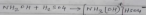
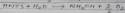
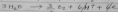
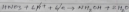


Seg. II Exam Home Paper: III (Study material)

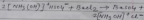
Hydroxyl amine

Preparation: -

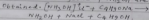
(1) It is prepared by the electrolytic reduction of nitric acid ( $\text{HNO}_3$ ) in 50%  $\text{H}_2\text{SO}_4$  using amalgamated lead cathode.



When the solution is treated with  $\text{BaCl}_2$  hydroxyl amine hydrochloride is formed.



When hydrochloride is treated with sodium butoxide ( $\text{C}_4\text{H}_9\text{ONa}$ ) and cooled to  $-5^\circ\text{C}$ , pure crystal of  $\text{NH}_2\text{OH}$  are obtained.



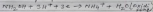
### Properties:-

(1) It is colourless hygroscopic crystal.  
M.P =  $34^{\circ}\text{C}$

(2) It is unstable and decomposes to  $\text{H}_2\text{O}$  and  $\text{NH}_3$  even at room temperature



(3) It acts as both oxidising and reducing agent



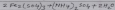
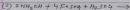
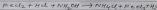
When it acts as oxidising agent

$\text{NH}_3^+$  is formed, when it acts as

reducing agent  $\text{H}_2\text{O}$  is formed.

### Oxidising action of $\text{NH}_2\text{OH}$ .

(1) When  $\text{FeCl}_2$  solution in acidic medium is treated with  $\text{NH}_2\text{OH}$ ,  $\text{FeCl}_3$  and  $\text{H}_2\text{O}$  are formed.

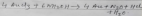


### Reducing reaction of $\text{NH}_2\text{OH}$ .

When  $\text{NH}_2\text{OH}$  is added to  $\text{HgCl}_2$  solution in basic medium  $\text{Hg}$  and  $\text{H}_2\text{O}$  are formed



It produces black solution for metallic gold.



### Uses :-

- (1) As an oxidising and reducing agent.
- (2) For the detection or identification of carbonyl group in organic compounds.  

$$>C=O + H_2/NH_4OH \rightarrow >C=N-OH + H_2O$$

Oxime

### Structure :-

