

## Testing Carbohydrates

Charing Cross place.

$$\text{CH}_3 ; \quad \text{CH} = \text{O}$$

-CH<sub>2</sub>-OH (hydroxy  
(5) methyl.

$$\Rightarrow \text{Glycerine} \xrightarrow[\text{H}_2\text{SO}_4]{\text{cone.}} \text{Black carbon}$$


 $\xrightarrow[\text{HgSO}_4]{\text{cone.}} \text{Charring takes place}$   
 Black Carbon

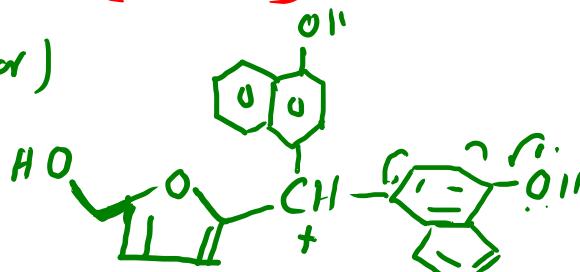
Molisch Test (Test for glucose) Aldohexose



$\beta$ -D-glucopyranose

$(C_6H_{12}O_6)$

Purple color



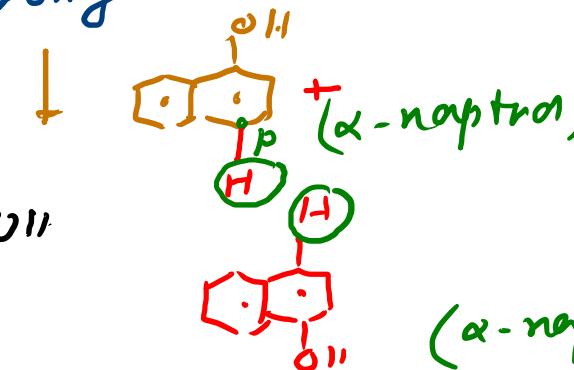
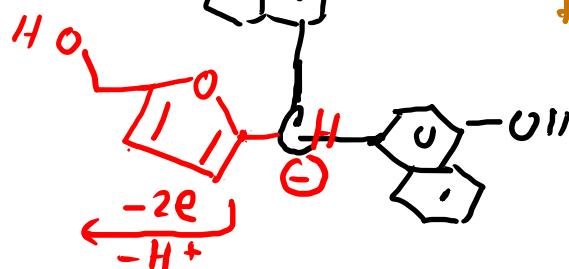
$\alpha$ -naphtho.

"Purple colour"



On 5. May

On 5-hydroxy methyl furfural



( $\alpha$ -naphthol)

III

### Barfoed Test.

- i) Glucose & vs Maltose.
- ii) Fructose vs Lactose.
- iii) Cu<sup>II</sup> acetate.  
(Oxidising reagent)

It oxidises monosaccharide glucose, fructose  
but it can not oxidise  
disaccharide Maltose & Lactose.

Glucose (+ve test)

Maltose & Lactose (-ve test)

Observation: red colour Cu<sub>2</sub>O.

no observation.

	Tollens Test	Fehling test (startred)
Glucose	+ ve	+ ve.
Fructose	+ ve	+ ve. red Cu <sub>2</sub> O
Maltose	+ ve	+ ve. red Cu <sub>2</sub> O
Lactose	+ ve	+ ve.
Sucrose	- ve	- ve.

Tollens & Fehling can not  
so distinguish

Monosaccharide      Disaccharide

Glucose & Maltose

To distinguish Glucose &  
Maltose, Barfoed  
test is carried out.

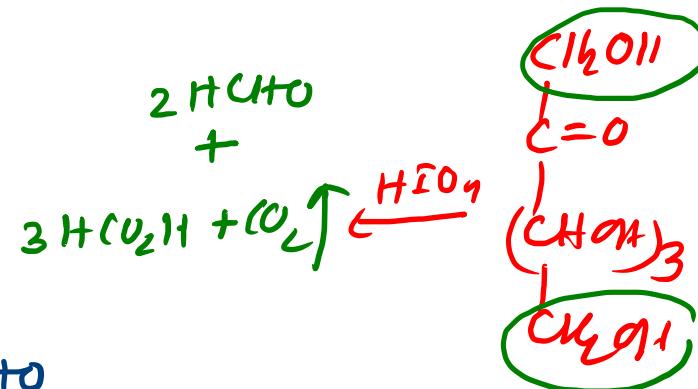
$\text{Br}_2 + \text{H}_2\text{O}$       Glucose & fructose  
+ve test      -ve test.  
→ gluconic acid.

$\text{H}_2\text{O}_4$ .       $\text{HCO}_2\text{H} \rightarrow \text{HCHO}$   
                        (5:1)

Seliwanoff's Test.  
+ conc.  $\text{H}_2\text{SO}_4$   
dehydronium  
rate is  
very low.

$\text{CO}_2\uparrow$ .  
 $\text{HCO}_2\text{H} + \text{HCHO}$   
(3:2)

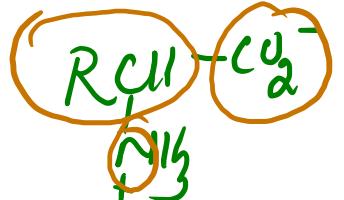
dehydronium  
rate is  
very very fast.  
(+ve test)



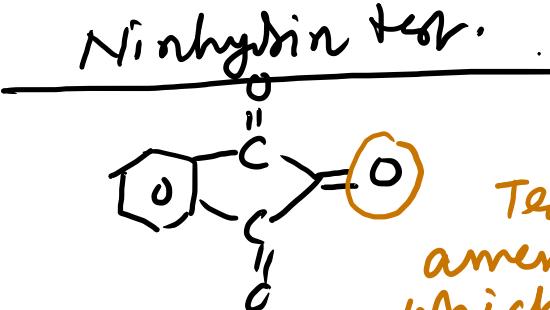
✓  
9460011295

Starch  $\xrightarrow{I_2^x}$  Starch iodide. Bluish Black Amino Acid: (Ninhydrin test; Biuret test). Xanthoproteic acid.

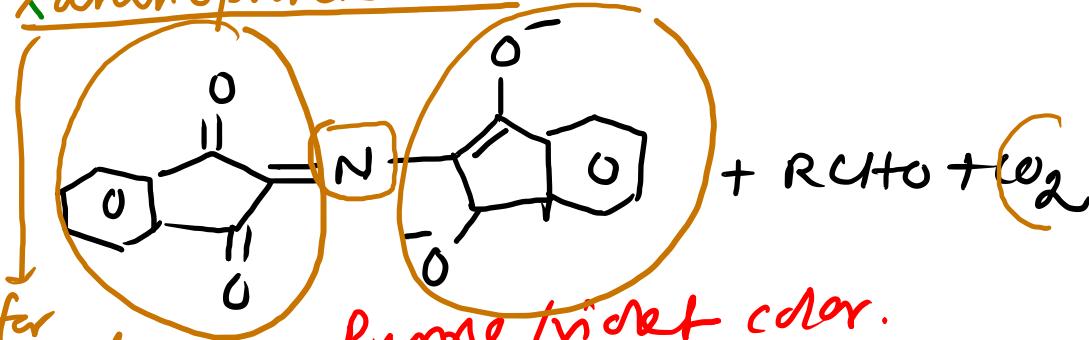
$\alpha$ -amino acid



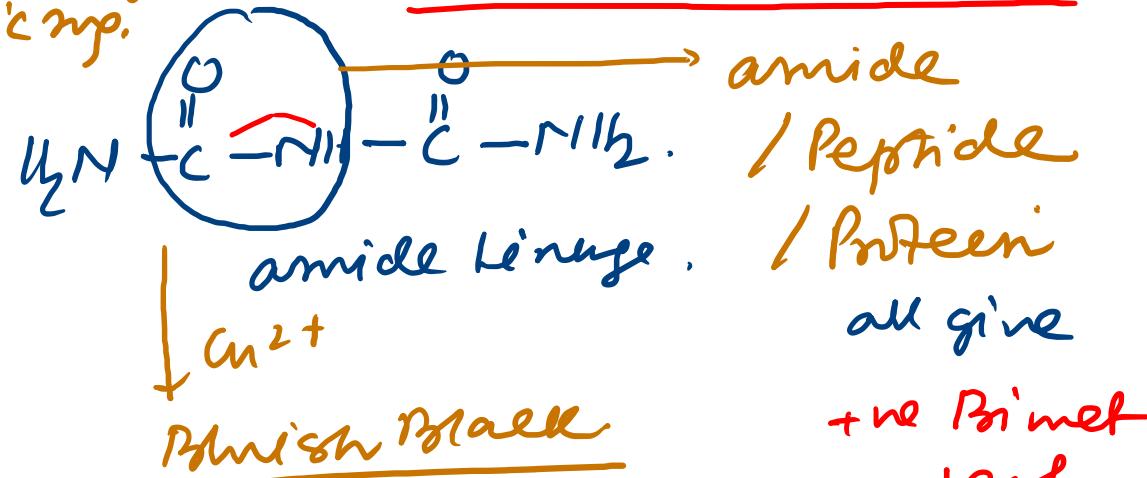
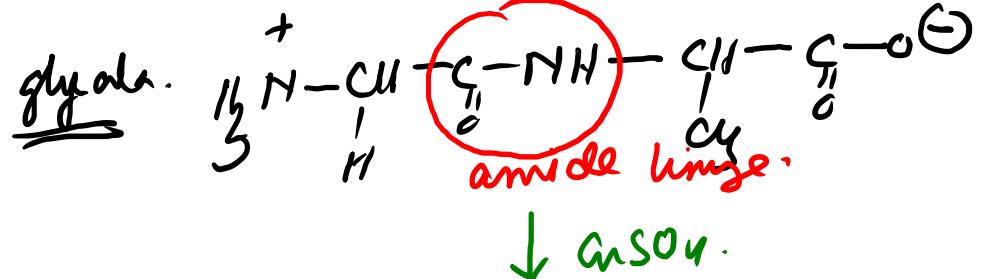
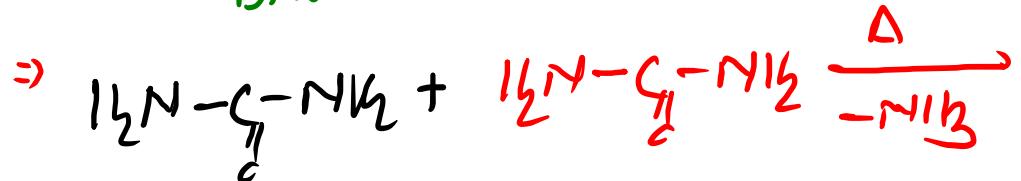
$\Rightarrow$



Test for  
amino acid  
which have  
aromatic ring.

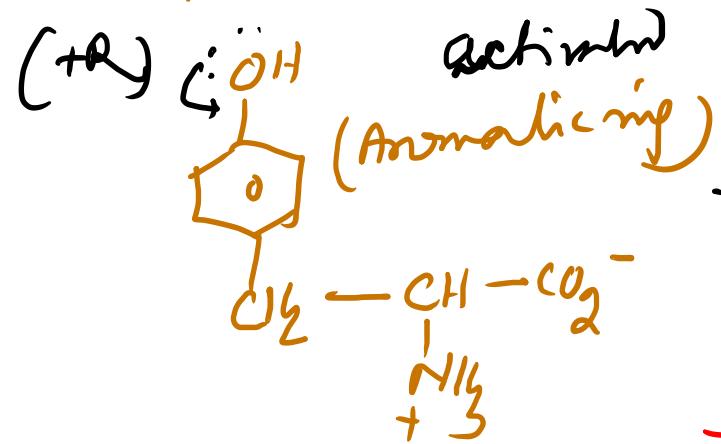


Biuret test.



with  $\text{CuSO}_4$  it gives bluish black colour test.

Xanthoproteic acid



alanine      valine  
glycine      leucine      ~~isoleucine~~

-ve test.



Phenylalanine. (very very slow)

## DNA & RNA

Common basic units

Adenine

Cytosine.

Guanine.

DNA

RNA

DNA only.

Thymine.

RNA only

Uracil.

G, C, A, T

G, C, A, U

DNA

RNA.

G : Guanine.

C : Cytosine.

A : Adenine.

T : Thymine

DNA.

G : Guanine.

C : Cytosine

A : Adenine

U : Uracil.

RNA.

"Basic unit"

<https://chat.whatsapp.com/IT>

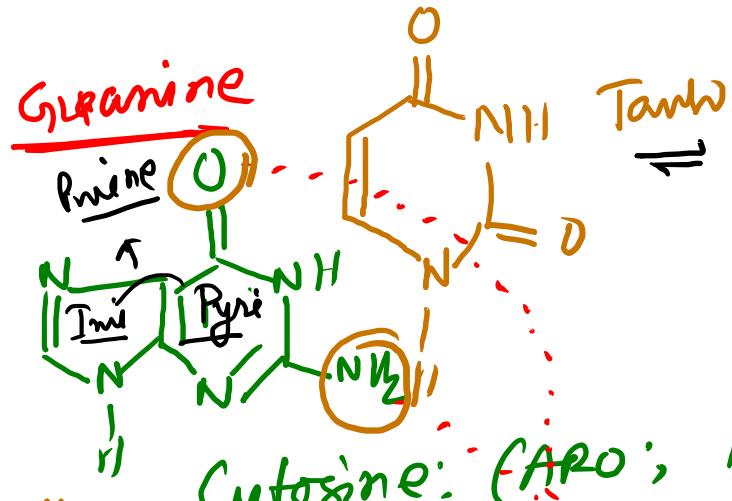
VDBK4a62g

GMILIIp9F.

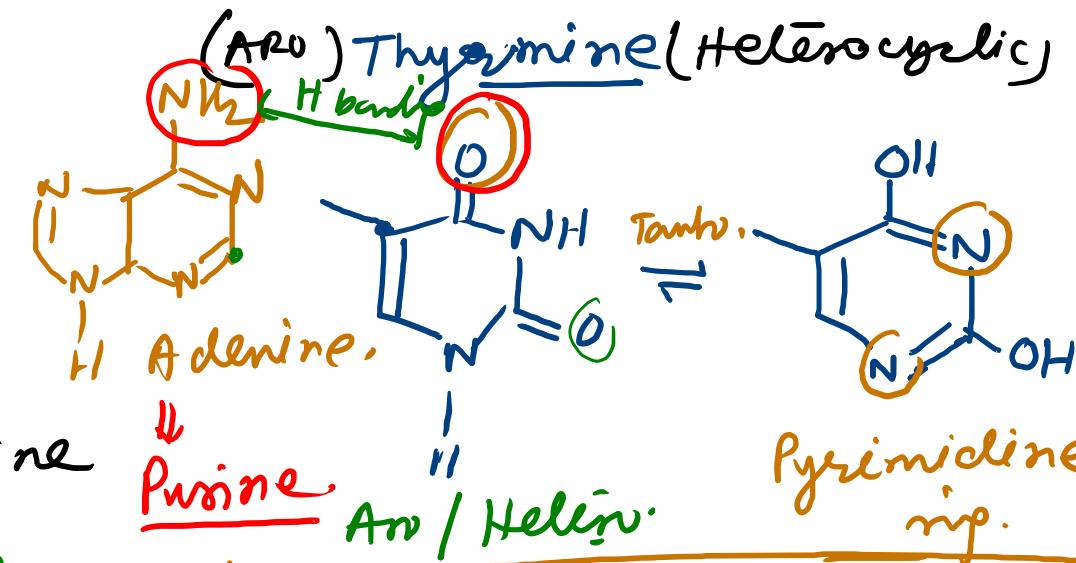
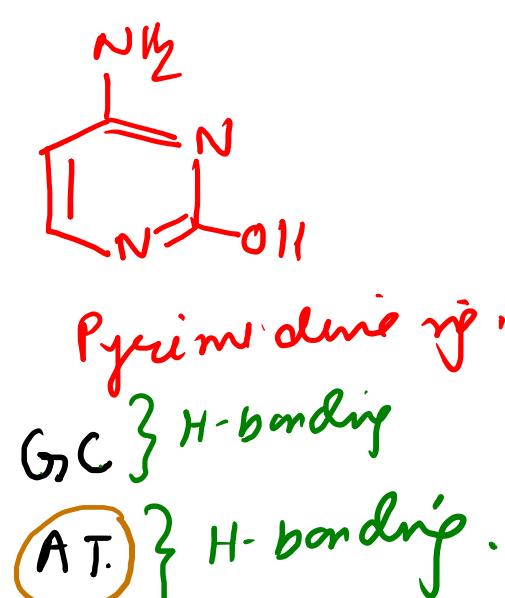
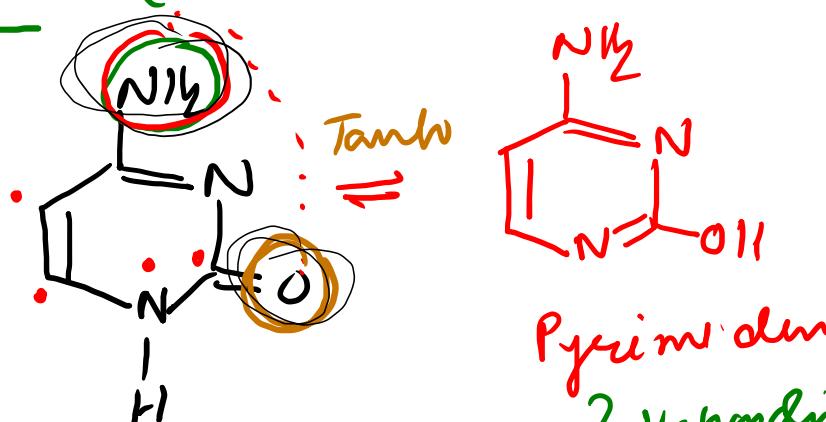
/



: Uracil: (A.R.O) (Heterocyclic)



↓  
Prine  
ring  
Aromatic  
Heterocyclic  
H-bonding.



- |             |                  |
|-------------|------------------|
| 1. Thymine  | Pyrimidine ring. |
| 2. Cytosine |                  |
| 3. Uracil.  |                  |
1. 2 } Part of DNA.  
2. 3 } Part of RNA.  
4. Guanine } Part of DNA & RNA  
5. Adenine } Part of RNA  
Prine ring.

Vitamins:  $\rightarrow$  A D E K. (fat soluble)

Disease (deficiency)  $\rightarrow$  B C (water soluble).

Night Blindness. Xerophthalmia.

Vitamin - A -

Vitamin B<sub>1</sub>

Berry berry (loss of appetite) retarded growth

(Thiamine)  
B<sub>2</sub> (Riboflavin)

Chemical name -

418  
Old NCERT  
B<sub>3</sub> (Niacin)

526  
New NCERT  
B<sub>6</sub> (Pyridoxine)

B<sub>12</sub> (Cobalamin)

C (Ascorbic Acid)

D

E

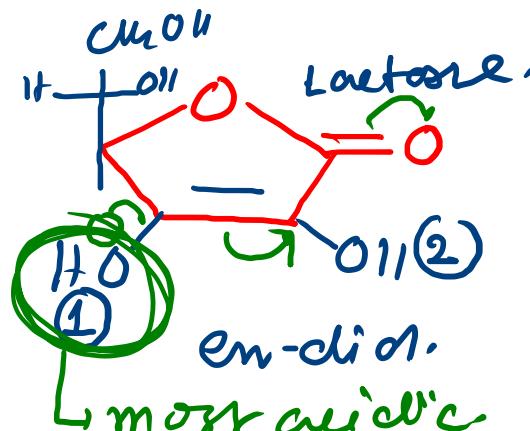
K

Ascorbic Acid

( $\text{HO}(\text{CO}_2\text{H})_{n-6}\text{O}_2\text{H}$ )

$\text{NaHCO}_3$  test  
+ve.

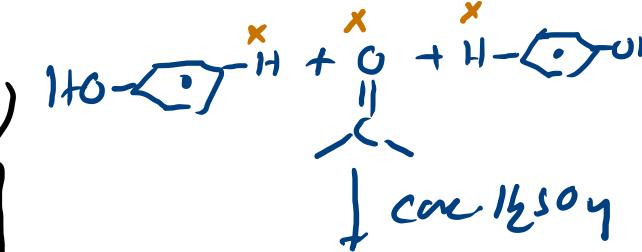
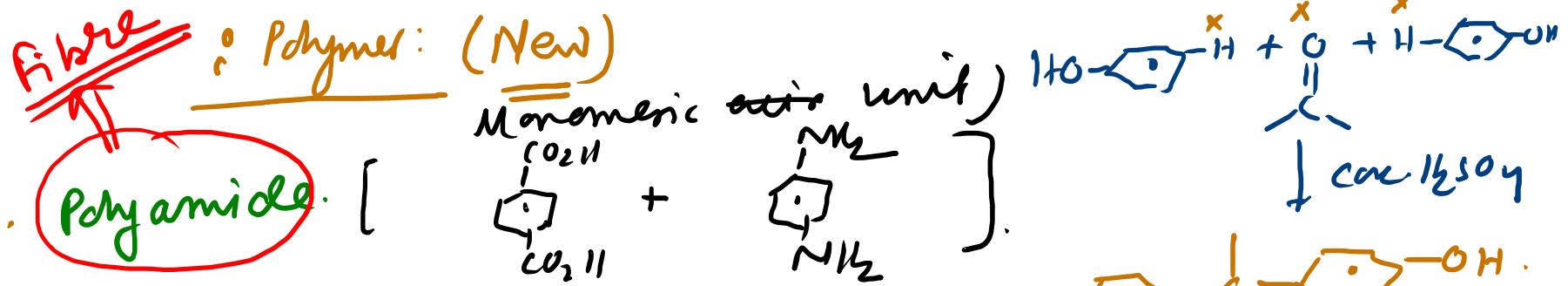
Anaemia -



Scurvy (bleeding gums) "Citrus fruits"  
Rickets; soft bones. (osteomalacia)

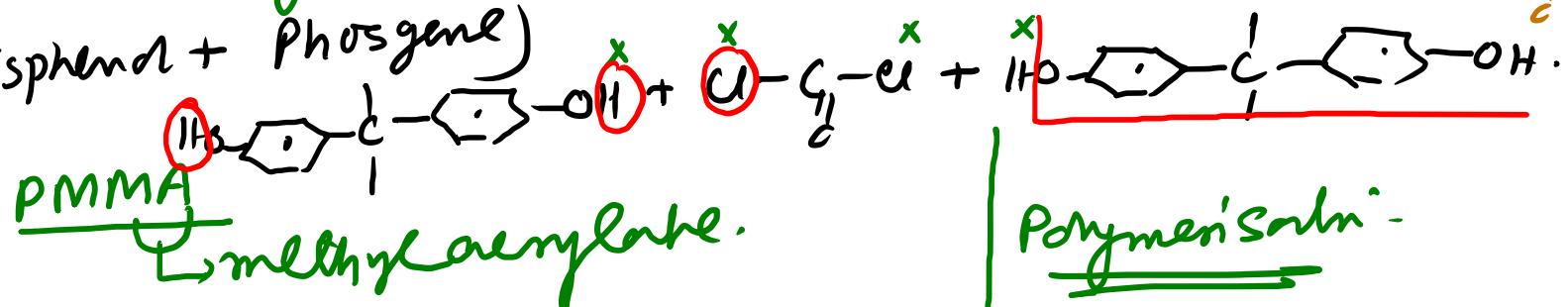
Muscular weakness. RBC fragility

$\downarrow$  blood  
Increased clotting time.



ii) Lexan. Carbonate Polymer

Monomeric units (-Bisphenol + Phosgene)

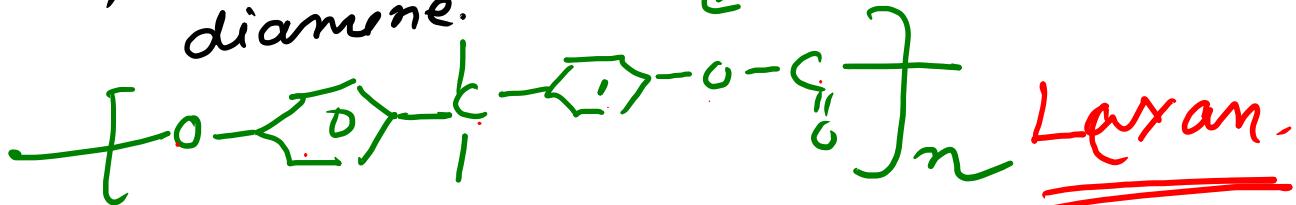
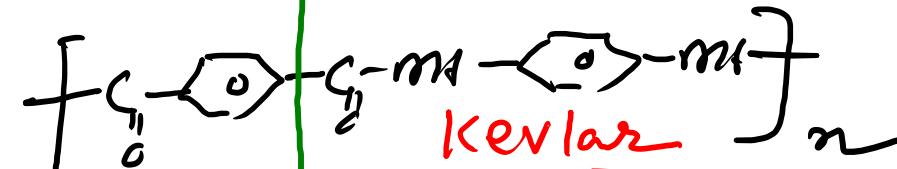
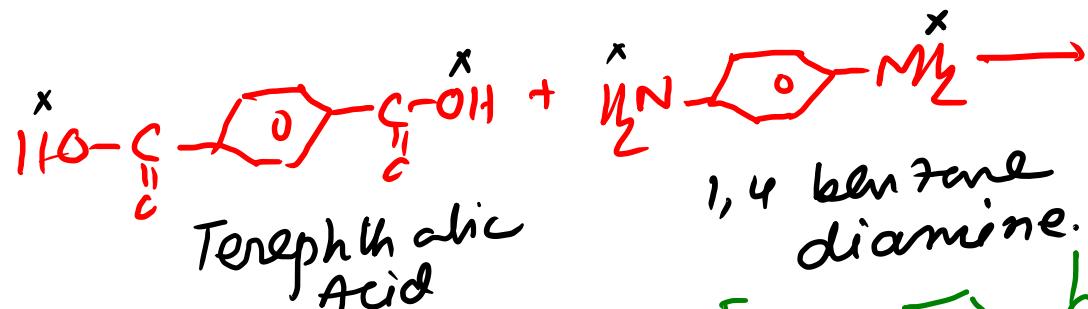


iii) Plexiglass.

PMMA

Emethyl Acrylate.

Polymerisation -



semi synthetic : Which Polymer?

for  
Natural  
Polymer:  
 $\text{CH}_2 = \text{CH} - \text{C}_2\text{H}_4 - \text{OH}$   
which Acrylic acid  
Polymer!

P  
R  
E  
P  
A  
R  
A  
T  
I  
O  
N.

'Using Polymer': (Table of Polymer)  
from NCERT.

HDPE  $\longrightarrow$  experimental  
conditions.

LDPE  $\longrightarrow$   $\equiv$  Thermosetting  
Polymer:

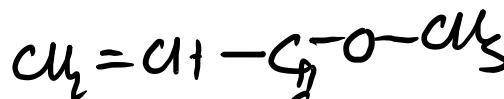
Nylon 6  $\longrightarrow$

Nylon 66  $\longrightarrow$  Thermoplastic Which Polymer?:

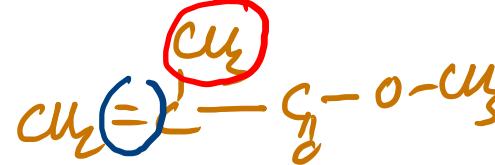
Addition Which Polymer?:

Condensation Which Polymer?:

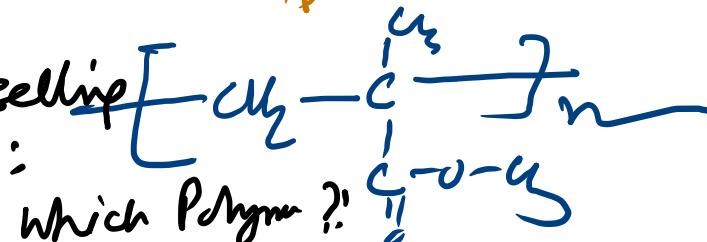
Biodegradable  
Polymer: Which Polymer?



Methyl acrylate.



Polymer (methyl acrylate).



Which Polymer?:

PMMA.

Elastomers.

Fibres.

Homopolymer  
copolymer

Which Polymer?

Which Polymer?

Which Polymer?

Which Polymer?

Vulcanised  
Rubber

↓ change in property  
on vulcanising

Sulphur  
in natural  
rubber