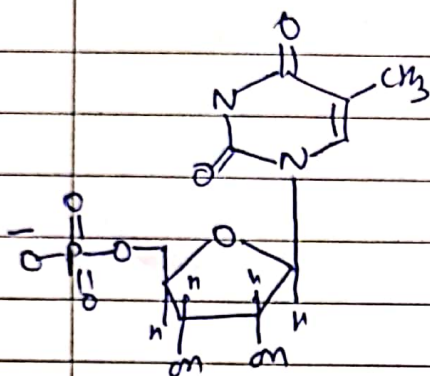
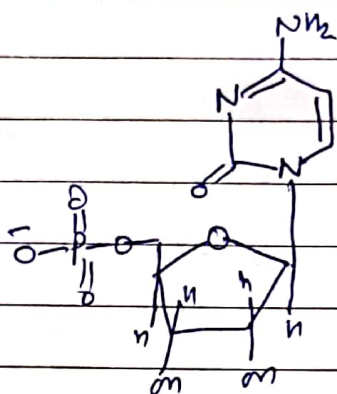
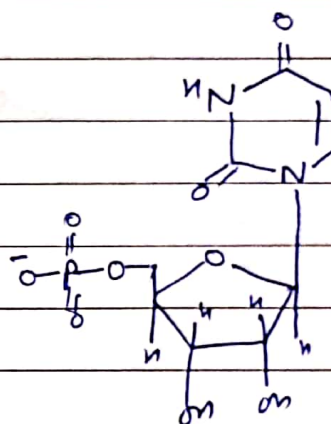


Biosynthesis of pyrimidine nucleotides

TMP



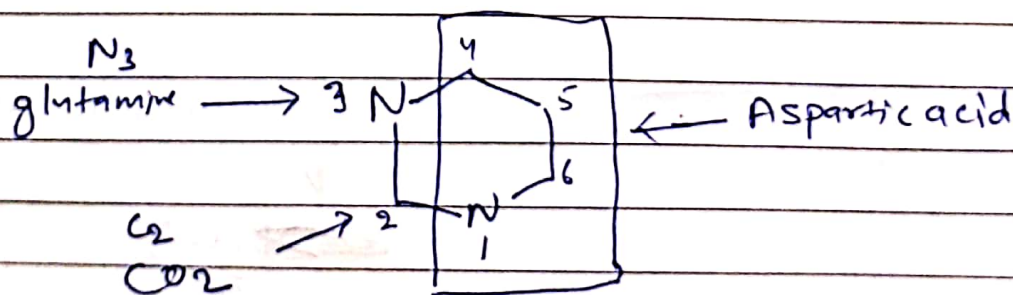
CMP



UMP

In pyrimidine biosynthesis, first pyrimidine ring formation occurs then ribose phosphate group is attached which is donated by PRPP

precursor for de novo biosynthesis of pyrimidine ring

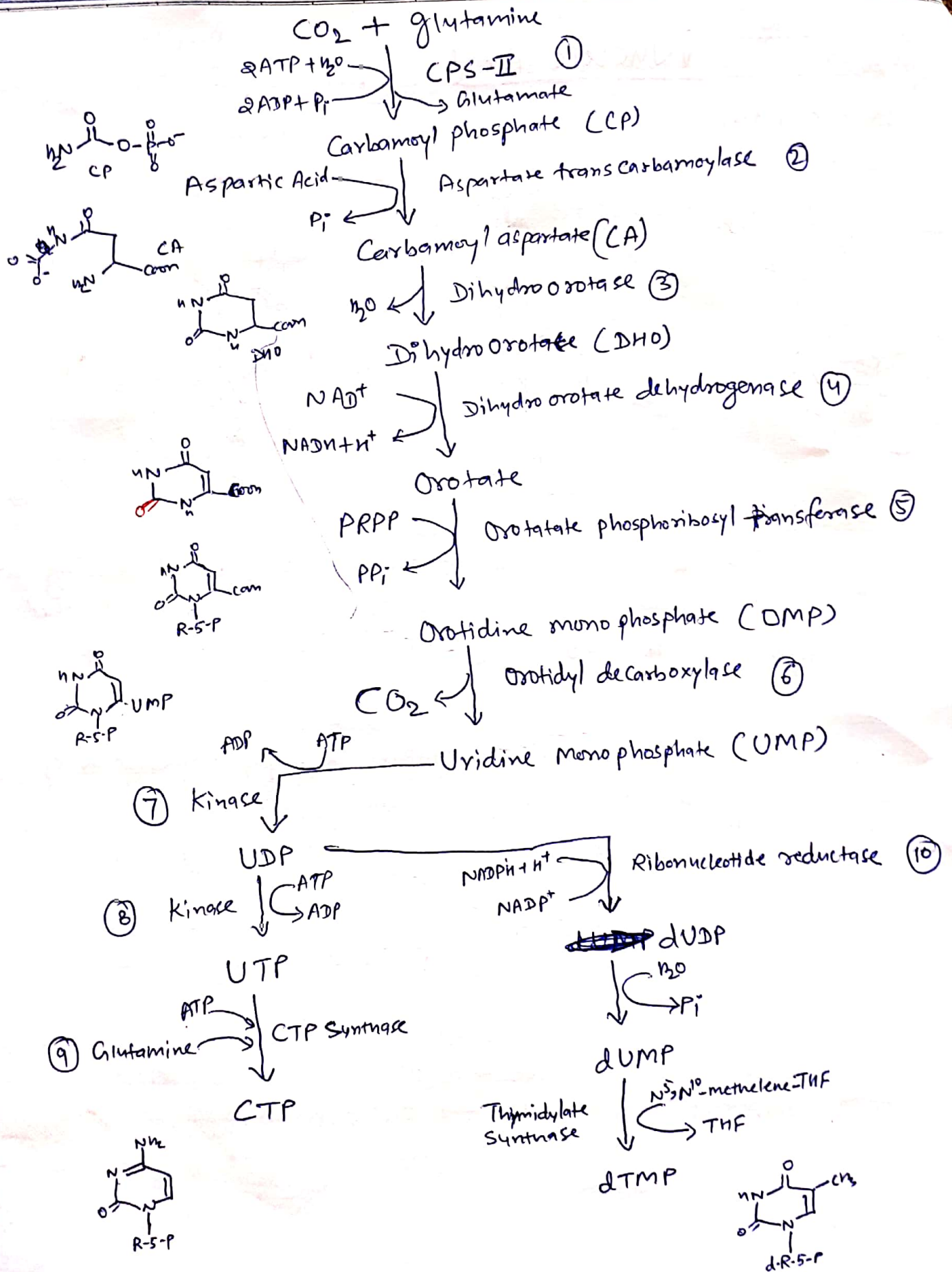


Glutamine provide $\rightarrow N_3$

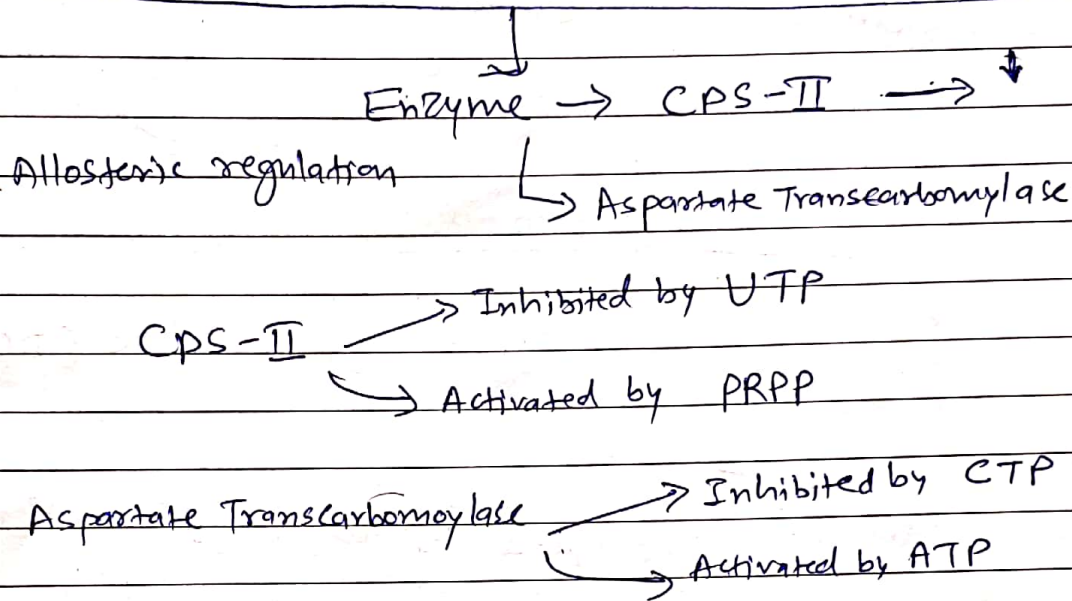
Aspartic acid provide $\rightarrow C_4, C_5, C_6$ & N_1

CO_2 provide $\rightarrow C_2$

De novo biosynthesis pathway for pyrimidine:

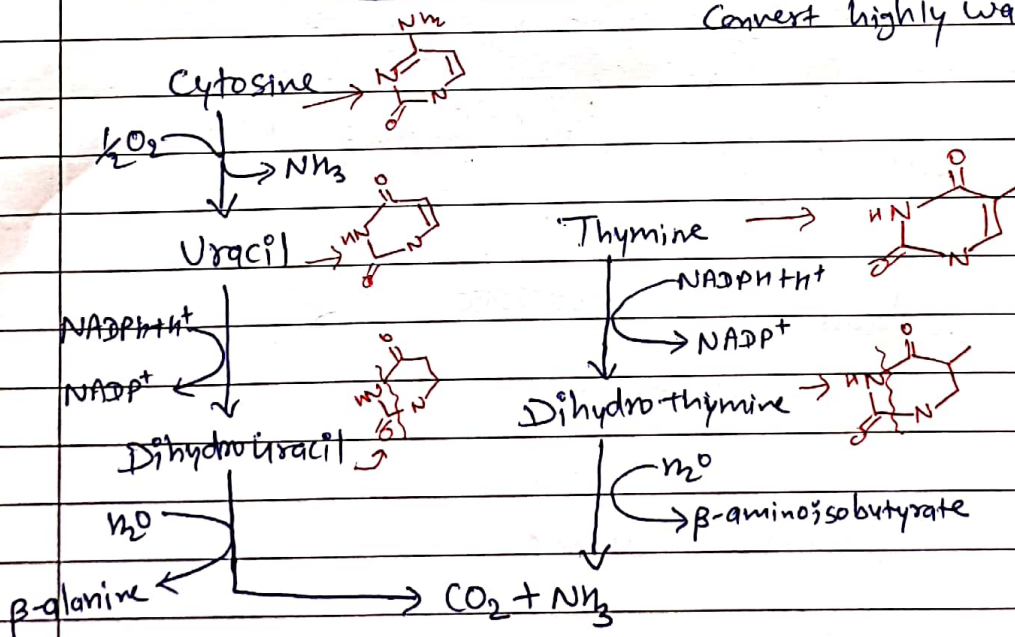


Regulation of de novo synthesis of pyrimidine nucleotides



Catabolism of pyrimidine nucleotides :

Convert highly water soluble product



End product :

CO_2

NH_3

β -alanine

β -aminoisobutyrate

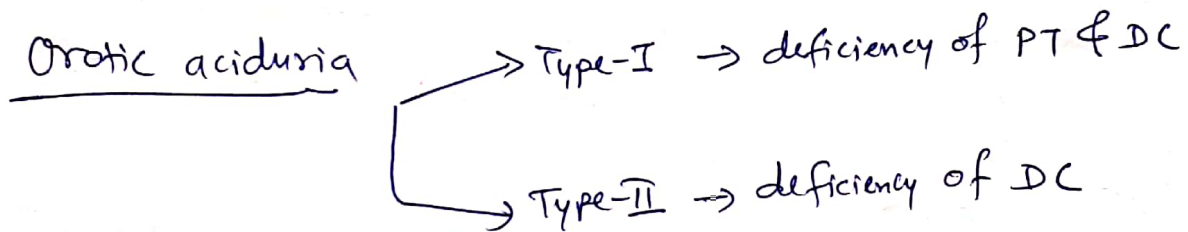
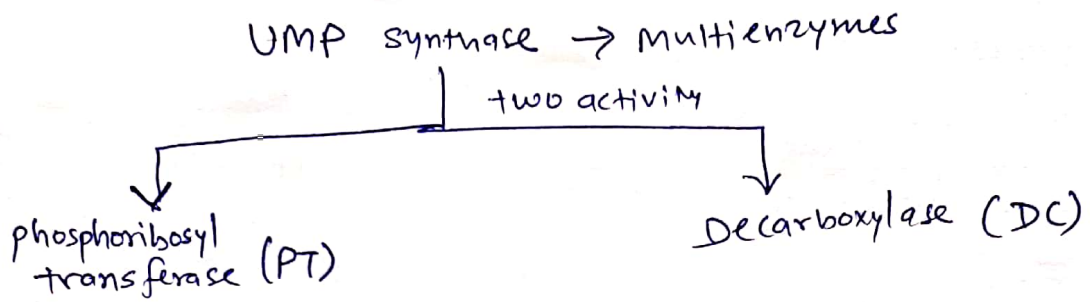
Further $\rightarrow$ Acetyl CoA

Further $\rightarrow$ Succinyl CoA

Teacher's Signature : _____

Disorder of pyrimidine nucleotides:

Orotic Aciduria: Hereditary disorder due to defect in enzymes of pyrimidine nucleotide synthesis



So deficiency of UMP & other ^{pyrimidine} nucleotide

↓
Results in inhibition of DNA & RNA

↓
leads to megaloblastic anaemia
& Growth Retardation

↑ excretion of orotate in urine

Reye's Syndrome → due to severe damage of mitochondria

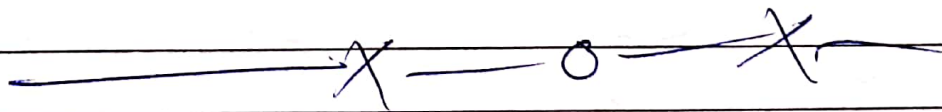
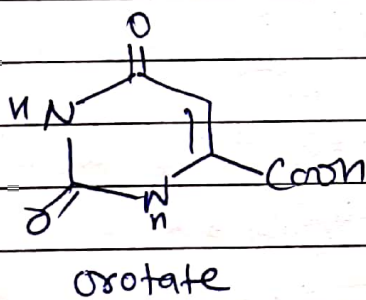
↓
Unable to utilise Carbamoyl phosphate generated in urea cycle

↓
which is diverted for purimidine synthesis

↓
leads to over production of orotate

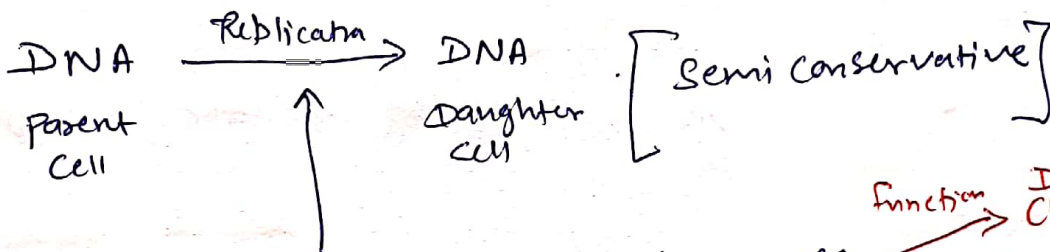
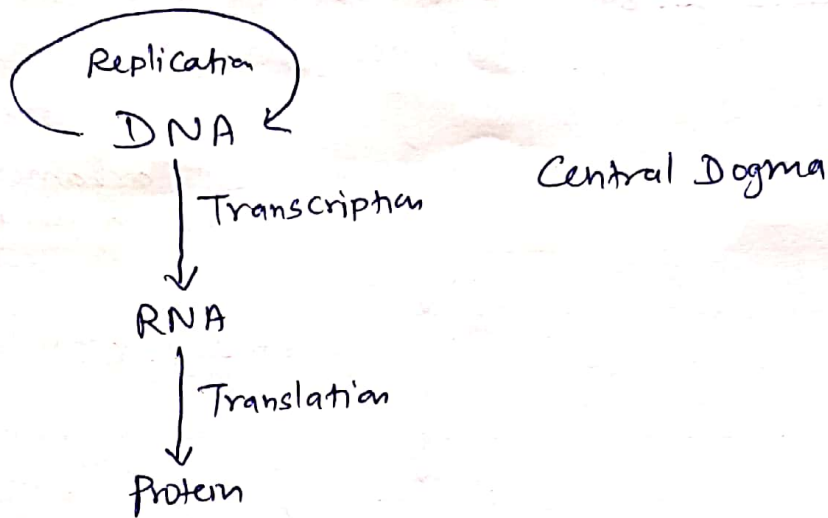
↓
↑ excretion of orotate in urine

↓
leads to secondary orotic aciduria



Mammalian Genome

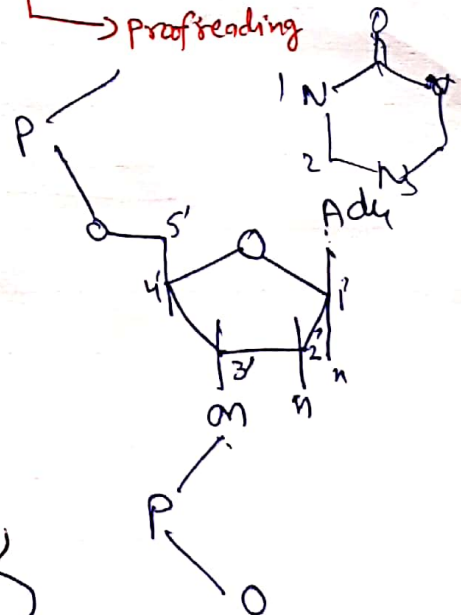
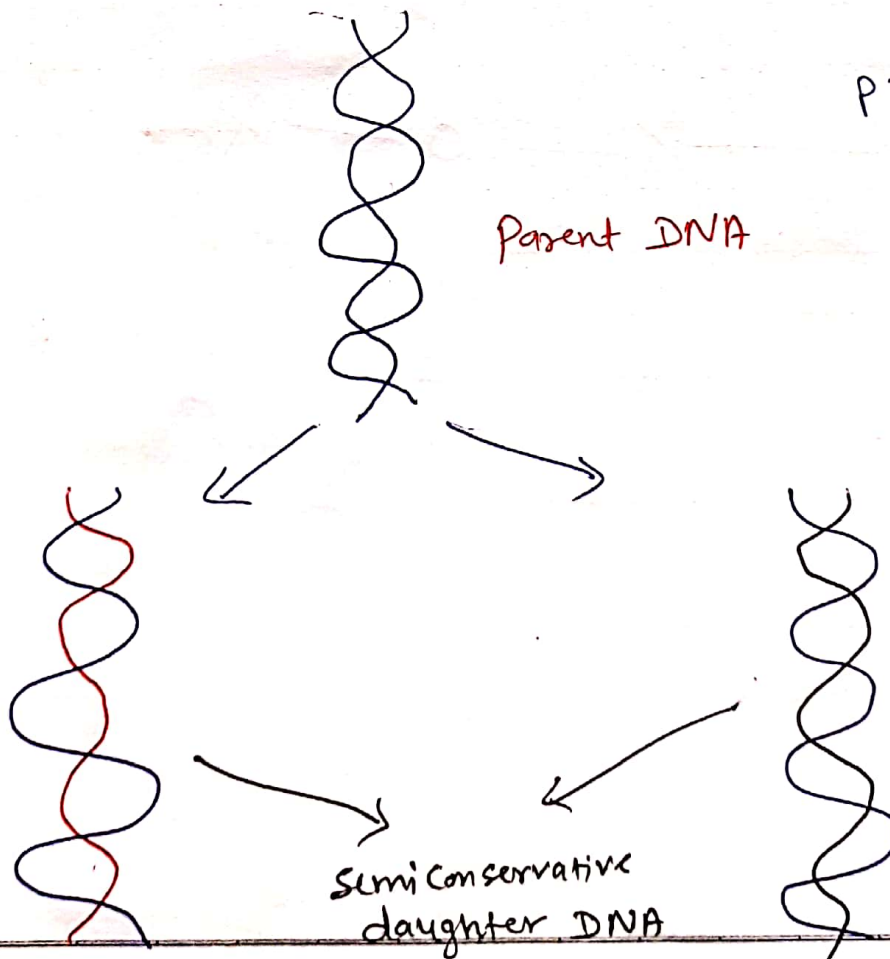
Genetic Information transfer by three methods



DNA dependent DNA polymerase

Function

- DNA Chain elongation
- DNA repair
- proofreading



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Page No.

Replication:

Stages

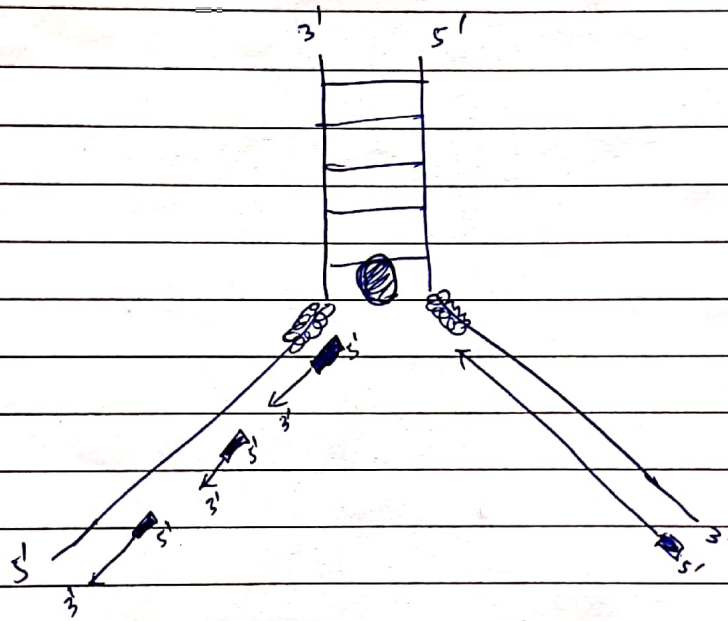
Initiation

DNA-A DNA-B Topoisomerase
Recognition, Unwinding, strand cutting
stabilisation
Priming $\rightarrow$ RNA strand

Elongation

DNA polymerase - III start adding nucleotides
at 3' end of RNA primer

Termination



Elongation:

DNA polymerase - III $\rightarrow$ start chain elongation

DNA polymerase - I $\rightarrow$ cut RNA primer from the strand
& fill the gap

DNA Polymerase II $\rightarrow$ Proofreading & DNA Repair

DNA Ligase $\rightarrow$ Joint ~~to~~ attach the nucleotide