



## Elemental Analysis

- All the elements present in a sample of earth's crust are also present in a sample of living tissue.

Difference is in % composition

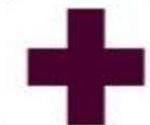
• Living : C, H, O, N, S, P

>99% of weight of living tissue is contributed by these 6-elements

• Non living : Si ↑

NOTE : In both living & non-living samples : oxygen is the most abundant

Element	% Weight of Earth's crust	% Weight of Human body
Hydrogen (H)	0.14	0.5 ↑
Carbon (C)	0.03	18.5 ↑
Oxygen (O)	46.6	65.0 ↑ (most abundant)
Nitrogen (N)	very little	3.3 ↑
Sulphur (S)	0.03	0.3 ↑
Sodium (Na)	2.8	0.2
Calcium (Ca)	3.6	1.5
Magnesium (Mg)	2.1	0.1
Silicon (Si)	27.7 ↑	Negligible



# Chemical Analysis

Tissue sample

- Piece of liver/Leaves/Microbial paste

Trichloroacetic acid  
 $\text{CCl}_3\text{COOH}$

• gives us two fractions

1. Acid soluble
2. Acid insoluble

1. Proteins
2. Polysaccharide
3. Nucleic acid

4. LIPID

Insoluble in acid

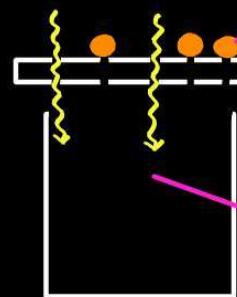
Separation/purification techniques

Analytical tech./Spectroscopic tech.

पर्ती बनाती

Mol. wt.  $> 1000 \text{ Da}$

Acid insoluble pool/  
Retentate  $\rightarrow$  Biomacromolecules



cheesecloth/cotton cloth

1. Amino acids
2. monosaccharides
3. Nucleotides
4. Fatty acid, glycerol
5. Inorganic ions

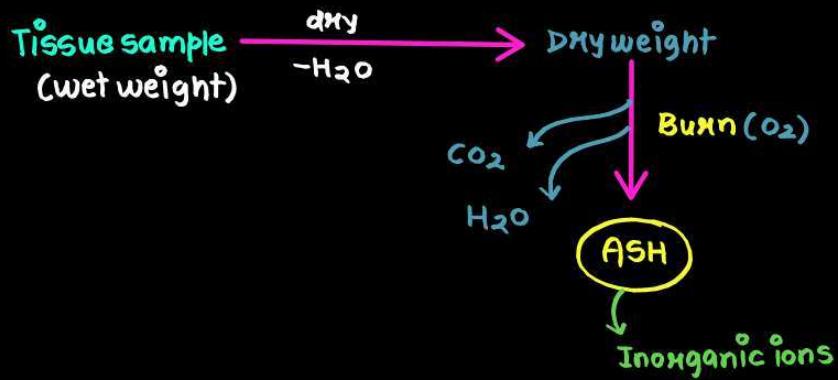
Mol. wt:  
 $18-800 \text{ Da}$  OR  
 $< 1000 \text{ Da}$

Acid soluble pool/  
Filterate : Biomolecules +  
Inorganics

$\text{Na}^+$ ,  
 $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$   
 $\text{SO}_4^{2-}$ ,  $\text{PO}_4^{3-}$ ,  
 $\text{NaCl}$ ,  $\text{CaCO}_3$



## Ash Analysis



Component	Formula
Sodium	$Na^+$
Potassium	$K^+$
Calcium	$Ca^{++}$
Magnesium	$Mg^{++}$
Water	$H_2O$
Compounds	$NaCl, CaCO_3, PO_4^{3-}, SO_4^{2-}$



## Macro and Micro-molecules

- weight :  $>1000\text{ Da}$
- Protein, polysacc., nucleic acid.

Lipid

- weight :  $<1000\text{ Da}$   
(18-800 Da)
- AA, nucleotides, N-bases, Sugars.  
inorganic ions

Cytoplasmic composition

overall cell  
composition



## Primary and Secondary Metabolites

- Participates in metabolism
- They have an identifiable role in our body  
↳ help in normal physiology: growth, dev.,  
survival & reproduction
- e.g. glucose, amino acid

- Exits metabolism: do not participate in metabolic reactions
  - They do not have an identifiable function
  - cellulose, curcumin, carotenoid
    - ↳ do not participate in reaction further
  - They can be found in fungi, bacteria & plants
- ↳ do not have a role in plant but it is economically important for humans.



# Primary and Secondary Metabolites

Some Secondary Metabolites	Examples
Pigments	Carotenoids, Anthocyanins etc.
Alkaloids → N-containing	Morphine, Codeine etc.
Terpenoides	Monoterpene, Diterpenes etc.
Essential oils	Lemon grass oil etc.
Toxins (AR-T)	Abrin, Ricin
Lectins (LAC)	Concanavalin A
Drugs	Vinblastin, Curcumin, etc.
Polymeric substances	Rubber, Gums, Cellulose

Component	% of the Total Cellular Mass
Water	70-90
Proteins	10-15
Carbohydrates	3
Lipids	2
Nucleic acids	5-7
Ions	1

Handwritten notes below the table:

Water ProoF New Cam LI Ions

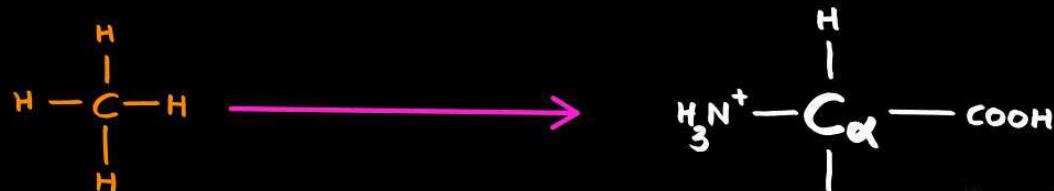
↓ H<sub>2</sub>O Protein Nucleic acid Lipid

combonyd.



## Amino Acids

- They are substituted methane

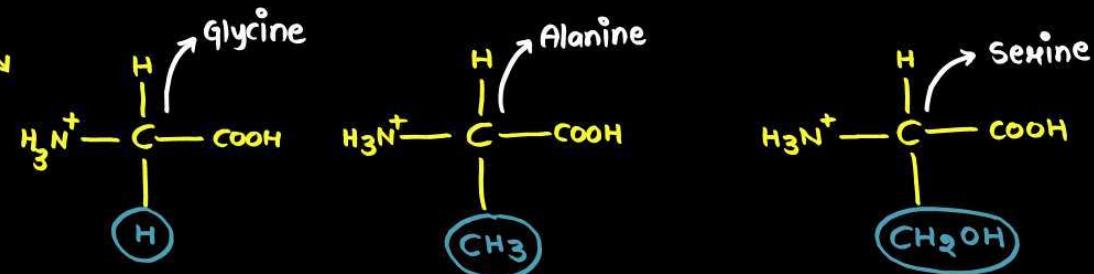


- Alpha-amino-acids

$\alpha$ -carbon has funct. gps. i.e.,  $-\text{NH}_3^+$  gp. &  $-\text{COOH}$  gp. attached to it

- Glycine, Alanine, Serine

$\Rightarrow$   
simplest  
amino acid





## Amino Acids

- The chemical and physical properties of amino acids are essentially of the amino, carboxyl and the R functional groups.

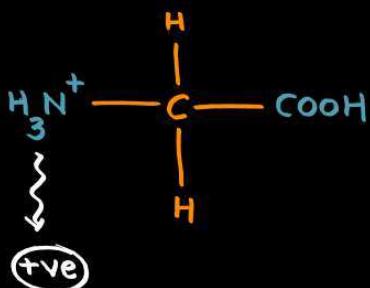
1. Acidic: Aspartic acid & Glutamic acid
2. Basic: (BAHL): Lysine, arginine, Histidine
3. Neutral: Glycine, Alanine, valine . . . .
4. \* Aromatic: Phenylalanine, Tyrosine, Tryptophan
5. Alcoholic: Serine, threonine
6. \* Sulphur Containing: Cysteine & methionine



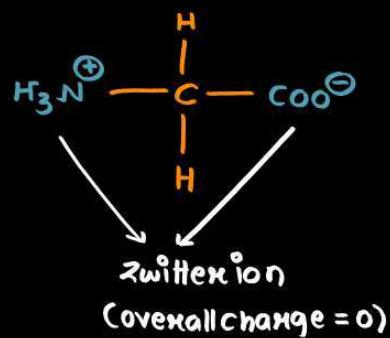
## Amino Acids: Ionisable Nature

Very low pH (<7)

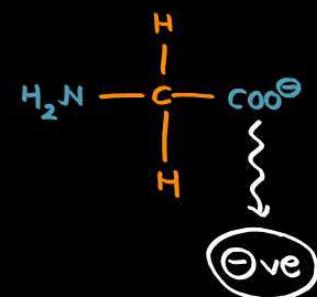
acidic; pH↓;  
 $\text{H}^+ \uparrow$



Neutral pH (~7)\*



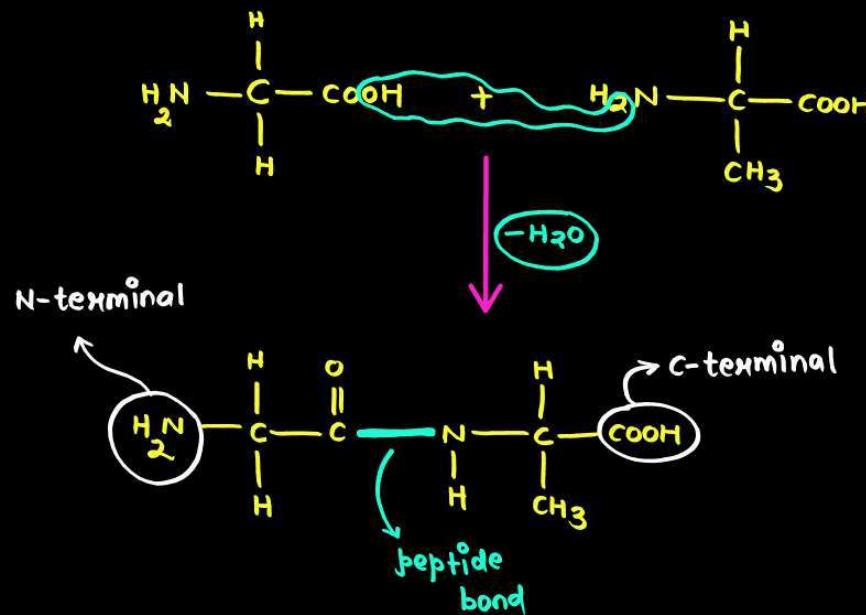
Very high pH (>7)





## Proteins: Peptide Bond Formation

- Heteropolymers: formed by diff. amino acids





## Amino Acids: Essential and Non-Essential



- we need them through diet  
∴ they are not made in our body



- Can be made in our body

Can be skipped

Any: Arginine\*

Help: Histidine

In: Isoleucine

Learning: Leucine

These: Threonine

Little: Lysine

Molecules: Methionine

Proved: Phenylalanine\*

Truly: Tryptophan

Valuable: Valine



## Functions of Proteins

Protein	Functions
Collagen	Intercellular ground substance
Trypsin	Enzyme
Insulin	Hormone
Antibody	Fights infectious agents
Receptor	Sensory reception (smell, taste, hormone, etc.)
GLUT-4	Enables glucose transport into cells

→ Most abundant protein in animal world  
BIOSPHERE: RUBISCO



## Levels of Proteins Structure

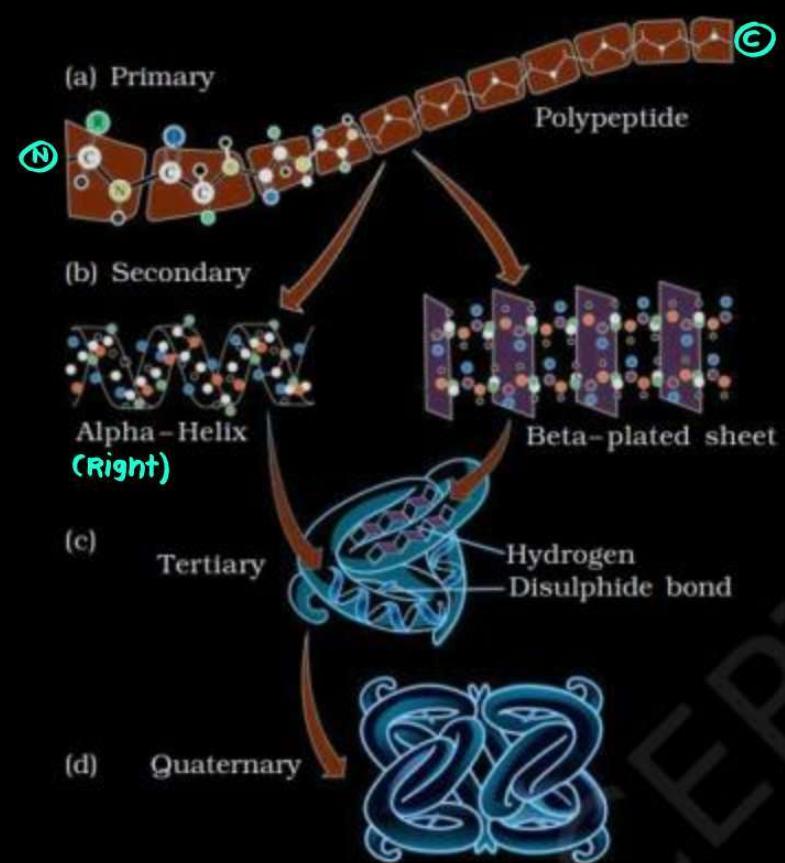
- Inorganic:  $\text{H}_2\text{O}, \text{NaCl}$

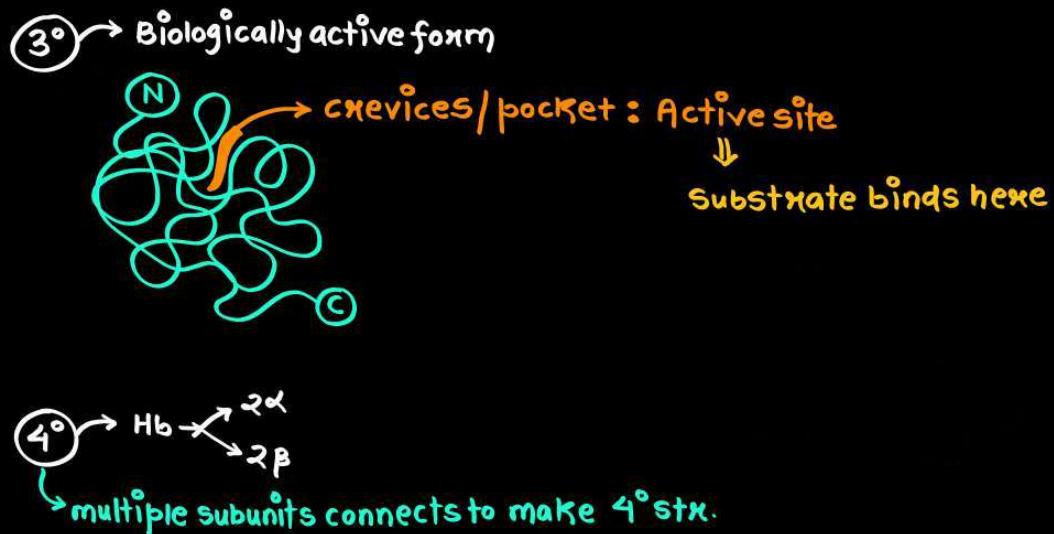
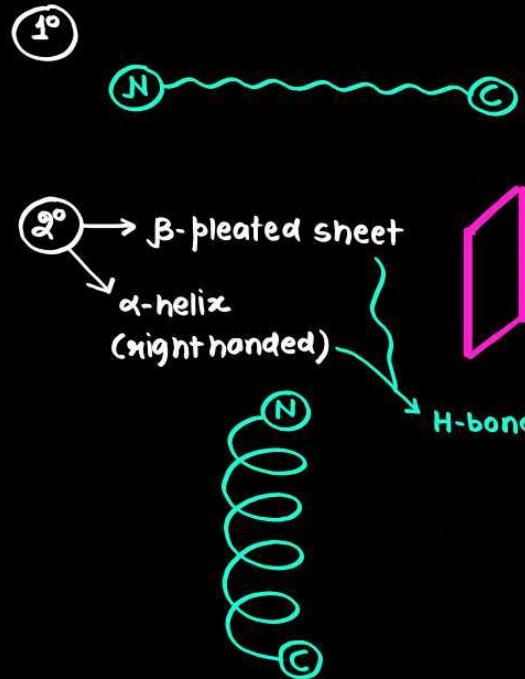
- Organic:



- Physics: 3D

- Protein structure: 4-levels: 1°  
2°  
3°  
4°





P  
W

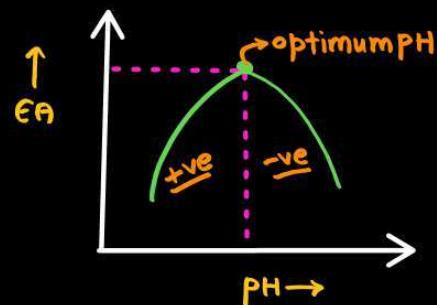
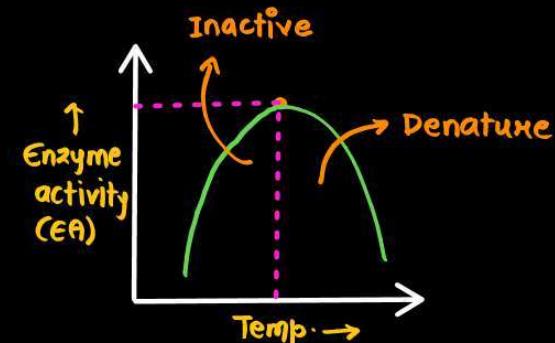


# Enzymes

- Most enzymes are proteins  
↳ Not all because RNA can also act as enzyme called Ribozyme
- 3<sup>o</sup> Structure is needed for enzyme to perform all biological activities



- They are different than inorganic catalysts  
↳ Enzymes work efficiently at optimum Temp & pH  
↳ 37°C
  - Thermophilic: 80°C - 100°C
- ↳ can tolerate ↑ Temp & ↑ pressure  
↳ 10°C ↑ → rate → 2x  
10°C ↓ → rate → half





## Physical and Chemical Reactions

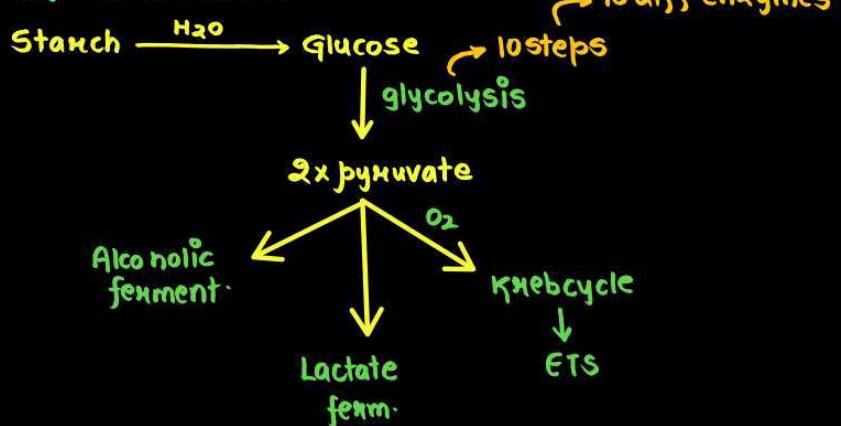
- No new product is formed
- Tearing of paper
- Ice  $\xrightarrow{\Delta}$  Water  $\xrightarrow{\Delta}$  vapour  
(s) (l) (g)

New chemical is formed

### ① Inorganic reaction:

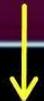


### ② Organic reaction





## Rate and Velocity of a Reaction



- Amount of reactant consumed or product formed per unit time

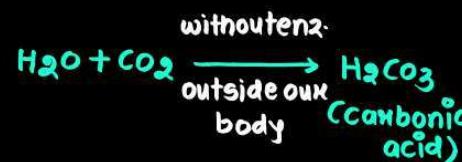
If direction is mentioned, rate is called velocity



Rate:  $\frac{\partial A}{\partial t}$  OR  $\frac{\partial B}{\partial t}$  OR  $\frac{\partial C}{\partial t}$



## Catalysed vs Uncatalyzed Reaction



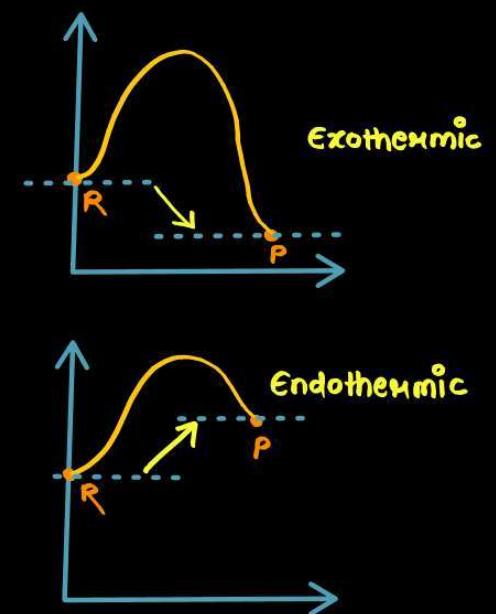
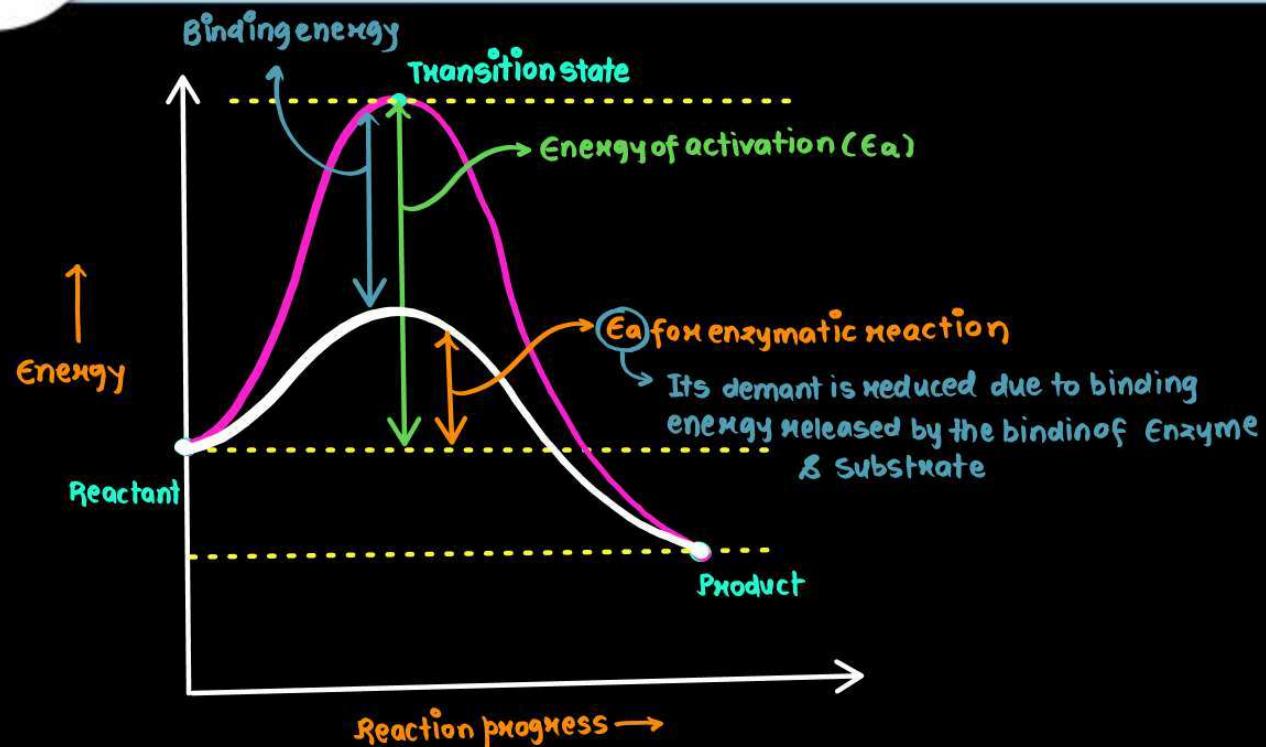
200 molecules / hour



6 lakh molecules / second  
(1000 times)



## Enzyme Activity



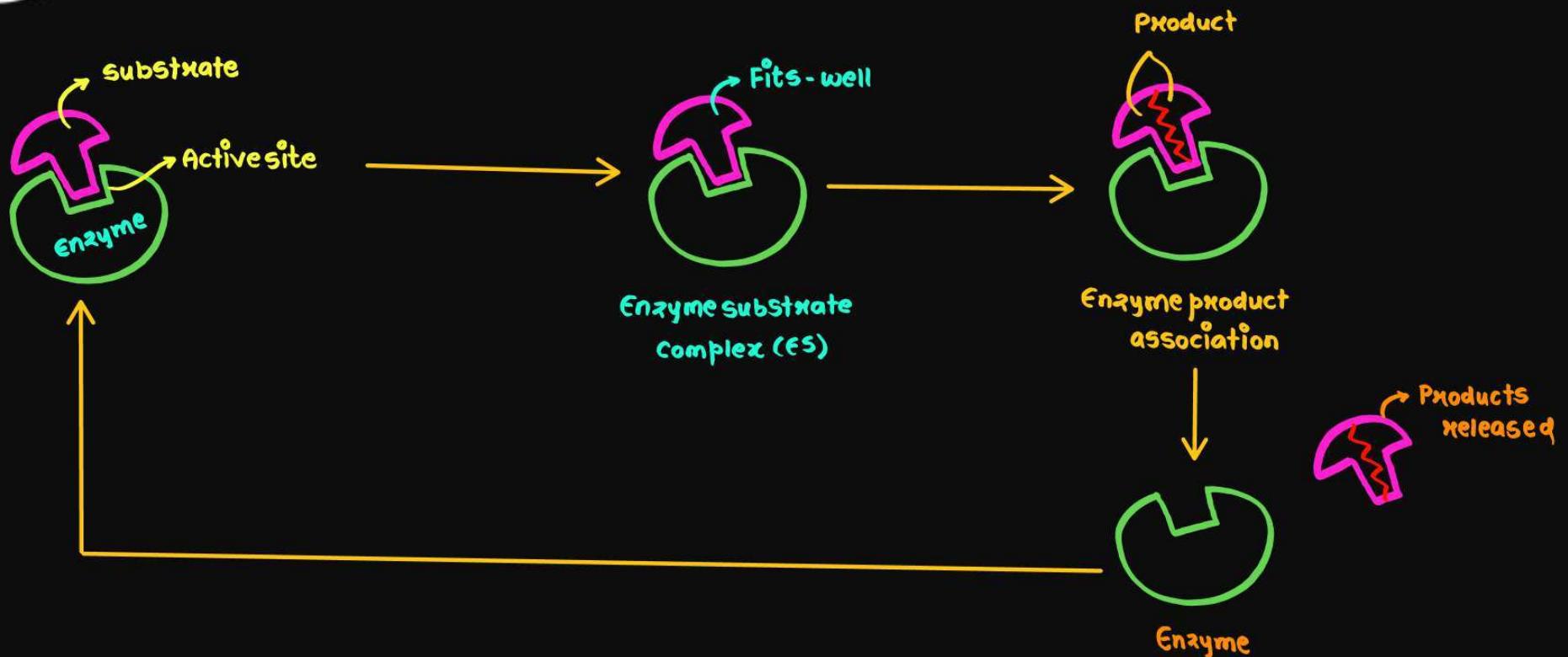


## Nature of Enzyme Action

1. First, the substrate binds to the active site of the enzyme, fitting into the active site.
2. The binding of the substrate induces the enzyme to alter its shape, fitting more tightly around the substrate.
3. The active site of the enzyme, now in close proximity of the substrate breaks the chemical bonds of the substrate and the new enzyme- product complex is formed.
4. The enzyme releases the products of the reaction and the free enzyme is ready to bind to another molecule of the substrate and run through the catalytic cycle once again.

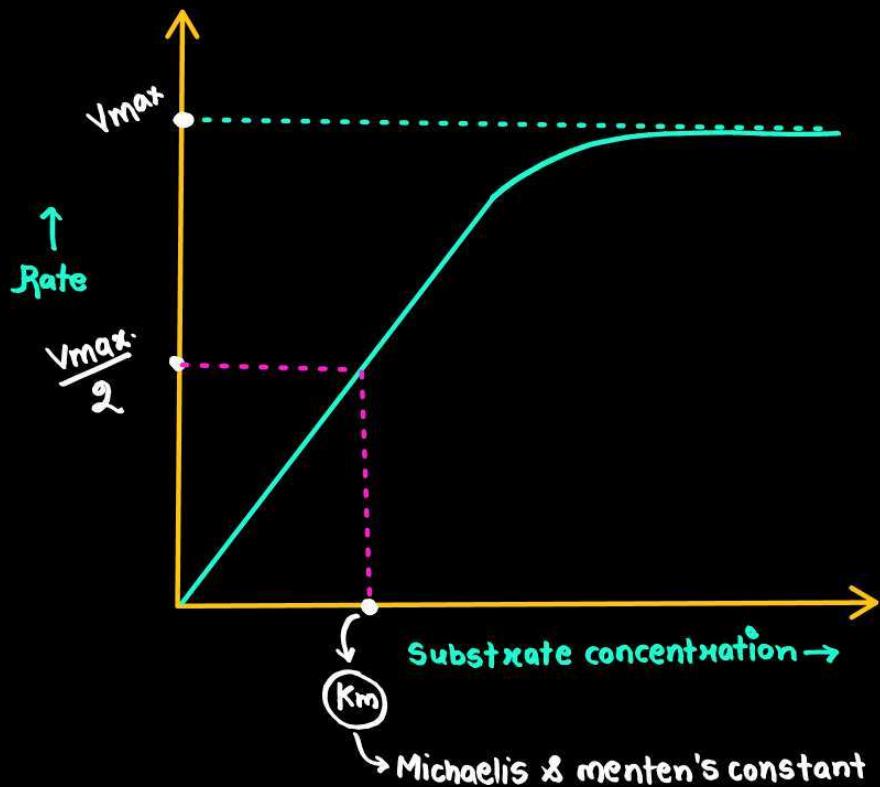


## Nature of Enzyme Action





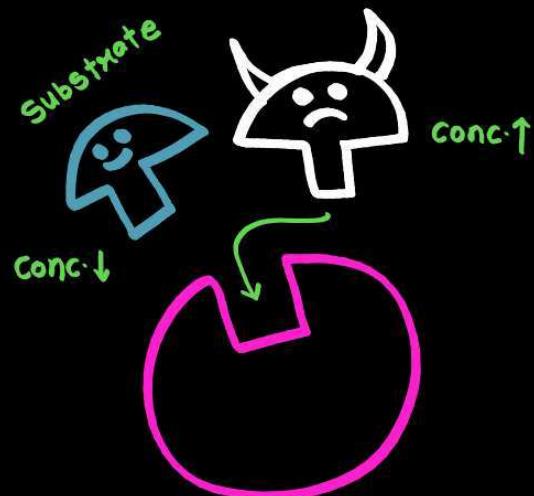
## Factors Affecting Enzyme: Temp., pH & Substrate Concentration



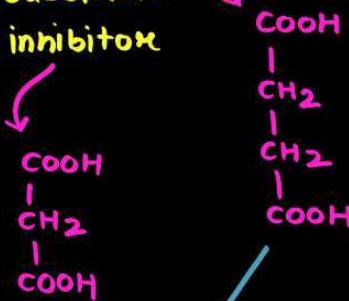
- If  $K_m \downarrow$ ; the affinity b/w enzyme & Substrate is more  
∴ reaction is efficient



## Enzyme Inhibition



Succinate dehydrogenase  
• Succinate : substrate  
Malonate : inhibitor



similar structure



## Classification of Enzymes

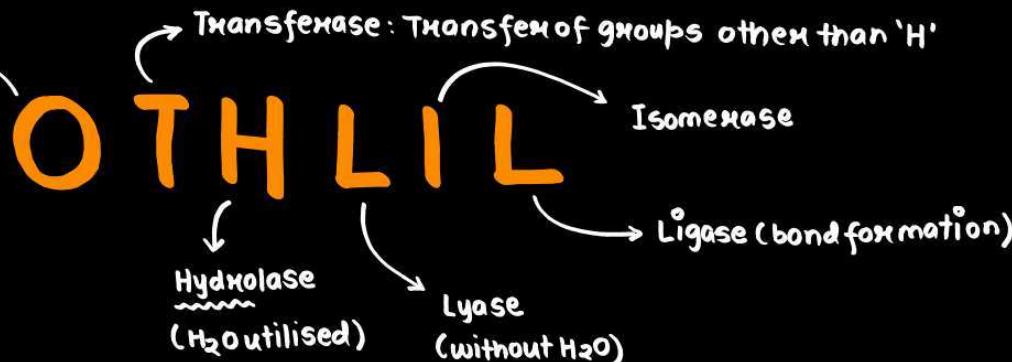
- Enzymes can be divided into 6 main classes

every class can have 4-13 subclasses

Name of Enzymes

1.1.1.2 → no. given to enzyme  
Class      Sub-class      Sub-sub-class

oxidoreductas  
Redox reaction





## Classification of Enzymes

① **Oxidoreductases/dehydrogenases:** Enzymes which catalyse ~~oxidoreduction~~ between two substrates S and S' e.g.,



② **Transferases:** Enzymes catalysing a transfer of a group, G (other than hydrogen) between a pair of substrate S and S' e.g.,



③ **Hydrolases:** Enzymes catalysing hydrolysis of ester, ether, peptide, glycosidic, C-C, C-halide or P-N bonds.

④ **Lyases:** Enzymes that catalyse removal of groups from substrates by mechanisms other than hydrolysis leaving double bonds.



⑤ **Isomerases:** Includes all enzymes catalysing inter-conversion of optical, geometric or positional isomers.

⑥ **Ligases:** Enzymes catalysing the linking together of 2 compounds, e.g., enzymes which catalyse joining of C-O, C-S, C-N, P-O etc. bonds.

Alc-dehydrogenase

Hexokinase

PFK-1

Digestive enzymes

Lysosomal enzyme

Aldolase

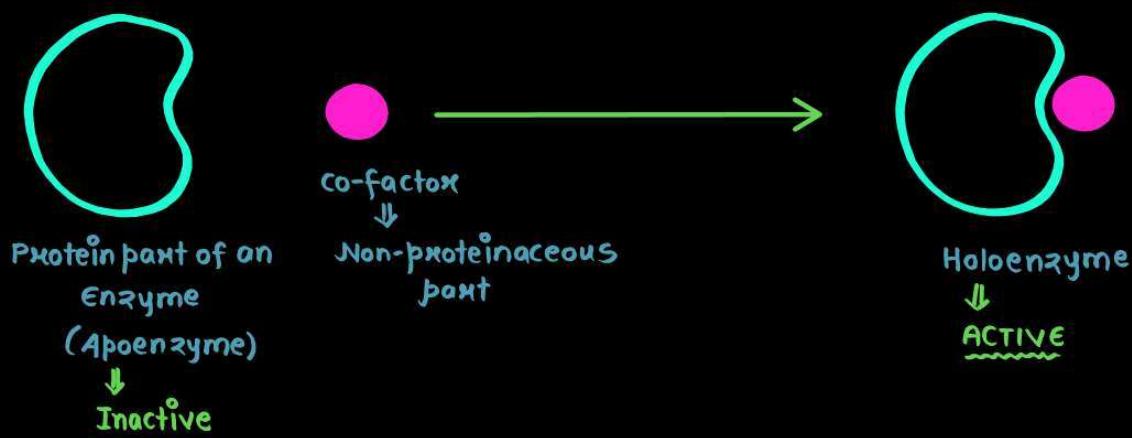
Phospho-hexo-isomerase

Triose isomerase

DNA ligase



## Co-Factors

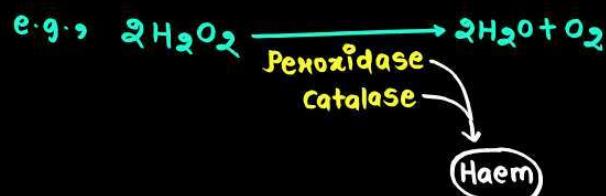




## Co-Factors

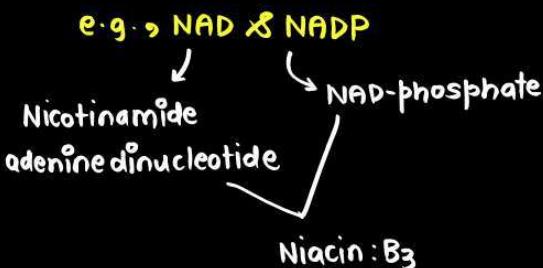
### Prosthetic Group

- organic
- Binds tightly with enzyme



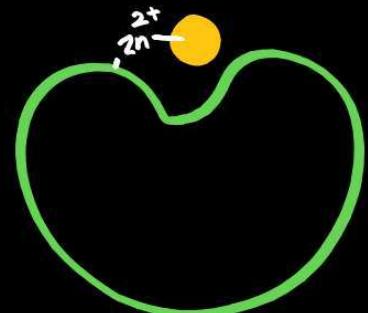
### Co-enzymes

- organic
- Binds transiently / loosely
- usually - vitamins



### Metal ions

- Inorganic
- Make coordinate bonds



e.g.,  $\text{Zn}^{2+}$  in Alc dehyd. or carboxy peptidase

# Lipids



- Mostly water insoluble  
∴ they were ~~not~~ with biomacromolecules in acid insoluble pool

- Fatty Acids:  
Fat/long hydrocarbon chain with a -COOH group

e.g., Palmitic acid (16C):  $\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$

16-C: 'R-chain'

Axachidonic acid (20): R = 19C + COOH

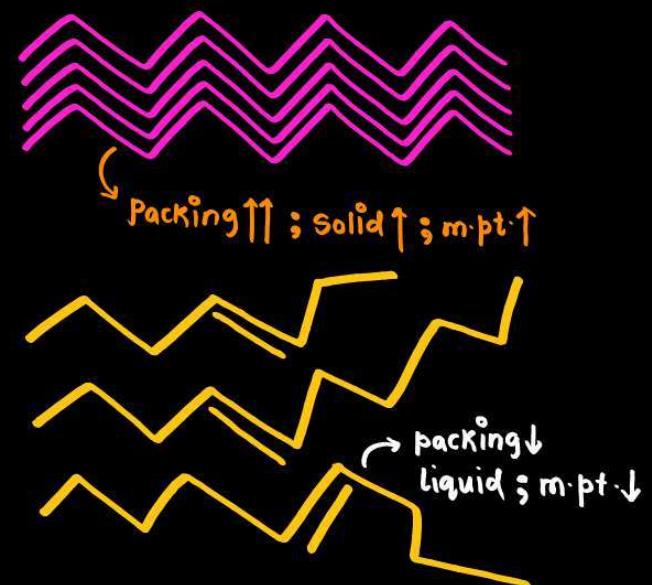
- Saturated and Unsaturated fatty acids

↓  
no '—' or '≡' bond  
e.g., palmitic acid

↑  
'—' ~~not~~  
e.g., Axachidonic acid

- Fats and oils

↑ m.pt.  
↓ m.pt.



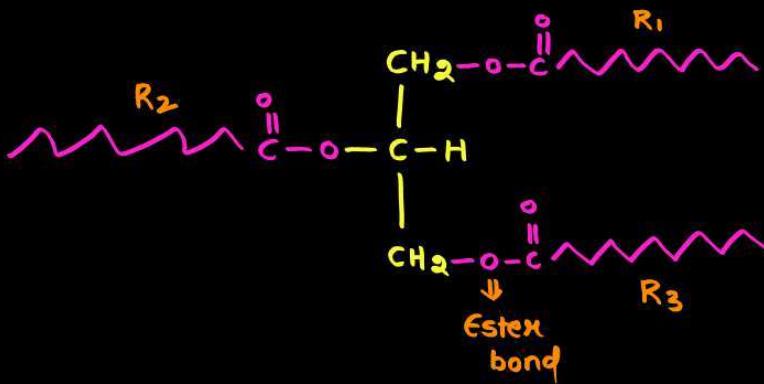


## Lipids: Fats

Fatty acid + Glyceral



Тригидроксиглукозе  
(Глюкозол)



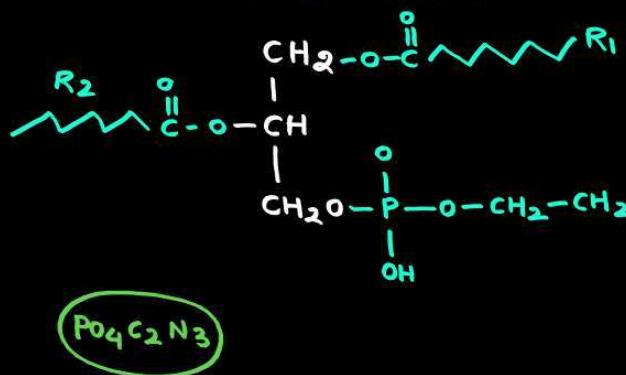
Glyceral + 1FA = Monoglyceralide  
—II— + 2FA = Diglyceralide  
—II— + 3FA = Triglyceralide



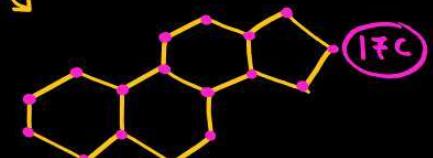
## Lipids: Types

Simple Lipid  
↓  
Fat, oil

Conjugated Lipid  
• Additional gpc-like phosphate  
is seen; e.g., Lecithin



Derived Lipid  
• Sterols: cholesterol





# Nucleic Acid

DNA: A, T, C, G  
RNA: A, U, C, G

also called polynucleotide

has 3-components

Nitrogenous Base



Purine

N = 1, 3, 7, 9

e.g., Adenine  
Guanine

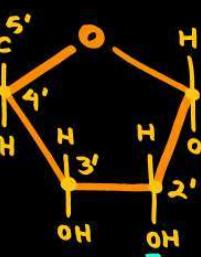


Pyrimidine  
N = 1, 3  
C: Cytosine  
U: Uracil  
T: Thymine

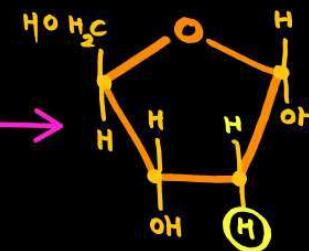
Phosphoric acid / phosphate

Pentose sugar

5C

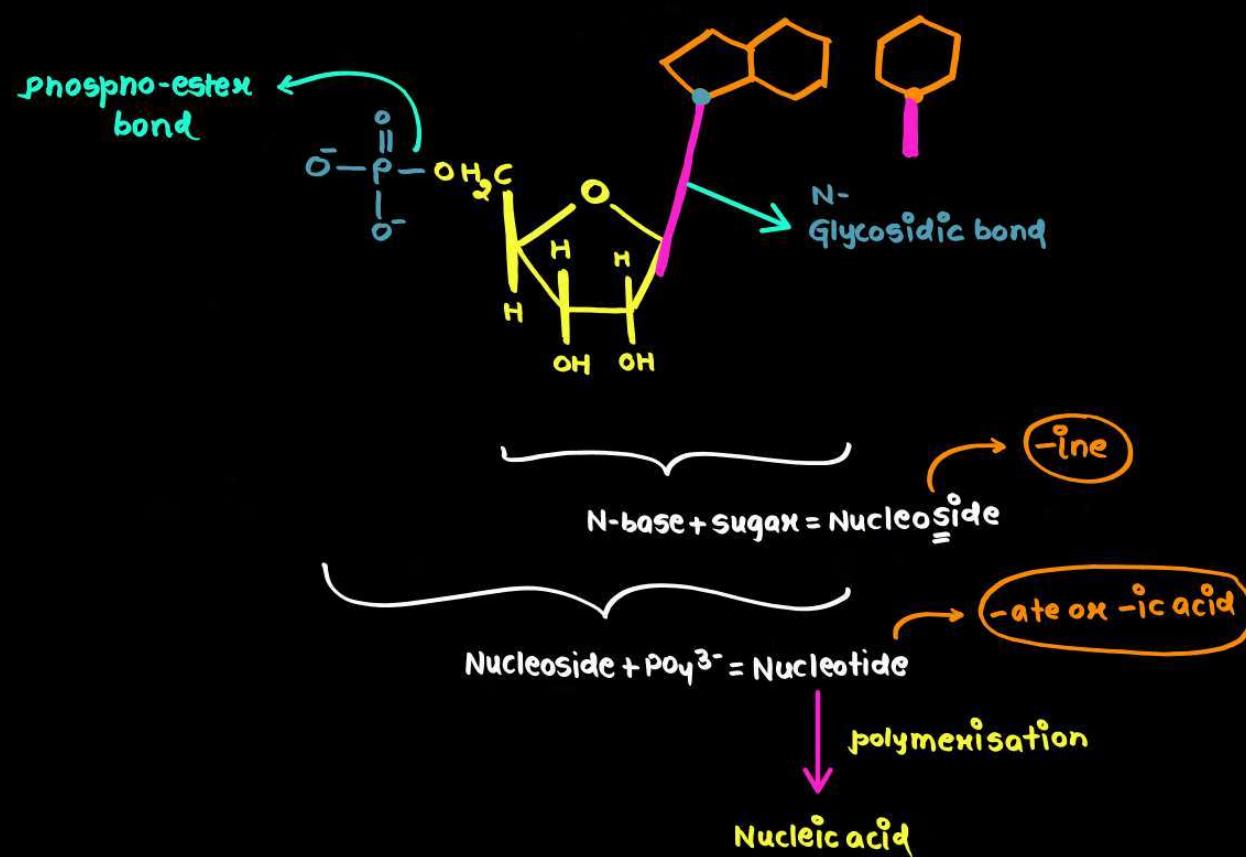


Ribose sugar  
in RNA



De-oxyribosugar  
in DNA

Heterocyclic  
compounds  
as they contain  
'N' other than  
'C', 'H' & 'O'





## Naming of Nucleosides and Nucleotides



Nitrogenous Base	<i>-ine</i> Nucleoside (Nit. Base + Sugar)	<i>Ribose</i> Nucleotide (N. Base + Sugar + Phosph.)
Cytosine	<u>Cytidine</u>	<u>Cytidylic acid</u> / <u>Cytidylate</u>
Uracil	<u>Uridine</u>	<u>Uridylic acid</u>
Thymine	<u>Thymidine</u>	<u>Thymidylic acid</u>
Adenine	<u>Adenosine</u>	<u>Adenylic acid</u>
Guanine	<u>Guanosine</u>	<u>Guanylic acid</u>

- NOTE: If deoxyribose sugar is used, then names will be:  
de-cytidine  
de-cytidylic acid



# Polysaccharides

- Found in bio-macromolecular pool
- Definition: Polyhydroxy aldehydes or polyhydroxy ketones having at least one chiral carbon

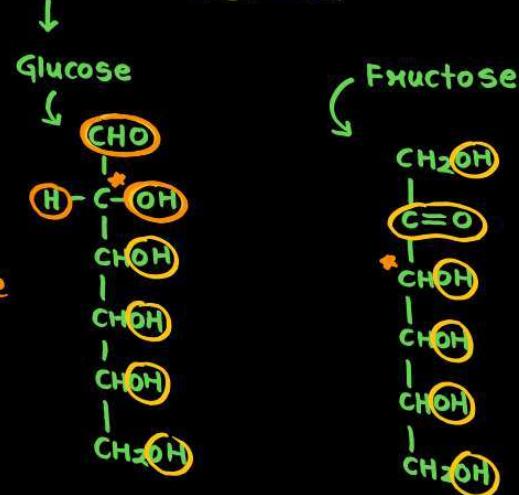
- E.g., Monosaccharides: Glucose, Fructose

Oligosaccharides: 2-9 monosaccharides

e.g. disaccharide: Sucrose = Glucose + Fructose

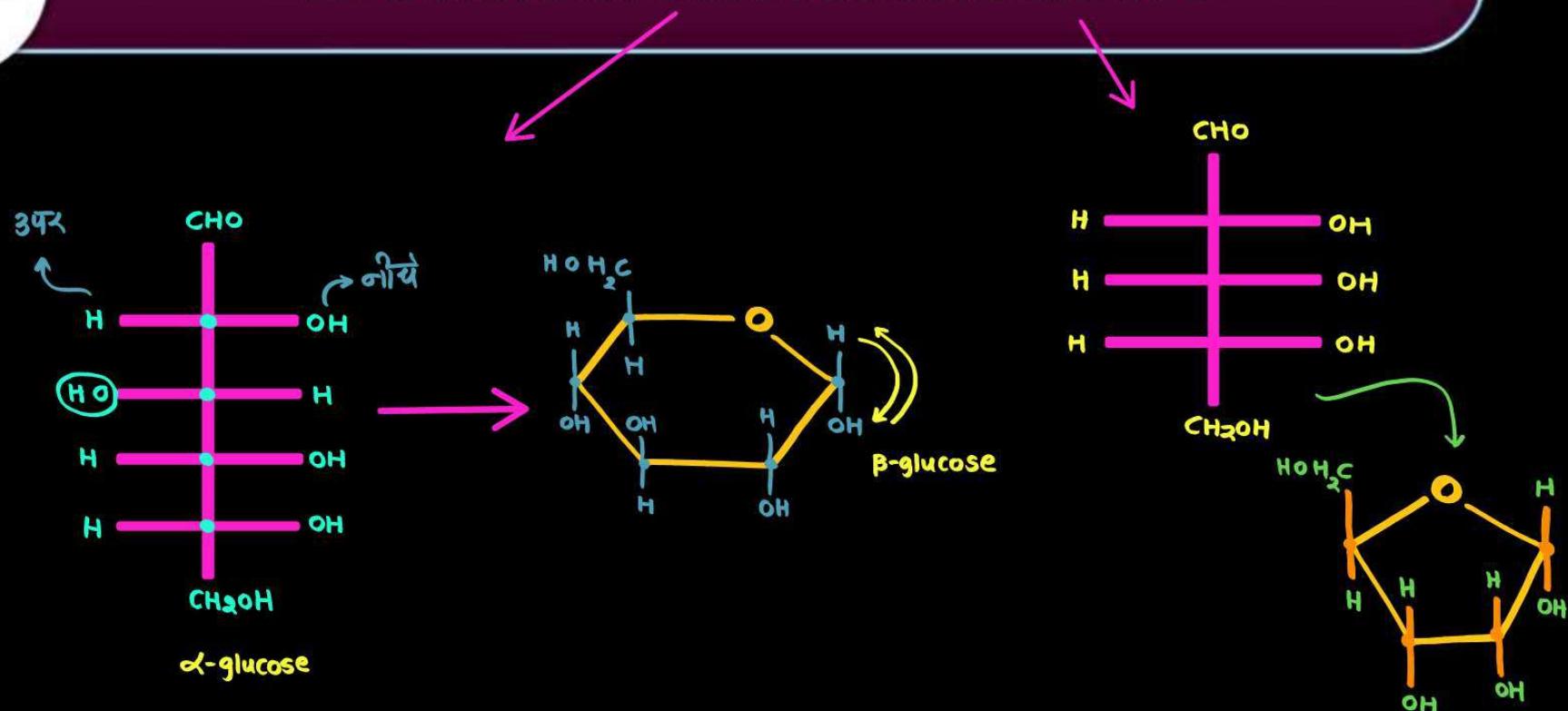
Polysaccharides: >10 monosaccharides

Lactose = Glucose + Galactose





## Structure of Glucose and Ribose



# Polysaccharides

## "Homopolysaccharide"

↳ same monosaccharide is repeating

• Cellulose : Glucose → plant cell wall, paper ↳

.. I<sub>2</sub> Test +ve  
linear

• Starch : Glucose → storage in plants

↳ Amylose : 30% → non-branched

↳ Amylopectin → Branched ↳



• Glycogen : Glucose → storage in animals

↳ Branched

\* Chitin : N-acetylglucosamine (NAG)

↳ cell wall of fungi

exoskeletal of arthropods

• Inulin : fructose

## "Heteropolysaccharide"

↳ diff monosaccharides

• Peptidoglycan : bacterial cell wall

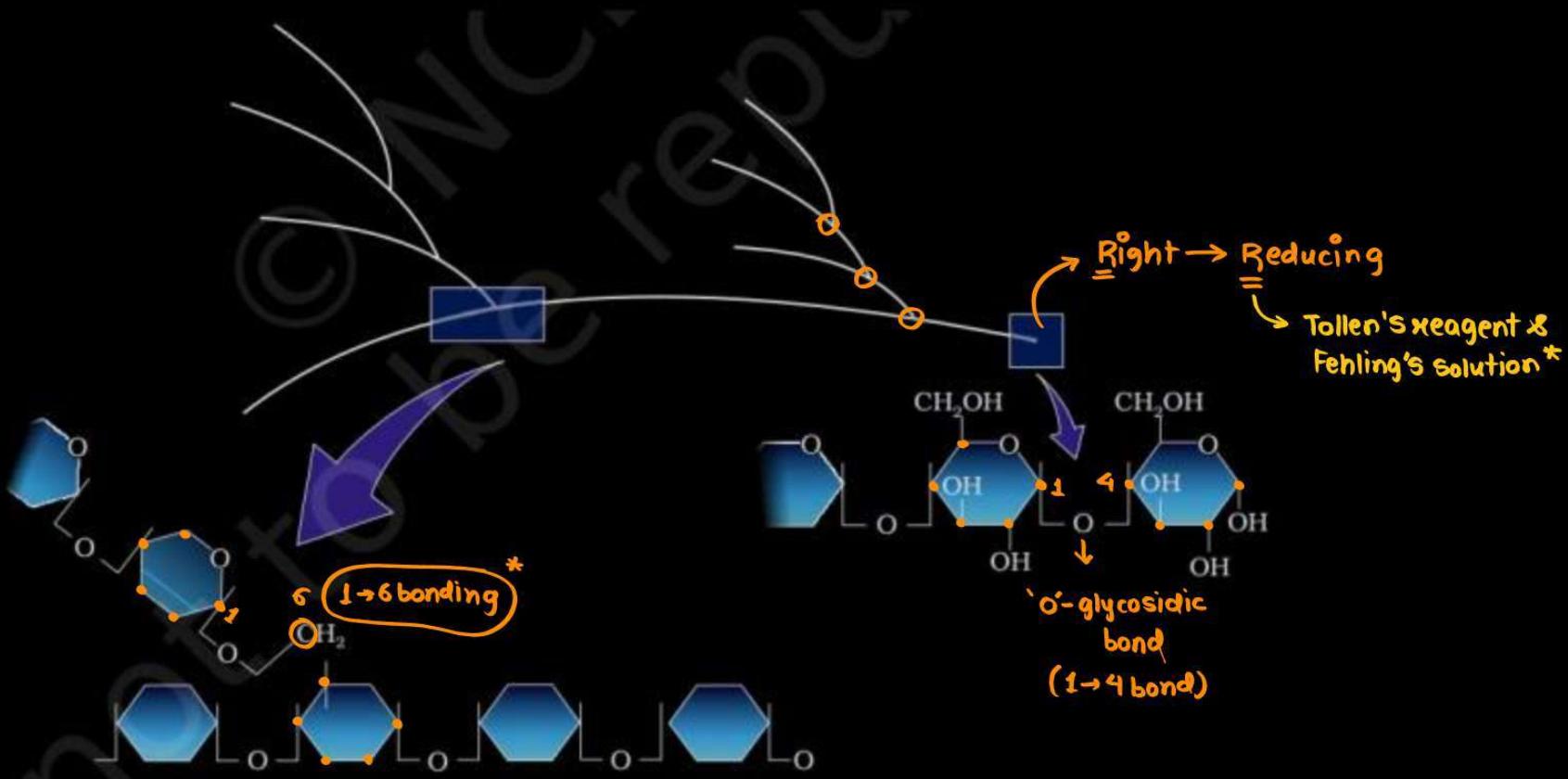
↓  
NAG + N-acetylmuramic acid  
(NAM)

• Hyaluronic acid : Animal cement

↳ NAG + Glucuronic acid

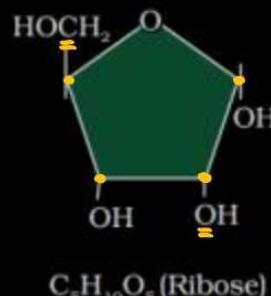


## Polysaccharides

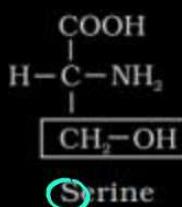
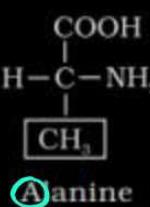
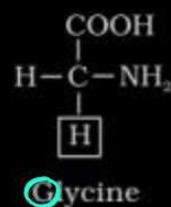




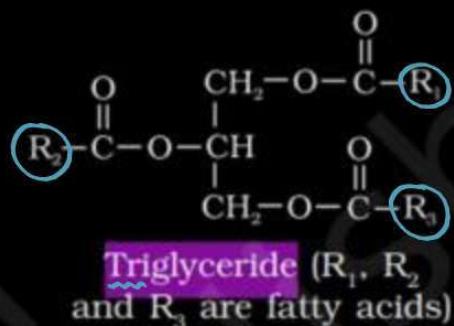
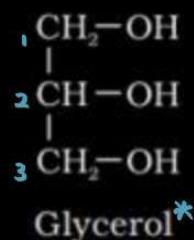
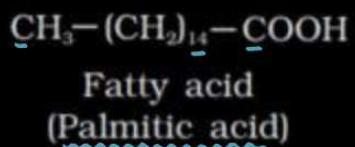
## NCERT Structures



Sugars (Carbohydrates)

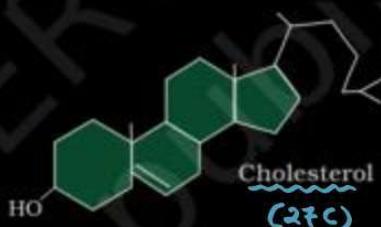
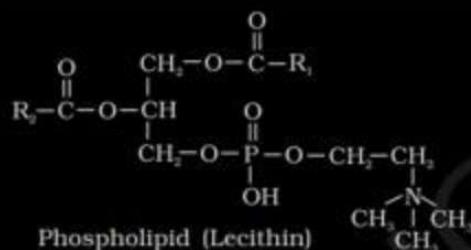


Amino acids

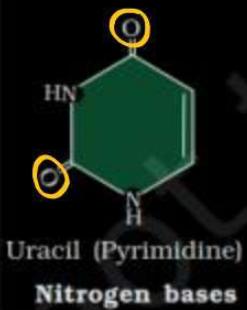
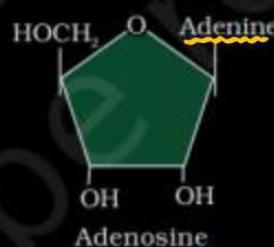




## NCERT Structures



Fats and oils (lipids)



Nitrogen bases



Nucleosides

Nucleotide

**QUESTION (NEET PYQ EXAM 2024)**

Match List I with List II :

	List-I		List-II
A.	Lipase	I.	Peptide bond
B.	Nuclease	II.	Ester bond
C.	Protease	III.	Glycosidic bond
D.	Amylase	IV.	Phosphodiester bond

Choose the correct answer from the options given below :

- (1) A-IV, B-II, C-III, D-I
- (2) A-III, B-II, C-I, D-IV
- (3) A-II, B-IV, C-I, D-III
- (4) A-IV, B-I, C-III, D-II

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2024)**

Regarding catalytic cycle of an enzyme action, select the correct sequential steps :

- A. Substrate enzyme complex formation ✓
- B. Free enzyme ready to bind with another substrate. ✓
- C. Release of products. ✓
- D. Chemical bonds of the substrate broken. ✓
- E. Substrate binding to active site. ✓

Choose the correct answer from the options given below :

- (1) E, A, D, C, B
- (2) A, E, B, D, C
- (3) B, A, C, D, E
- (4) E, D, C, B, A

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2024)

Enzymes that catalyse the removal of groups from substrates by mechanisms other than hydrolysis leaving double bonds, are known as :

- (1) Transferases
- (2) Oxidoreductases
- (3) Dehydrogenases
- (4) Lyases

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2024)**

Match List-I with List-II.

	List-I		List-II
A.	Primary structure of protein	I.	Human haemoglobin
B.	Secondary structure of protein	II.	Disulphide bonds
C.	Tertiary structure of protein	III.	Polypeptide chain
D.	Quaternary structure of protein	IV.	Alpha helix and $\beta$ sheet

Choose the correct answer from the options given below :

- ( A-III, B-IV, C-II, D-I      ( A-III, B-II, C-I, D-IV  
( A-I, B-III, C-II, D-IV      ( A-IV, B-III, C-II, D-I

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2023)**

Match List-I with List-II.

(Manipur, 2023)

List-I		List-II	
A.	Protein	P.	C=C double bonds
B.	Unsaturated fatty acid	Q.	Phosphodiester bond
C.	Nucleic acid	R.	Glycosidic bonds
D.	Polysaccharide	S.	Peptide bonds

Choose the **correct** answer from the options given below:

- (~~X~~) (A)-(Q)    (B)-(P)    (C)-(S)    (D)-(R)  
(~~X~~) (A)-(S)    (B)-(R)    (C)-(P)    (D)-(Q)  
 (A)-(S)    (B)-(P)    (C)-(Q)    (D)-(R)  
(~~X~~) (A)-(P)    (B)-(S)    (C)-(R)    (D)-(Q)

(NEET Arjuna Zoology M-1)

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2023)

Inulin is a polymer of; (Manipur, 2023)

- (1) Fructose
- (2) Galactose
- (3) Amino acids
- (4) Glucose

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2023)**

Match List-I with List-II.

(Manipur, 2023)

List-I		List-II	
A.	Terpenoides	P.	Codeine
B.	Lectins	Q.	Diterpenes
C.	Alkaloids	R.	Ricin
D.	Toxins ( <u>ART</u> )	S.	Concanavalin A

Choose the **correct** answer from the options given below.

- ( A-(Q)      B-(S)      C-(R)      D-(P)  
( A-(Q)      B-(P)      C-(S)      D-(R)  
( A-(Q)      B-(R)      C-(P)      D-(S)  
( A-(Q)      B-(S)      C-(P)      D-(R)

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2023)

Which of the following is not a secondary metabolite?  
(Manipur, 2023)

- (1) Curcumin
- (2) Morphine
- (3) Anthocyanin
- (4) Lecithin

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**FOR NOTES & DPP CHECK DESCRIPTION**

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### QUESTION (NEET PYQ EXAM 2023)

Melonate inhibits the growth of pathogenic bacteria by  
inhibiting the activity of; (2023)

- (1) Dinitrogenase
- (2) succinic dehydrogenase
- (3) Amylase
- (4) Lipase

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2023)**

Cellulose does **not** form blue colour with Iodine because;  
(2023)

- (1) it breakes down when iodine reacts with it.
- (2) it is a disaccharide.
- (3) it is a helical molecule.
- (4) it does not contain complex helices and hence cannot hold iodine molecules.

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2023)

Given below are two statements.

(2023)

**Statement-I:** Low temperature preserves the enzyme in a temporarily inactive state whereas high temperature destroys enzymatic activity because proteins are denatured by heat.

**Statement-II:** When the inhibitor closely resembles the substrate in its molecular structure and inhibits the activity of the enzyme, it is known as competitive inhibitor.

In the light of the above statements, choose the **correct** answer from the options given below.

- (1) Statement-I is false but Statement-II is true.
- (2) Both Statement-I and Statement-II are true.
- (3) Both Statement-I and Statement-II are false.
- (4) Statement-I is true but Statement-II is false.

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2023)

Given below are two statements. (2023)

**Statement-I:** A protein is imagined as a line, the left end represented by first amino acid (~~N~~-terminal) and the right end represented by last amino acid (~~C~~-terminal)

**Statement-II:** Adult human haemoglobin, consists of 4 subunits (two subunits of  $\alpha$  type and two subunits of  $\beta$  type.)

In the light of the above statements, choose the **correct** answer from the options given below.

- (1) Statement-I is false but Statement-II is true. ✓
- (2) Both Statement-I and Statement-II are true.
- (3) Both Statement-I and Statement-II are false.
- (4) Statement-I is true but Statement-II is false.

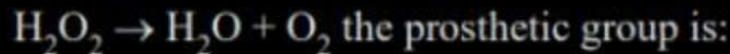
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## FOR NOTES & DPP CHECK DESCRIPTION

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**QUESTION (NEET PYQ EXAM 2022)**

In the enzyme which catalyses the breakdown of; (2022 II)



- (1) Niacin
- (2) Nicotinamide adenine dinucleotide
- (3) Haem
- (4) Zinc

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2022)**

Given below are two statements.

(2022 II)

**Statement-I:** Amino acids have a property of ionizable nature of  $-\text{NH}_2$  and  $\text{COOH}$  groups, hence have different structures at different pH.

**Statement-II:** Amino acids can exist as zwitterionic form at acidic and basic pH.

In the light of the above statements, choose the most appropriate answer from the options given below.

- (1) Statement-I is incorrect but Statement-II is correct
- (2) Both Statement-I and Statement-II are correct
- (3) Both Statement-I and Statement-II are incorrect
- (4) Statement-I is correct but Statement-II is incorrect

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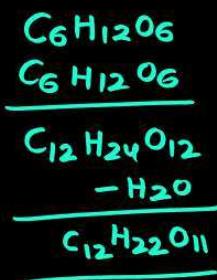
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**QUESTION (NEET PYQ EXAM 2022)**

A dehydration reaction links two glucose molecules to product maltose. If the formula for glucose is  $C_6H_{12}O_6$  then what is the formula of maltose? (2022)

- (1)  $C_{12}H_{22}O_{11}$       (2)  $C_{12}H_{24}O_{11}$   
(3)  $C_{12}H_{20}O_{10}$       (4)  $C_{12}H_{24}O_{12}$



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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2022)

Exoskeleton of arthropods is composed of; (2022)

- (1) Glucosamine
- (2) Cutin
- (3) Cellulose
- (4) Chitin

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2022)

Read the following statements and choose the set of correct statements.  
(2022)

- A. Lecithin found in the plasma membrane is a glycolipid.
- B. Saturated fatty acids possess one or more ~~X=c~~ bonds.
- C. Gingely oil has lower melting point, hence remains as oil in winter.
- D. Lipids are generally insoluble in water but soluble in some organic solvents.
- E. When fatty acid is esterified with glycerol, monoglycerides are formed.

Choose the **correct** answer from the options given below.

- (1) A, B and D only
- (2) A, B and C only
- (3) A, D and E only
- (4) C, D and E only ✓

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## FOR NOTES & DPP CHECK DESCRIPTION

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**QUESTION (NEET PYQ EXAM 2022)**

Match List-I with List-II.

(2022)

List-I (Biological Molecules)		List-II (Biological function)	
A.	Glycogen	P.	Hormone
B.	Globulin	Q.	Biocatalyst
C.	Steroids	R.	Antibody
D.	Thrombin	S.	Storage product

Choose the **correct** answer from the options given below.

- (✓) A-(S); B-(R); C-(P); D-(Q)  
(✗) A-(R); B-(Q); C-(S); D-(P)  
(✗) A-(S); B-(Q); C-(P); D-(R)  
(✗) A-(Q); B-(S); C-(R); D-(P)

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2021)

Which of the following are **not** secondary metabolites in plants? (2021)

- (1) Amino acids, glucose (2) Vinblastin, curcumin X
- (3) Rubber, gums X (4) Morphine, codeine X

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2021)**

Match List-I with List-II.

(2021)

	List-I		List-II
A.	Protein	P.	C = C double bonds
B.	Unsaturated fatty acid	Q.	Phosphodiester bonds
C.	Nucleic acid	R.	Glycosidic bonds
D.	Polysaccharide	S.	Peptide bonds

Choose the **correct** answer from the options given below.

- (X) A-(P); B-(S); C-(R); D-(Q)  
(X) A-(Q); B-(P); C-(S); D-(R)  
(X) A-(S); B-(R); C-(P); D-(Q)  
**(✓)** A-(S); B-(P); C-(Q); D-(R)

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2021)

Identify the incorrect pair. (2021)

- (1) Toxin - Abrin ✓
- (2) Lectins - Concanavalin A
- (3) Drugs - Ricin
- (4) Alkaloids - Codeine

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2021)

(2021)

- A. Lipids having only single bonds are called ~~unsaturated~~ fatty acids.
- B. Lecithin is a phospholipid.
- C. Trihydroxy propane is glycerol.
- D. Palmitic acid has 20 ~~carbon~~ atoms including carboxyl carbon.
- E. Arachidonic acid has 16 ~~carbon~~ atoms.

Choose the **correct** answer from the options given below.

- (1) C and D only
- (2) B and C only
- (3) B and E only
- (4) A and B only

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2020)

Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their; (2020 I)

- (1) Nutritive value
- (2) Growth response
- (3) Defence action
- (4) Effect on reproduction

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2020)

Identify the basic amino acid from the following. (2020)

- (1) Glutamic acid
- (2) Lysine
- (3) Valine
- (4) Tyrosine

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2020)**

Match the following. Choose the **correct** option from the following.  
**(2020)**

	<b>List-I</b>		<b>List-II</b>
A.	Inhibitor of catalytic activity	P.	Ricin
B.	Possess peptide bonds	Q.	<u>Malonate</u> *
C.	Cell wall material in fungi	R.	Chitin
D.	Secondary metabolite	S.	Collagen

- A      B      C      D
- (X) (R)    (P)    (S)    (Q)  
(X) (R)    (S)    (P)    (Q)  
(X) (Q)    (R)    (P)    (S)  
(✓) (Q)    (S)    (R)    (P)

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2020)

Which one of the following is the most abundant protein in  
the animals? (2020)

- (1) Collagen
- (2) Lectin
- (3) Insulin
- (4) Haemoglobin

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2020)

Identify the substances having glycosidic bond and peptide bond, respectively in their structure. (2020)

- (1) Glycxrol, trypsin
- (2) Cellulose, lecxthin
- (3) Inulin, insulin
- (4) Chitin, cholesterol

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**FOR NOTES & DPP CHECK DESCRIPTION**

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## QUESTION (NEET PYQ EXAM 2020)

Identify the statement which is **incorrect**. (2020 Covid)

- (1) Glycine is an example of lipids. X
- (2) Lecithin contains phosphorus atom in its structure. ✓
- (3) Tyrosine possesses aromatic ring in its structure. ✓
- (4) Sulphur is an integral part of cysteine. ✓

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**FOR NOTES & DPP CHECK DESCRIPTION**

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**QUESTION (NEET PYQ EXAM 2020)**

Match the following.

(2020 Covid)

	List-I		List-II	
1.	Aquaporin		I. <u>Amide</u>	
2.	Asparagine		II. Polysaccharide	
3.	<u>Abscisic acid</u>		III. Polypeptide	
4.	Chitin		IV. <u>Carotenoids</u>	

1      2      3      4

- (~~X~~) (II)    (III)    (IV)    (I)  
(~~X~~) (II)    (I)    (IV)    (III)  
(~~X~~) (III)    (I)    (II)    (IV)  
(~~✓~~) (III)    (I)    (IV)    (II)

**FOR NOTES & DPP CHECK DESCRIPTION**