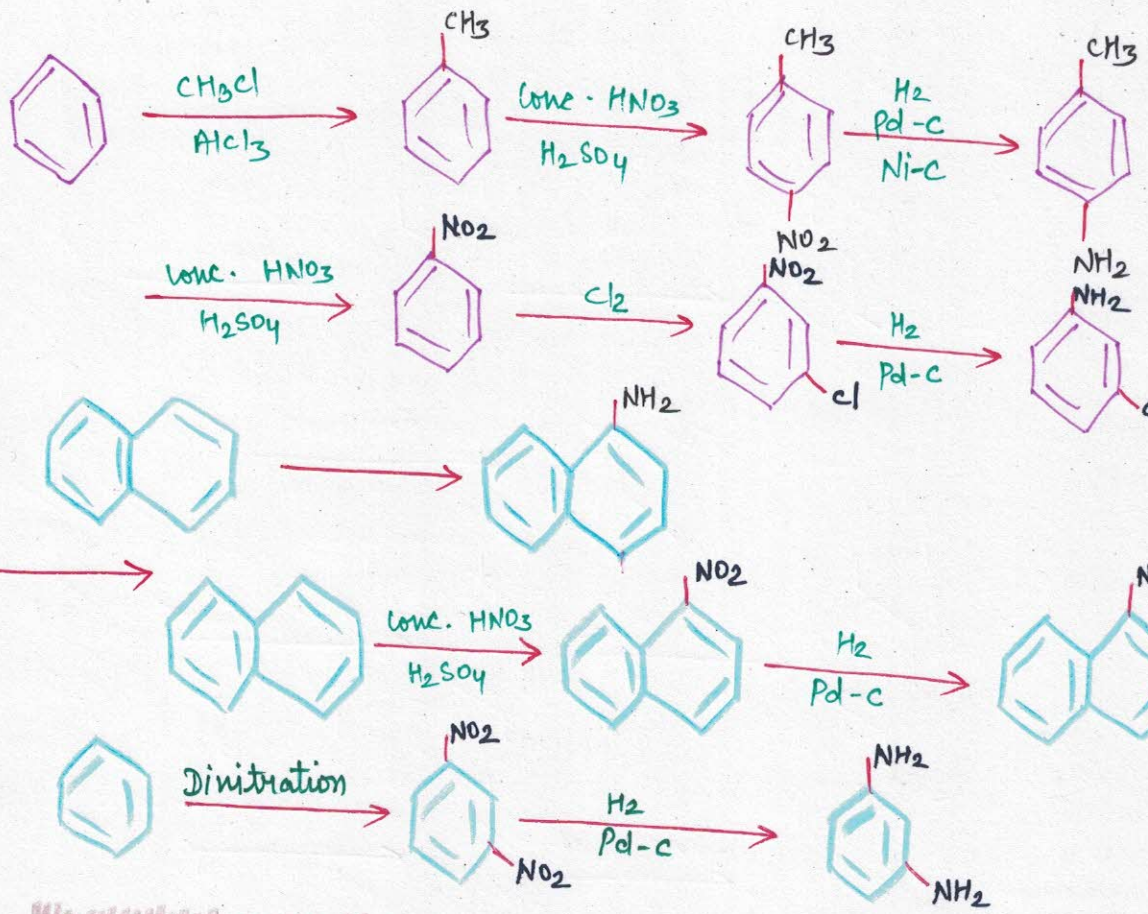
So, $Ar-NO_2 \xrightarrow{\text{reduction}} Ar-NH_2$

CONDITIONS FOR REDUCTION

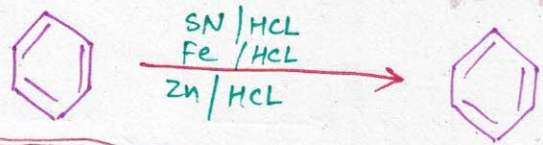
a. **Reduction by Catalytic hydrogenation**







b Reduction in acidic medium...



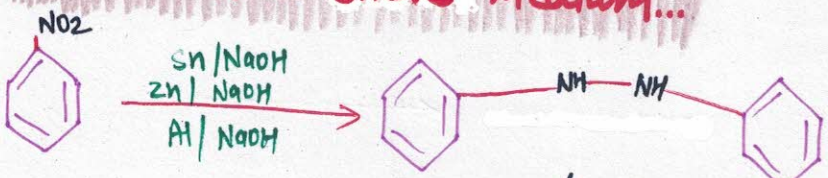
MECHANISM

$$SN + 2HCL \longrightarrow SnCl_2 + 2H$$
$$Fe + 2HCL \longrightarrow FeCl_2 + 2H$$
$$Zn + 2HCL \longrightarrow ZnCl_2 + 2H$$

Same as catalytic hydrogenation.

E.g. Same as that of catalytic hydrogenation.

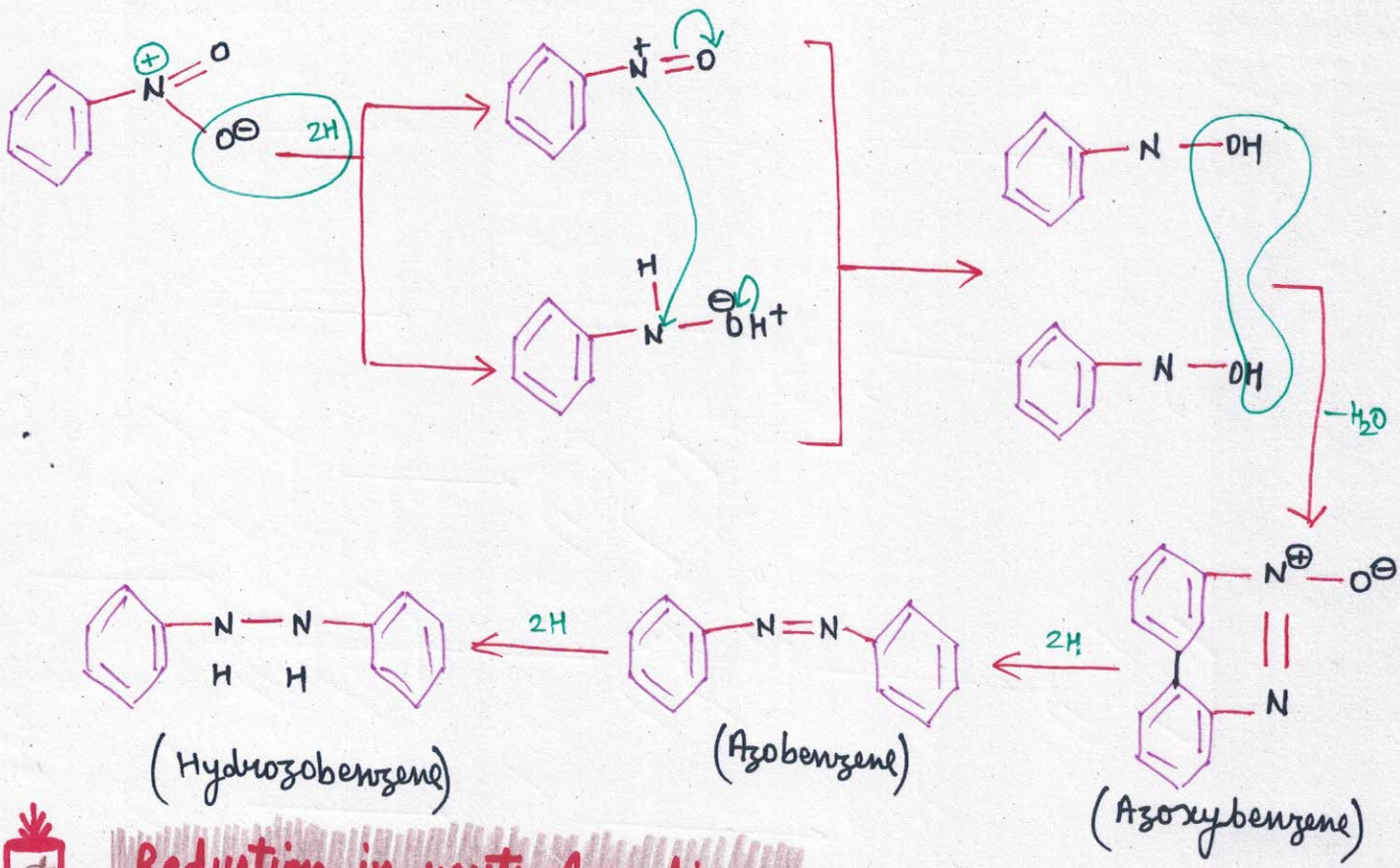
c Reduction in BASIC Medium...



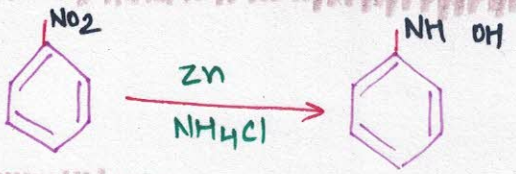
(Hydrozobenzene)

MECHANISM

$$Zn + 2NaOH \longrightarrow Na_2ZnO_2 + 2H$$

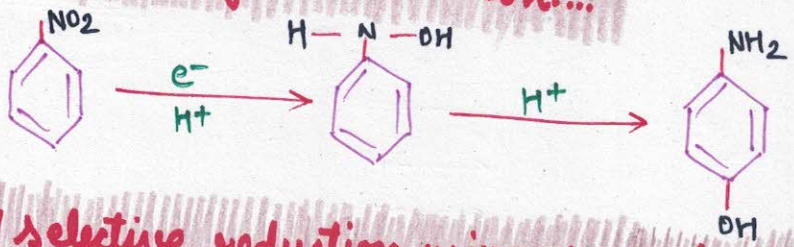


d. Reduction in neutral medium..



(Phenyl hydroxyl amine)

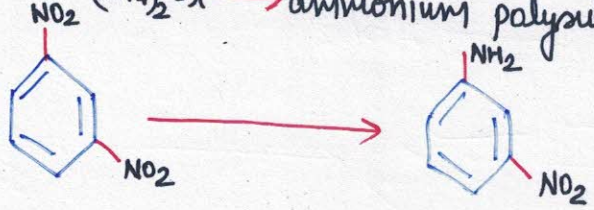
e. By electrolytic reduction....



f. By selective reduction using Na_2S_x / $(NH_4)_2S_x$

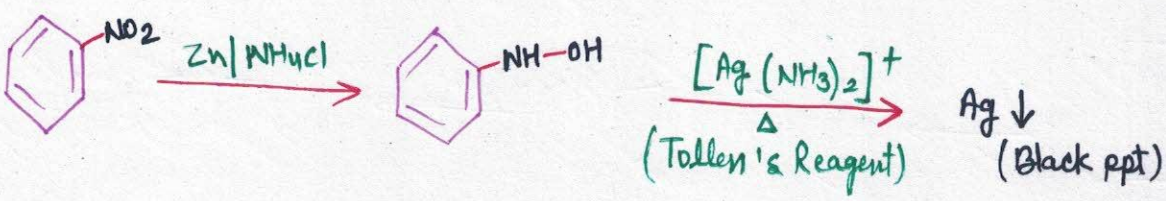
Na_2S_x → Sodium polysulphyl

$(NH_4)_2S_x$ → ammonium polysulphl



only one nitro group is reduced.

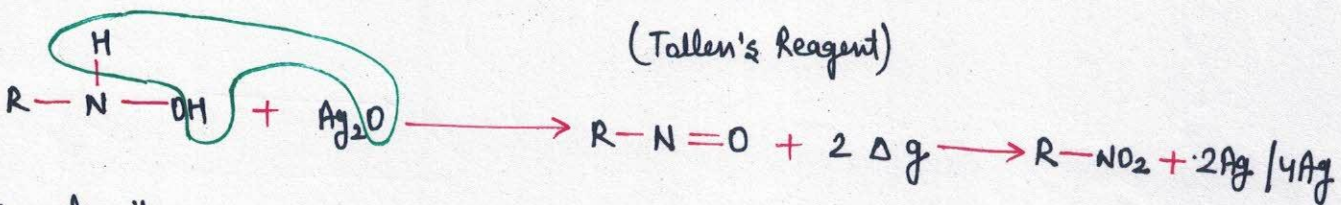
Mulliken Barker Test



$AgNO_3 + NH_4OH \longrightarrow AgOH + NH_4NO_3$

$AgOH + 2NH_4OH \longrightarrow [Ag(NH_3)_2]OH + 2H_2O$

(Tollen's Reagent)



1 mole nitro group requires 2 mole of Ag_2O to give 4 mole Ag.

Ag is precipitated as a black ppt and is called Black mirror.