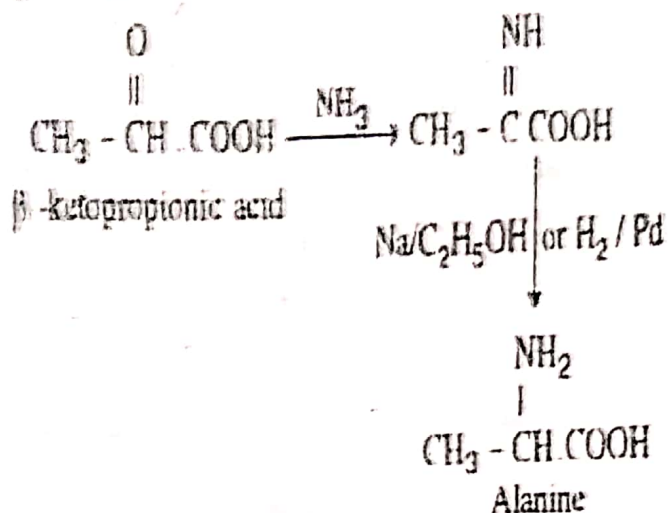


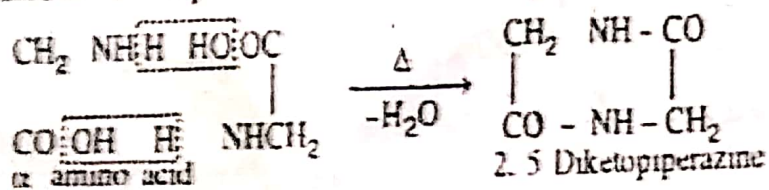
3. By Koop synthesis: α -keto acids react with NH_3 to form corresponding imine which on reduction gives as amino acid—



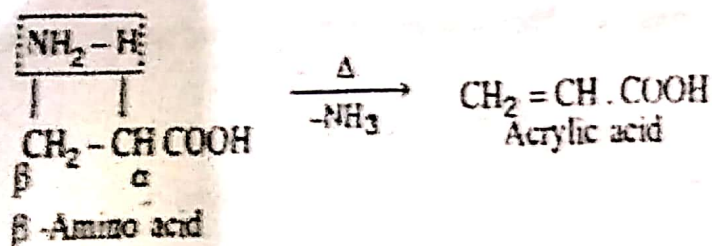
Q.63. Discuss the action of heat on α , β and γ amino acids :

Ans. : Action of heat on α , β and γ amino acids :

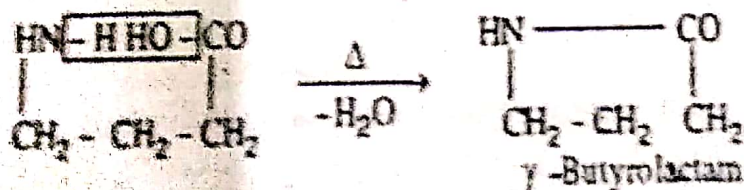
(a) On heating, α -amino acids lose two H_2O molecules from two acid molecules to form cyclic diamides known as **diketopiperazines** e.g.



(b) On heating, β -amino acids lose one NH_3 molecule to form α , β -unsaturated acids e.g.



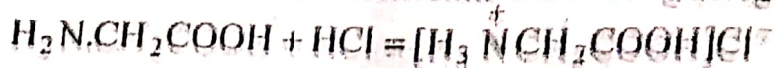
(c) On heating, γ and δ -amino acids lose one H_2O molecule to form internal anhydrides, known as **lactams** e.g.



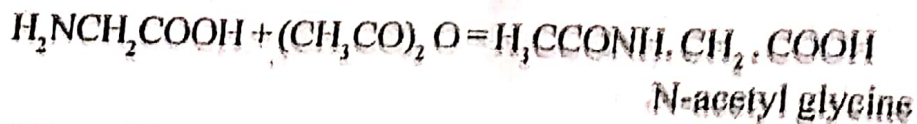
Q.64. Discuss the reactions of α -amino acids with mineral acids, Ac_2O , HNO_2 , HI , NH_3 , esterification and alkyl halide.

Ans. : Reactions with :

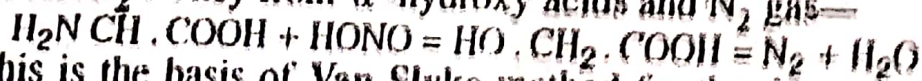
1. Mineral acids : α -amino acids form salts with strong inorganic acids—



2. Ac_2O : They form N-acetylamino acids—

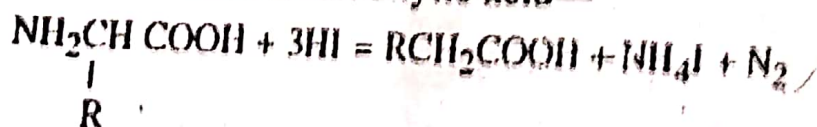


3. HNO_2 : They form α -hydroxy acids and N_2 gas—

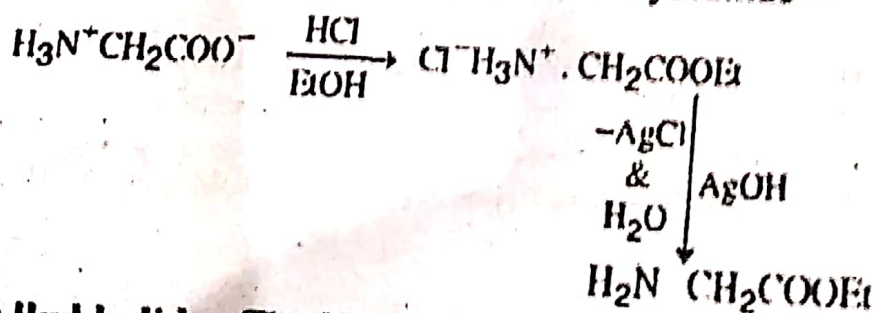


This is the basis of Van Slyke method for the determination of free NH_2 groups in protein.

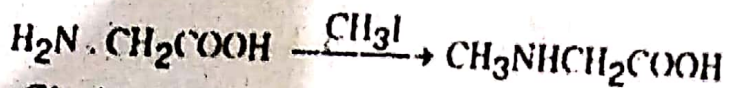
4. HI : When treated with HI , the NH_2 group is knocked off from the amino acid molecule to form a carboxylic acid—



5. Esterification : When boiled with alcohol in the presence of dry HCl , amino acids form ester hydrochloride. The free acid is obtained when ester hydrochloride is hydrolysed by silver hydroxide—

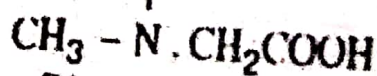
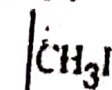


6. Alkyl halide : The H atoms of NH_2 group are successively replaced by alkyl groups



Glycine

Methylglycine



Dimethyl glycine

7. With alkalis, they produce salts on neutralisation—

