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Where Minds Pollinate

Class 12
Chemistry

Chapter 13
Polymers
Handwritten Notes

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Chapter: 13

Polymers

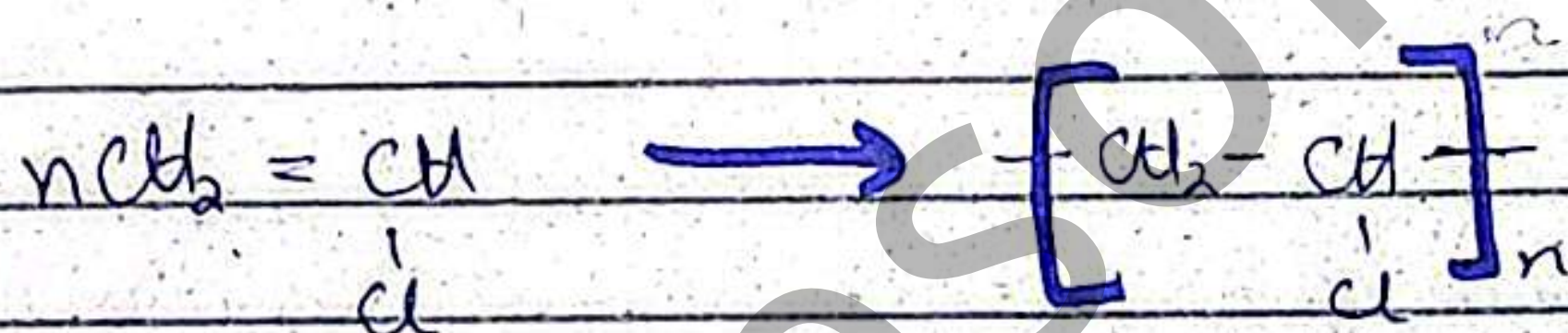
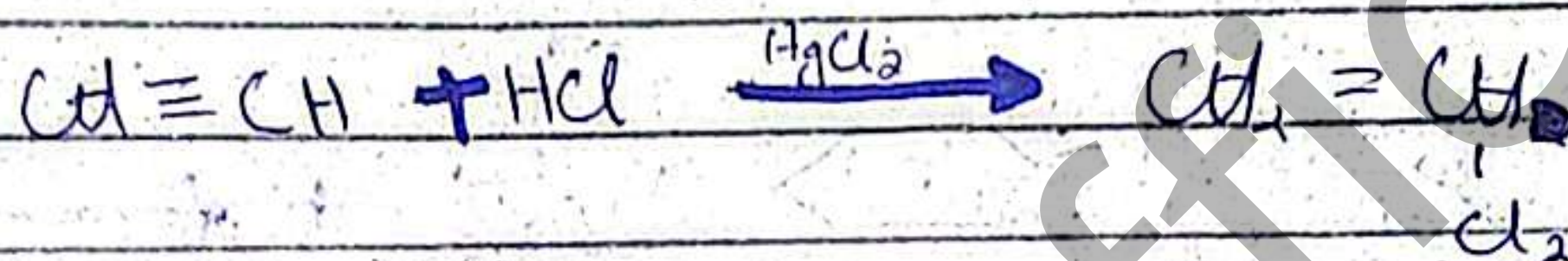
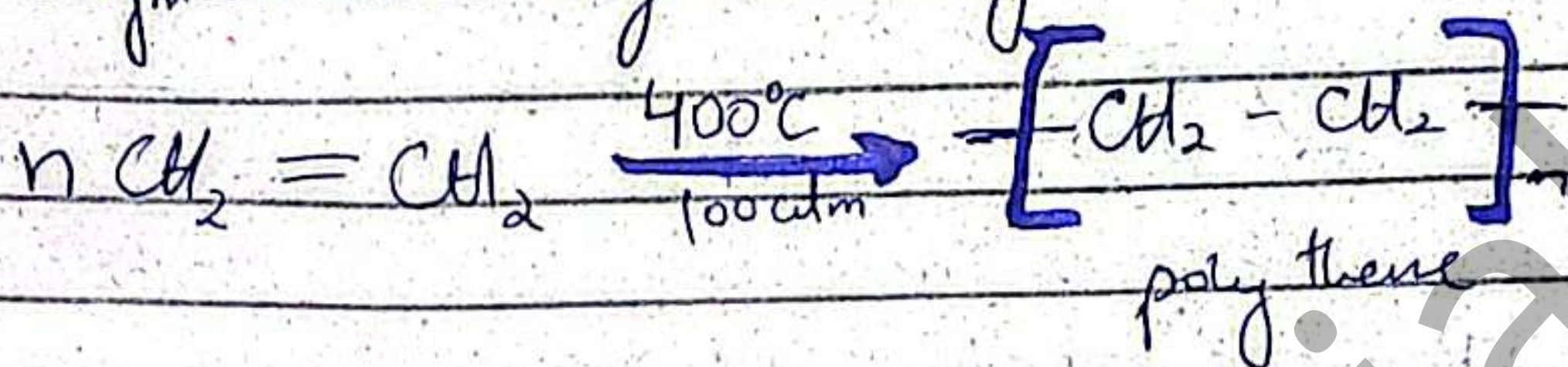
Polymers

Process in which small molecules called monomers combine with each other and form a large molecule called polymer is called polymerization.

Polymers back bone consist of carbon atoms
 ↑ that previously formed a double bond

Addition Polymer

Polymers formed by combining alkene monomers.



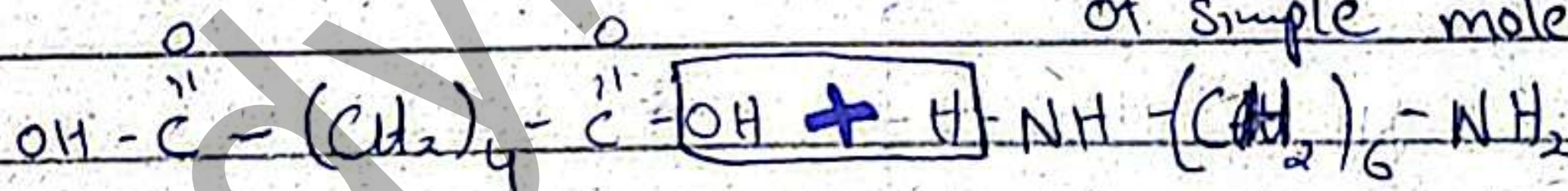
a. Polyamides

b. Polyesters

P.V.C

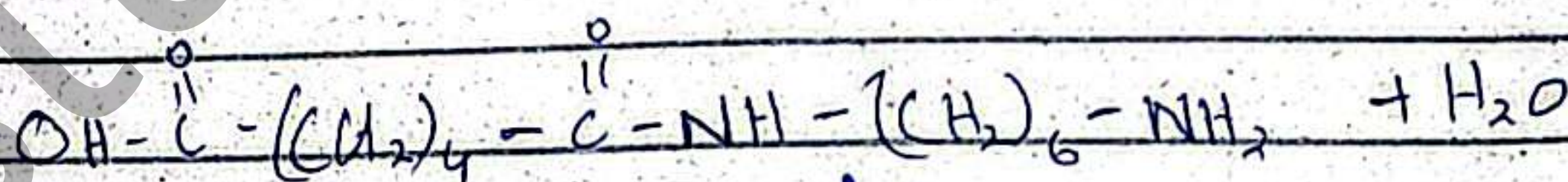
Condensation Polymer

Polymers formed by combination of monomers with elimination of simple molecules i.e. H_2O .

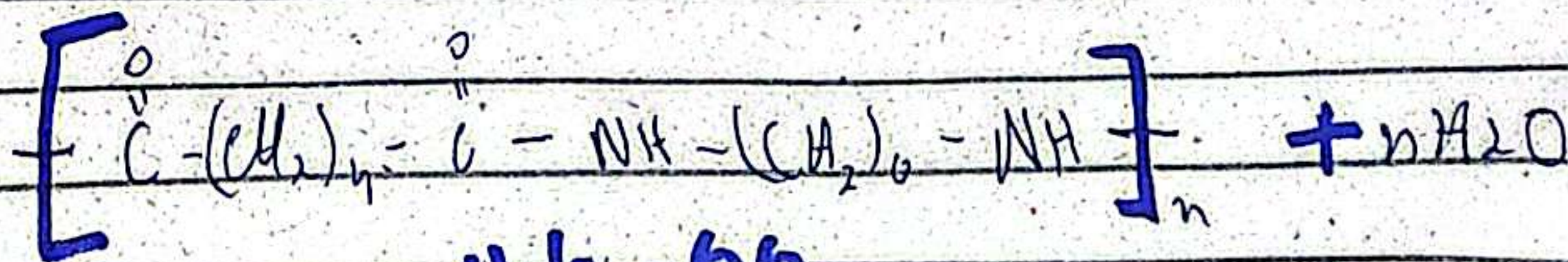


Adipic acid

Hexamethylene diamine



↓ further reaction

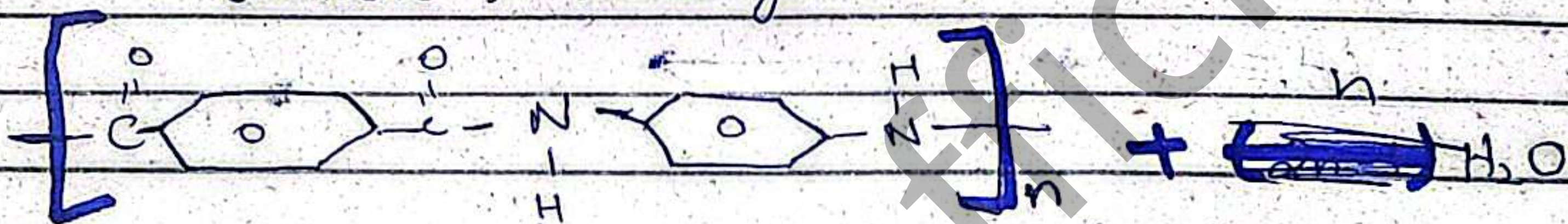
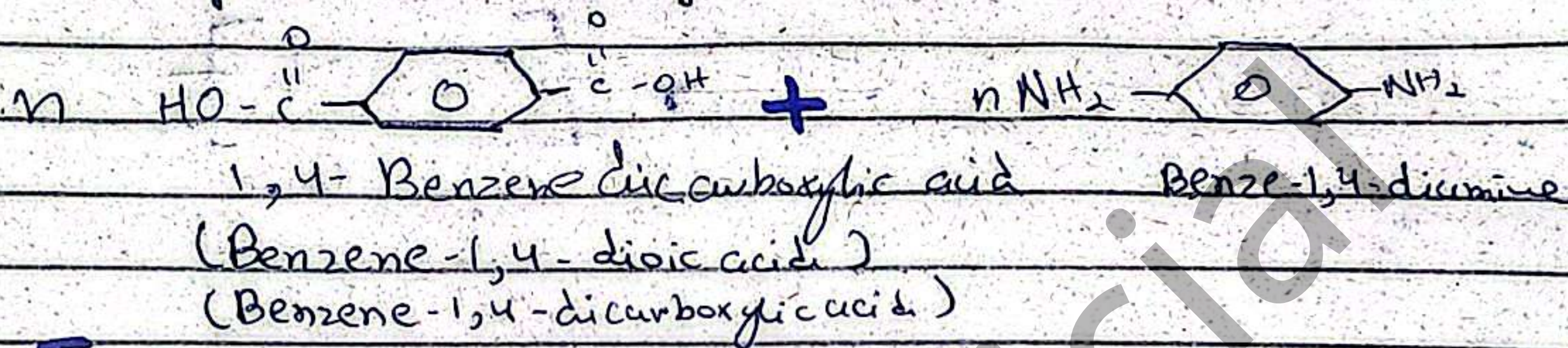


← Nylon 6,6
 (polyamide)

- ★ used to make fibers for clothing
- ★ filaments for fishing line & rope
- ★ Bristles for brushes and moulded object

(Polyamide)

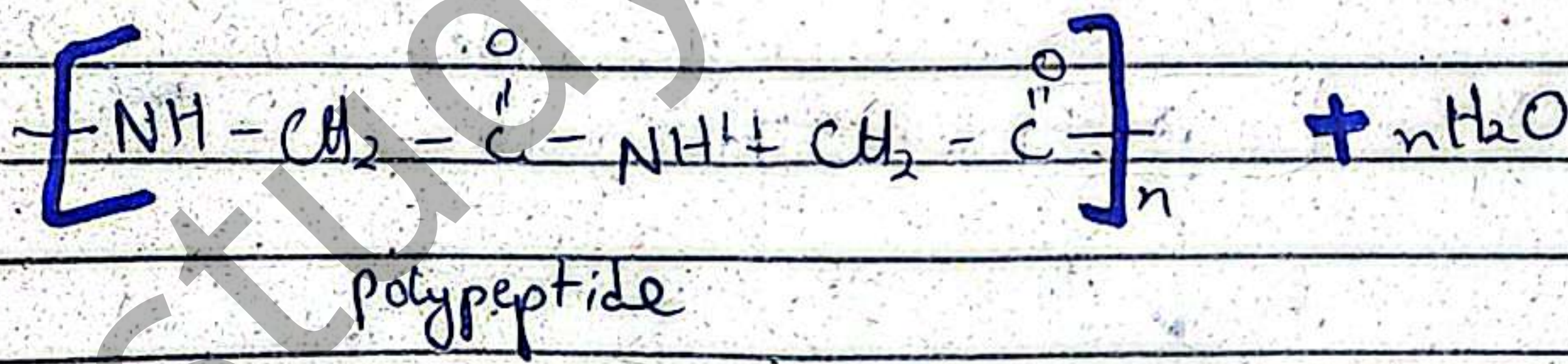
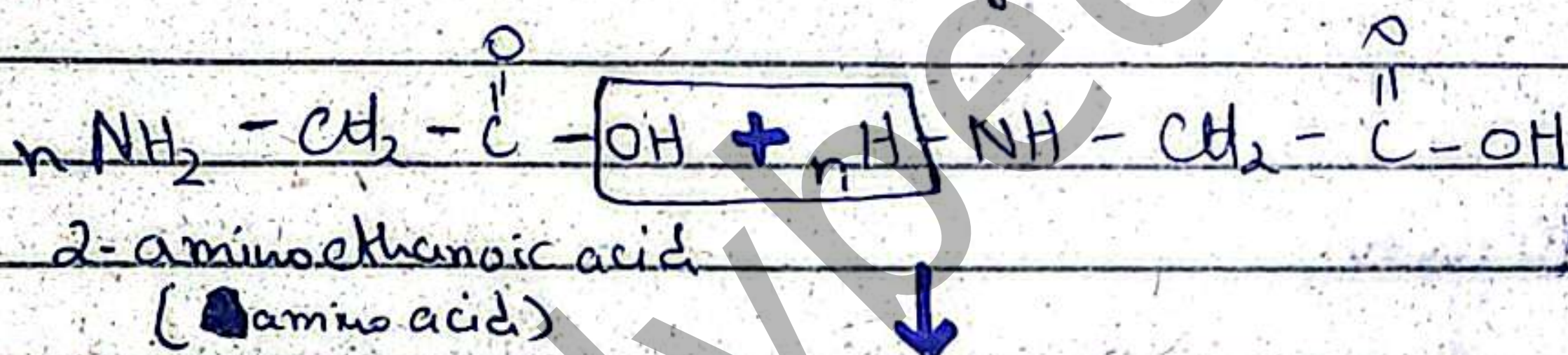
Kevlar Strong & light weight polymer used to make bullet and fire proof vests, body of air crafts and boats.



(Polyamide)

Polypeptide

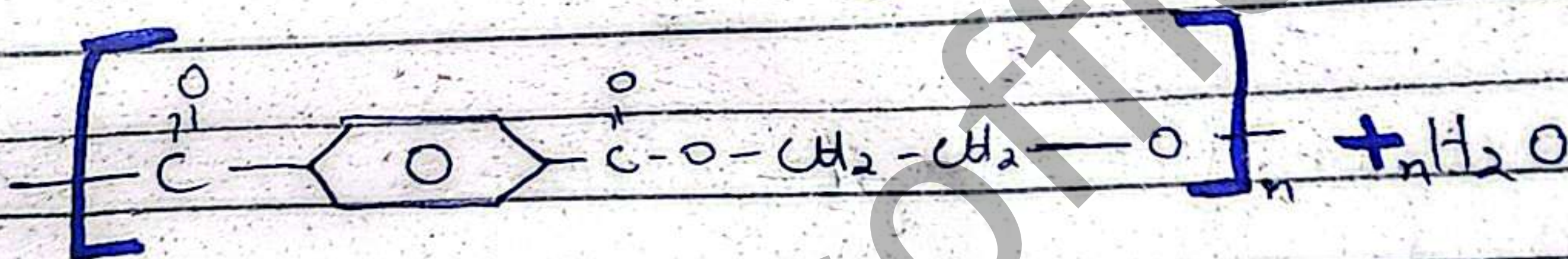
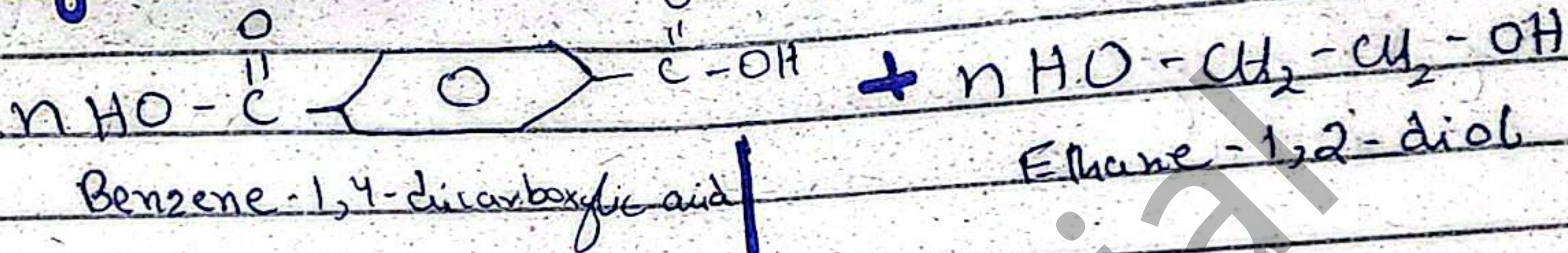
Formed from polymerization of amino acids.



Polyesters:

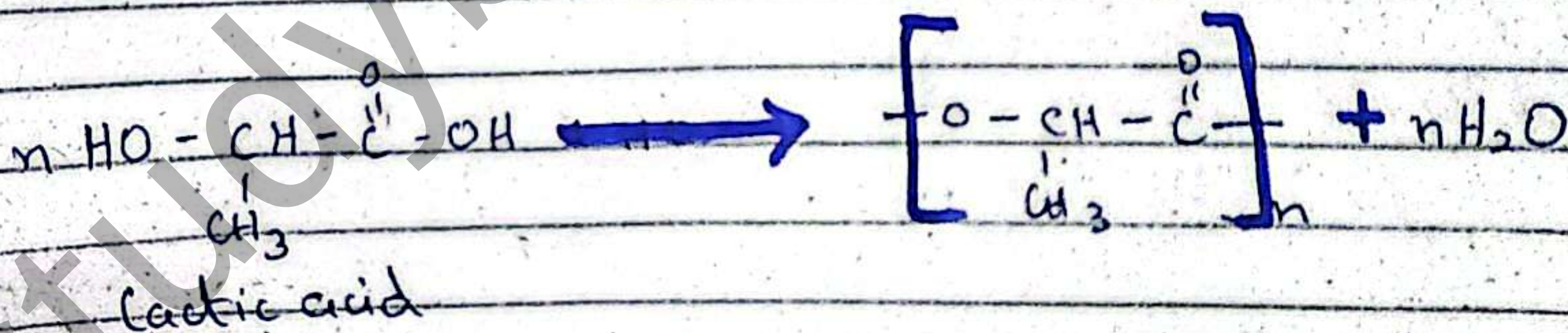
i) Tyrene:

Also called Polyethylene terephthalate (PET)



ii) Polymerization of Hydroxycarboxylic Acid:

Polylactic acid is formed from the polymerization of lactic acid (2-hydroxypropanoic acid)



Polymer Hydrolysis

Condensed polymers can be broken down by hydrolysis. Hydrolysis can be done in acidic or basic conditions.

Hydrolysis of Polyesters:-

a. Acid Hydrolysis:

with HCl catalyst
Products: diol and dicarboxylic acid

b. Alkaline Hydrolysis:

with heating heated NaOH
Products: diol and carboxylic acid salt.

Hydrolysis of Polyamides:-

a. Acid Hydrolysis:

Products: dicarboxylic acid and ammonium ions

(Alkaline)

b. Basic Hydrolysis:

Products: Sodium salts of its monomers
(dicarboxylic acid salts & diamines)