

HMP Shunt Pathway.

- G-6 PDH determine the rate of HMP.
- ⇒ Also Called Pentose Phosphate Pathway. / Phosphogluconate Pathway
- Alternative to Glycolysis & T.C.A for Glucose oxid.
- ⇒ Enzyme for H.M.P Shunt are $\oplus$ nt in Cytosol.
- ⇒ Starts with Glucose-6-Phosphate. [DEPTH OF BIOLOGY]
- Results into Synthesis of NADPH & Ribose.
- ⇒ No direct ATP is syntheses or used in this pathway.
- ⇒ It is Anabolic In Nature.

[H.M.P = Hexose Mono Phosphate.]

[DEPTH OF BIOLOGY]

2 Imp. Steps in H.M.P Shunt.

Oxid. Step

- Mainly occur in Liver, Adipose tissue R.B.C.

Non-Oxid. Step.

- It deals with Synth. of Pentose sugar. [DNA, RNA].

⇒ Rate of Pathway $\uparrow$ se.

[DEPTH OF BIOLOGY]

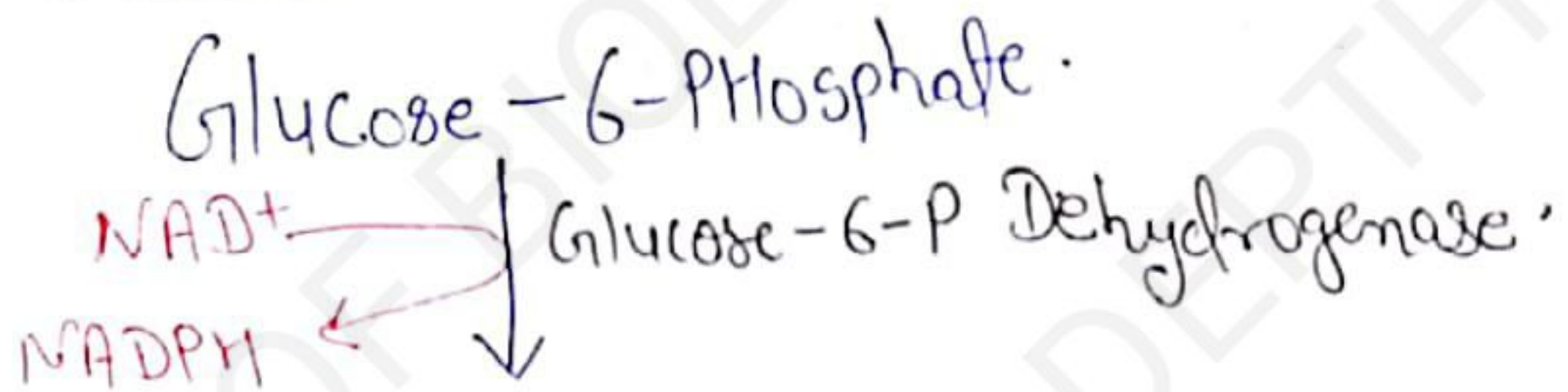
↓
When we feed High Carbohydrates diet.
& $\uparrow$ se starvation.

H.M.P

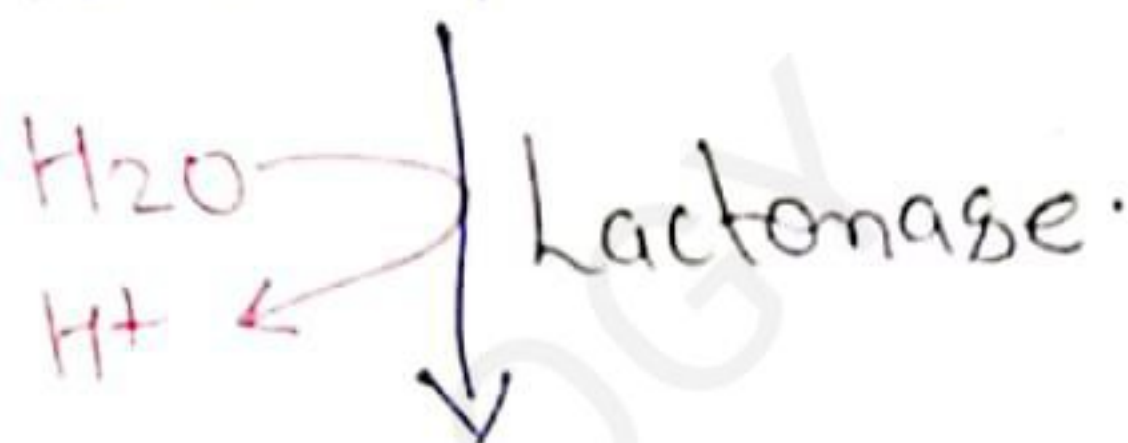
Pathway has 3 stages. $\Rightarrow$

① Oxidation reaction. $\Rightarrow$

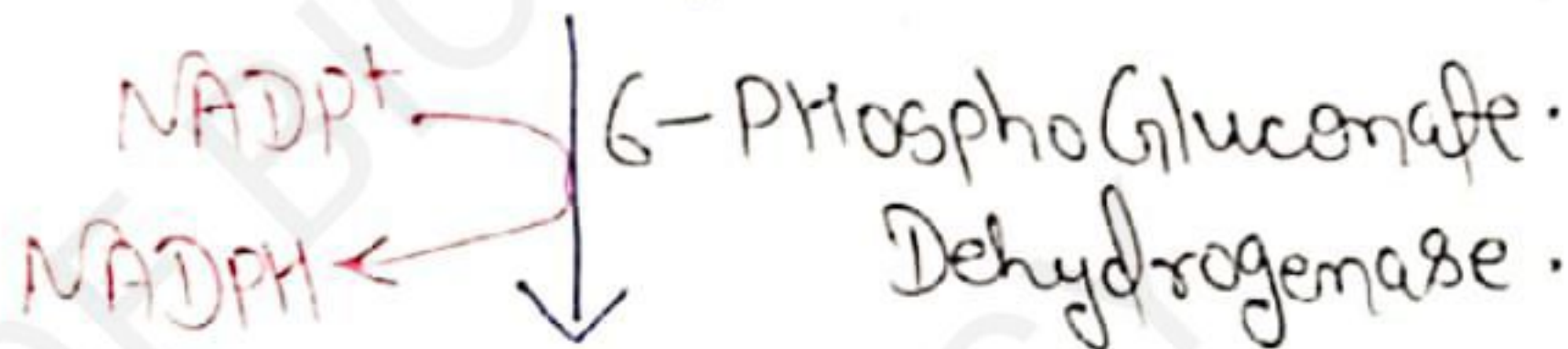
[DEPTH OF BIOLOGY]



6-Phosphogluconolactone.



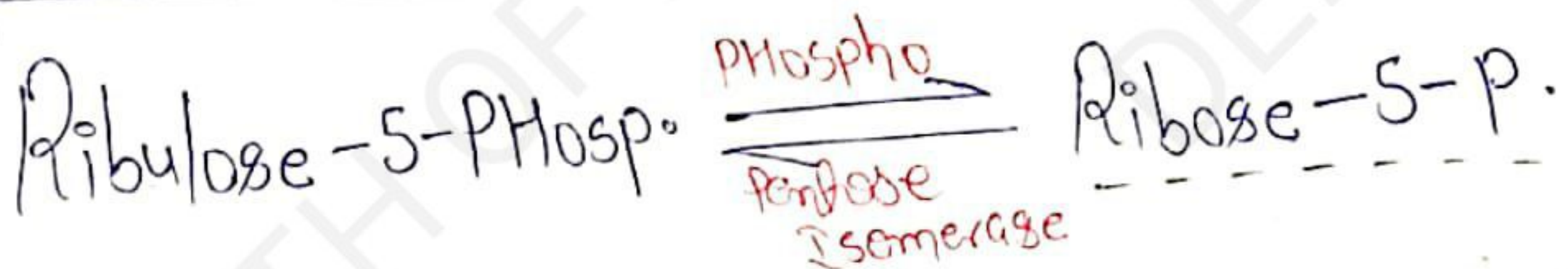
6-Phosphogluconate.



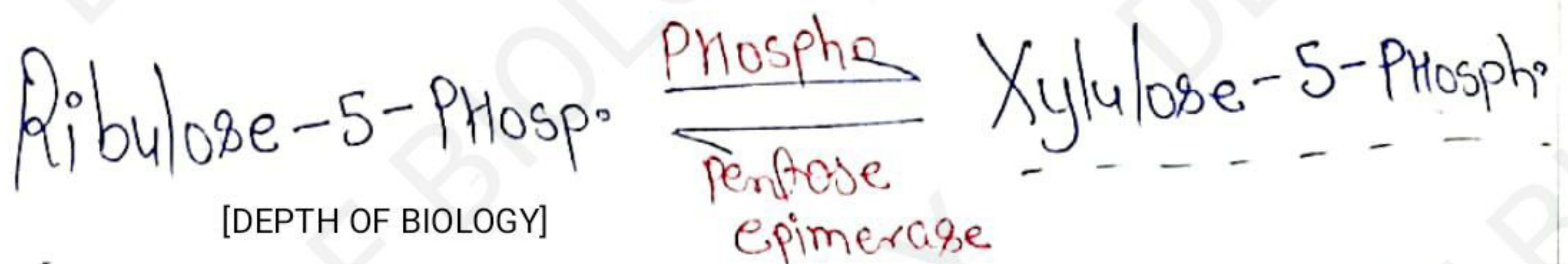
Ribulose-5-Phosphate.

[DEPTH OF BIOLOGY]

② Isomerisation of Ribulose-5-Phosp. to Ribose-5-Phos.



③ Linkage of P.Phosp. Pathway to Glycolysis.



[DEPTH OF BIOLOGY]

Xyululose 5-P + Ribose 5-P.

↓↑ Transketolase.

Glyceraldehyde-3-P + Seduheptulose-7-P.

[DEPTH OF BIOLOGY] ↓↑ Transaldolase.

Fructose-6-P + Erythrose-4-P.
(C₆) (C₄)

↓↑ Transketolase.

Glycerald. -3-P + Fructose-6-P.

[DEPTH OF BIOLOGY]

Significance.

- (a) Formation of NADPH.
- (b) Helps in Phagocytosis (W.B.C.).
- (c) Maintain Carbon Homeostasis.
- (d) Provide precursors for Nucleotide & Amino acid.
- (e) Provide reducing Molecule for Anabolism.
- (f) NADPH Imp. for Maintaining Transparency of Lens.
- (g) NADPH is Necessary for detoxification of drug.
- (h) Maintain the Integrity of Roba Membr.
- (i) Pentose are used for synth. of
 → Nucleic acid [DNA, RNA].
 → Nucleotides → ATP
 → NAD⁺
 → FAD.

[DEPTH OF BIOLOGY]