

SUBJECT - CHEMISTRY

CLASS - B.Sc (Sub./Gen) PART-11

GROUP - C

TOPIC - HYDROXY ACIDS

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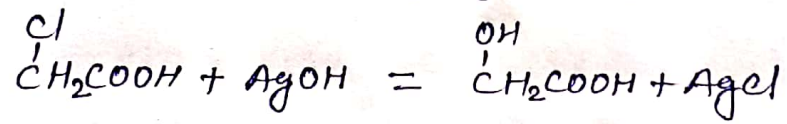
Q Give general methods of preparation of  $\alpha, \beta, \gamma$ - hydroxy acid?

Ans preparation: Since hydroxy acid have both OH & COOH groups, hence they are prepared by introducing one of them when another is present or by introducing both the groups when none is present in the molecule.

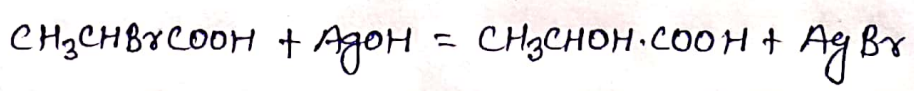
(a) By introducing OH-group when -COOH group is present in the molecule:

1. By boiling with chloroacids with dilute alkali, moist silver oxide or  $\text{Na}_2\text{CO}_3$  solution:

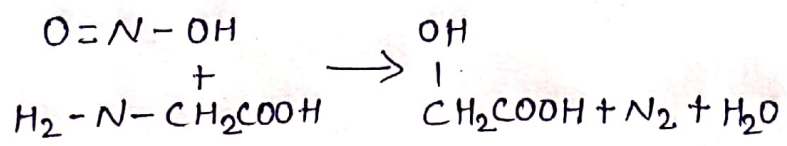
Silver oxide or  $\text{Na}_2\text{CO}_3$  solution:



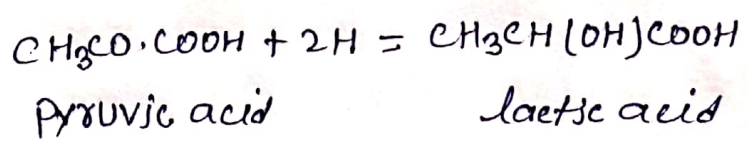
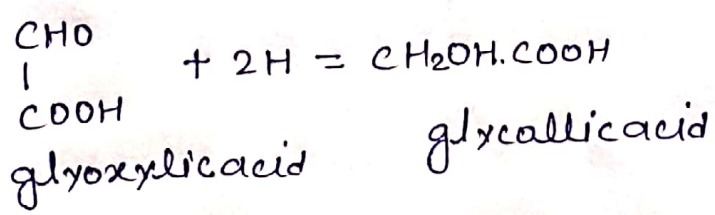
chloroacetic acid                  glycollic acid



2. By treating amino acids with nitrous acid:

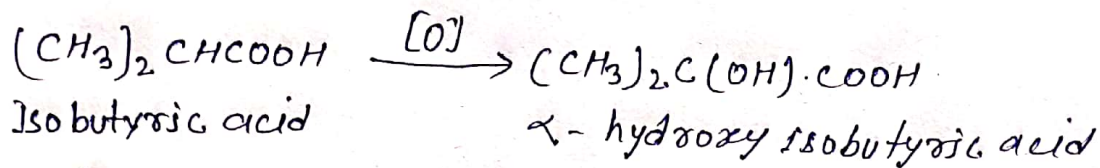


3 By the reduction of aldehydic or ketonic acid:

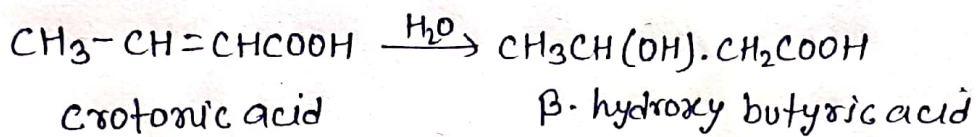
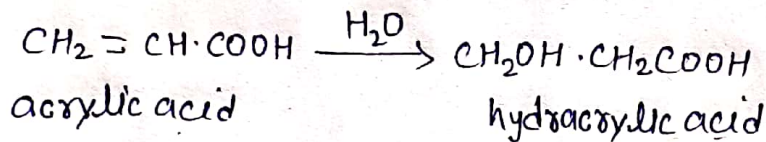


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4. By the oxidation of fatty acids having  $>CHCOOH$  group with  $HNO_3$  or  $KMnO_4$ :

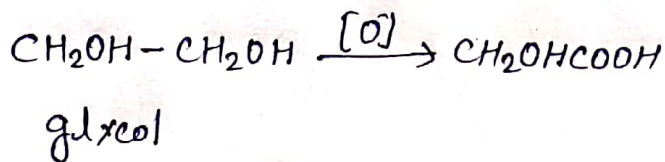


5. By <sup>the</sup> hydrolysis of unsaturated acids by boiling with caustic alkalis

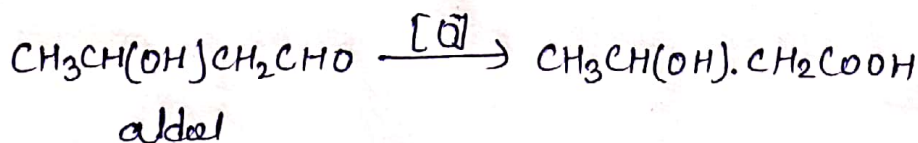


(b) By introducing  $-COOH$  group when  $OH$  group is already present in the molecule:

(i) By the oxidation of polyhydric alcohols with dil.  $HNO_3$  acid:

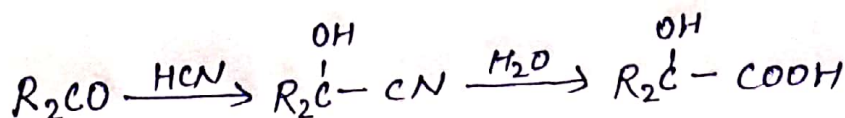
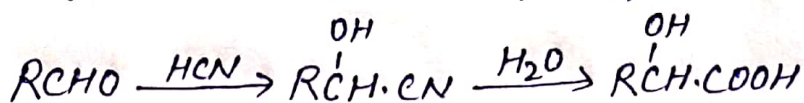


(ii) By the oxidation of aldel:



(c) By introducing both the  $COOH$  &  $OH$  groups when none is present in the molecule:

(i) By the hydrolysis of cyanohydrins



(ii) By the action of  $\alpha$ -halo ester on an aldehyde, ketone or ester in presence of Zn (Reformatsky's reaction)

