

BIOMOLECULES

→ Structure of atoms, molecules and chemical bonds

Atoms can only be observed individually using special instruments

↓
(Scanning tunneling microscope)

Particle	Charge	Masses
Proton	+1	$1.6727 \times 10^{-24} \text{ g}$
Neutron	0	$1.6750 \times 10^{-24} \text{ g}$
Electron	-1	$9.110 \times 10^{-28} \text{ g}$

Unit of Proton, neutron, electron =

[Atomic Mass Unit]

Electron is 2000 times lighter than P and N

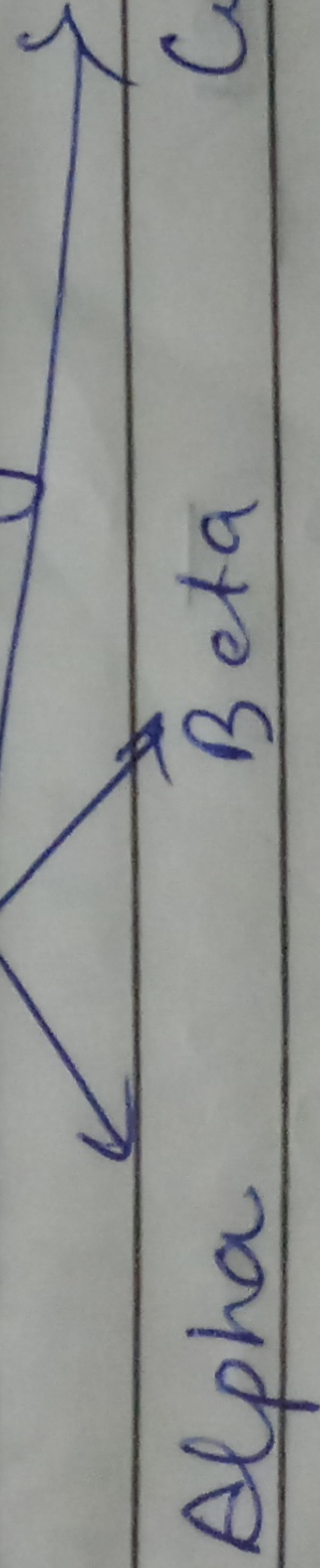
Ex - Carbon atoms contain 6 Protons

Cold atoms contain 7 Protons

Lead atoms contain 82 Protons

Isotopes :- Two atoms with same no. of protons but different number of neutrons

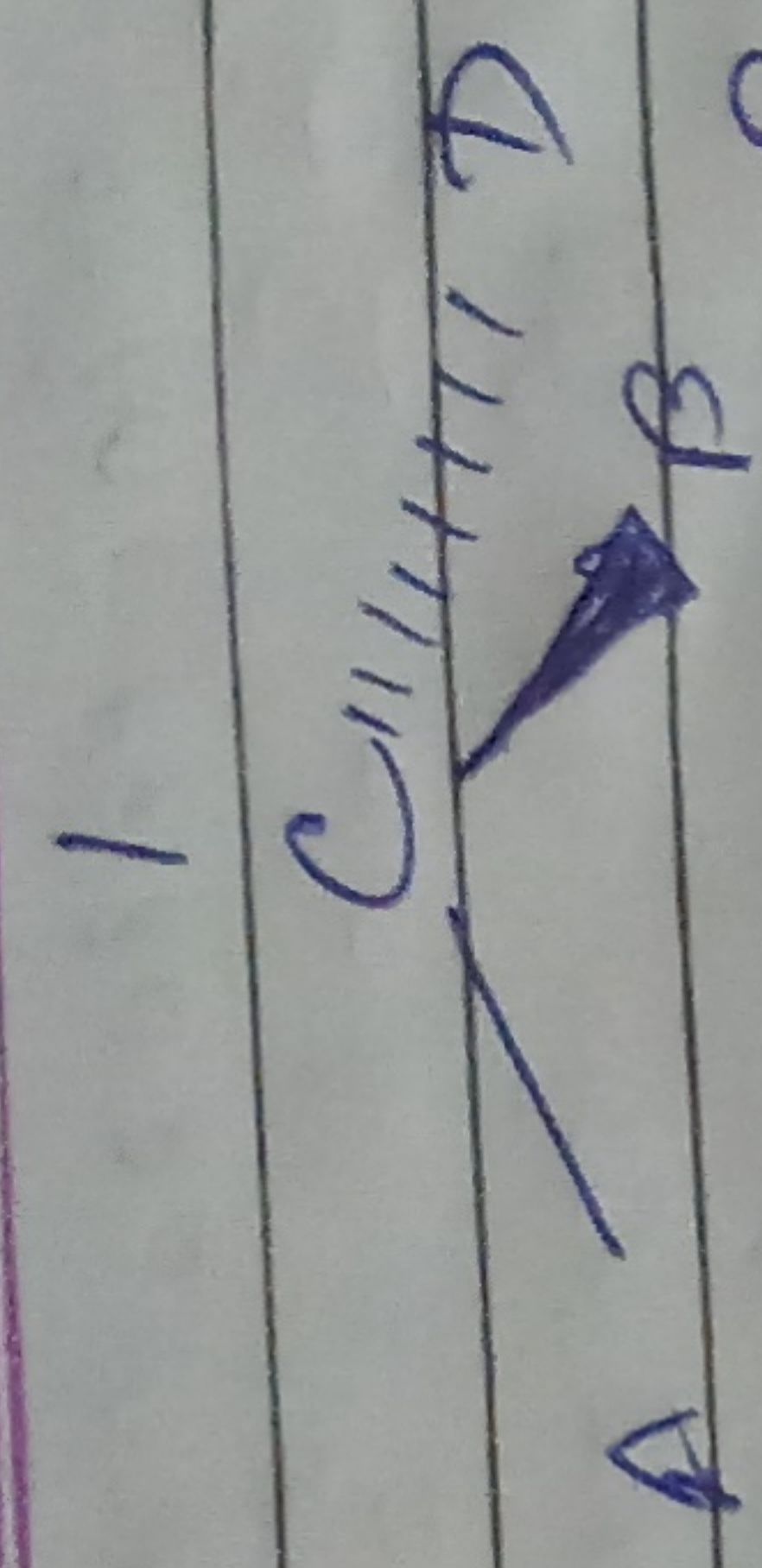
Radioactive decay



Molecules :-

Two or more atoms held together by covalent chemical bonds.

A

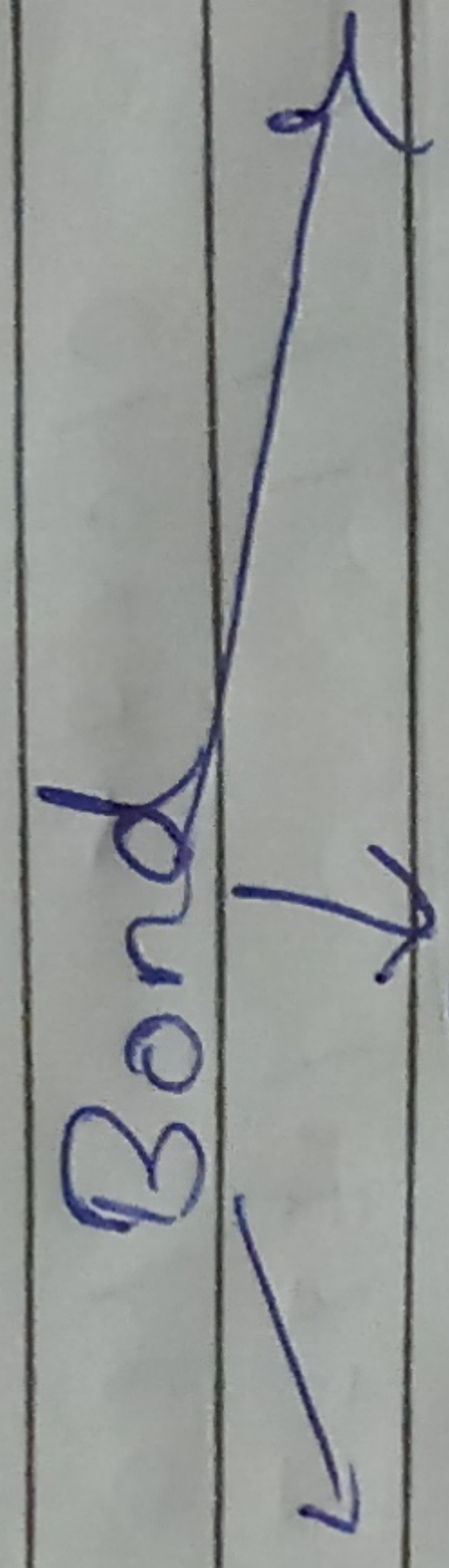


Molecule Basic structure

Tetrahedral - 109.5°

Trigonal - 120°

Linear - 180°



Covalent Ionic Metallic

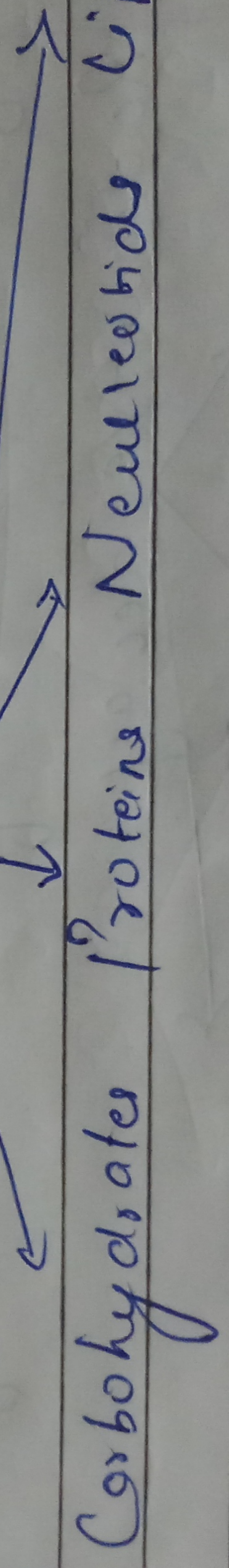
Sharing of e^- Transferring of e^- Donation & e^-

VSEPR Theory

Valence shell electron pair repulsion theory

* Composition Structure and function of Biomolecules

Biomolecules



1) Carbohydrates

Most important source of energy
Digestive System
To glucose

Simple

Complex

Carbohydrate \rightarrow Saccharide

- 1) Monosaccharide] - lower molecules
- 2) Disaccharide] weight
- 3) Oligosaccharide
- 4) Polysaccharide

Formula - $C_n(H_2O)_n$

\rightarrow Monosaccharide -

Example - Glucose, fructose and glyceraldehyde.

\rightarrow 3-D structure of Monosaccharide represented by Howorth Projection

\rightarrow Disaccharides

Example - Maltose, gentiobiose, Trehalose
Disaccharides are made up of two

glucopyranose ring.

Maltose \rightarrow Malt Sugar

(Hydrolysis of starch.)

Cellulose is obtained by the hydrolysis of Cellulose. \rightarrow No taste and

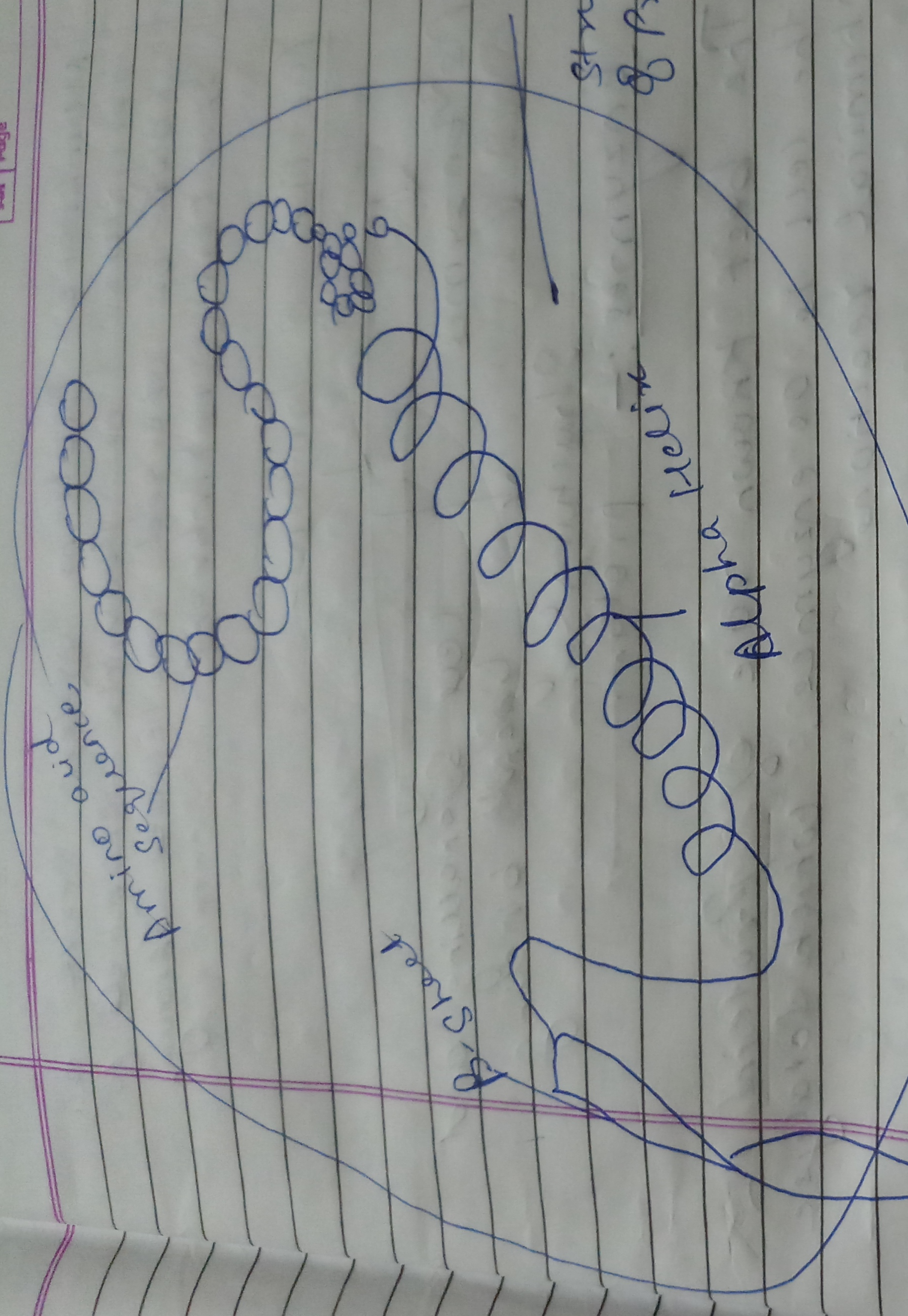
is not fermented by yeast.

Trehalose \rightarrow Sweet taste, but

gentiobiose is bitter.

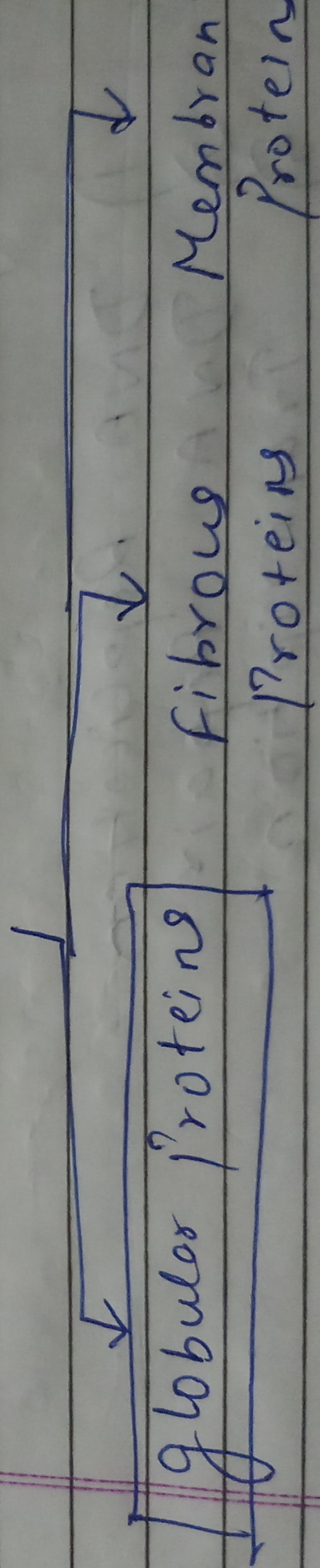
\rightarrow Polysaccharides (Oligosaccharides)

\rightarrow The main difference between poly- and oligosaccharides is that



Proteins Classification

Proteins are informally divided into three main classes



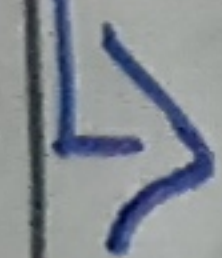
1) Globular proteins work as a enzyme which act as a catalyst in chemical reaction

2) Fibrous proteins are the structural proteins such as collagen

of nucleic acids are

Transmission of genetic information
Translation of genetic information

Nucleic acid types



DNA

RNA

Broken down

Nucleic acid

Phosphoric acid, Sugars and
mixture of organic bases

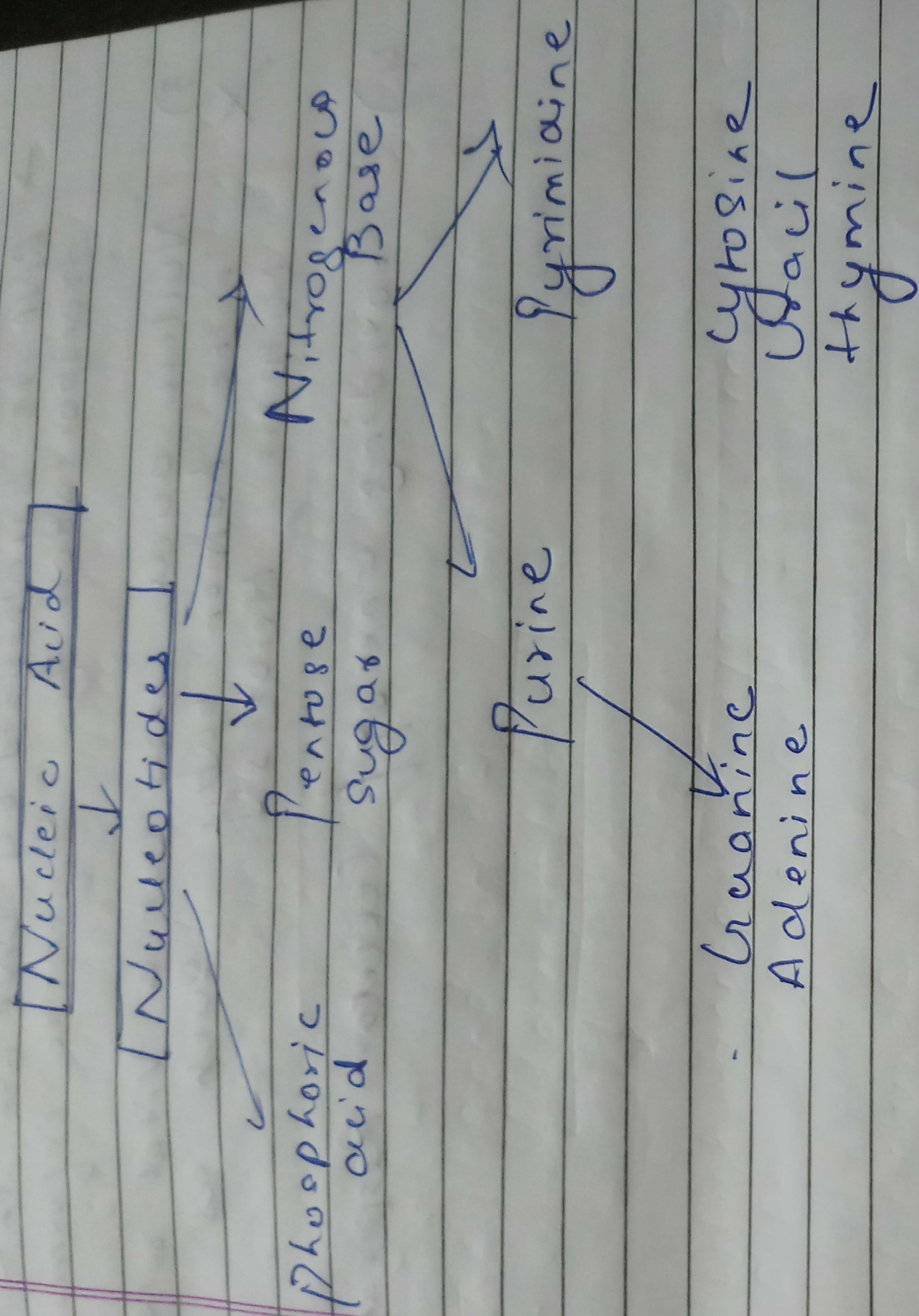
→ Nucleic acids are linear
Polymers (chains) of nucleotides.
Each nucleotide consists of three
components

1) Purine or Pyrimidine base
(Nitrogenous base)

2) Pentose Sugar

3) phosphate group

Composition of Nucleic Acid



* Function of Nucleic Acid

1) function of DNA (De-Oxy Ribonucleic Acid)

→ DNA is the permanent storage place for genetic information.

→ DNA controls the synthesis of RNA (ribonucleic acid)

→ The sequence of nitrogenous bases in DNA determines the protein cleavage in new cells.

2) Function of RNA - (Ribonucleic acid)

→ RNA is synthesized by DNA for the transportation of genetic information

3) ~~Nucleic acids carry out a vital role in the human body such as Mitosis, Meiosis~~

4) ~~Providing Energy / Cellular Respiration~~