

HYDROXY ACID & DICARBOXYLIC ACID

21-05-2020 **Lecture-4** Deg-II (Sub.)

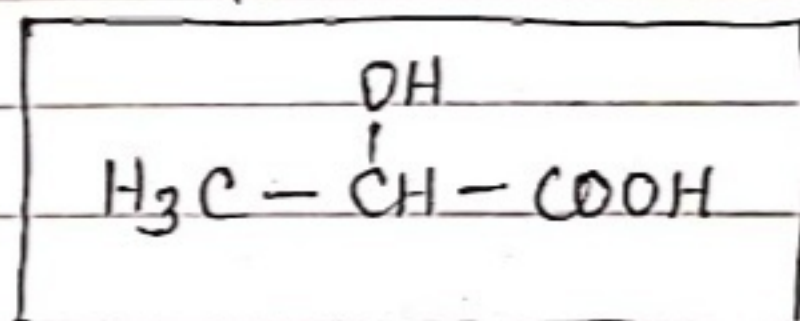
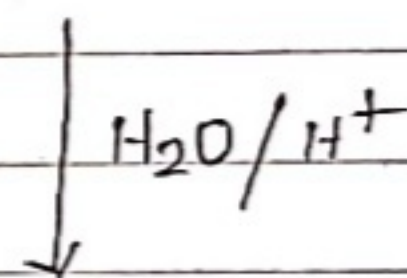
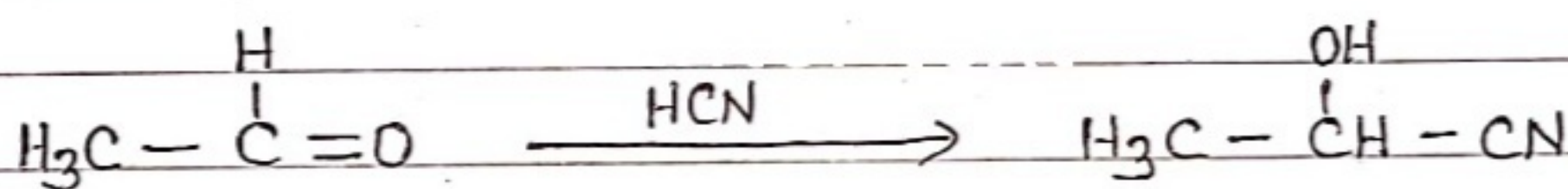
Topic - Preparation, Properties & Uses

Of Lactic Acid

Lactic acid is main constituent of milk that has gone sour.

PREPARATION

1. By the hydrolysis of acetaldehyde cyanohydrin.



Lactic Acid

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2. From molasses :-

Lactic acid is manufactured by fermentation of molasses (or milk which containing lactose) by the microorganism *Bacillus acidilactici* (BAL).



PHYSICAL PROPERTIES

Lactic acid is a colourless, crystalline solid melting point 53°C and has sour taste.

* Soluble in water, alcohol and ether.

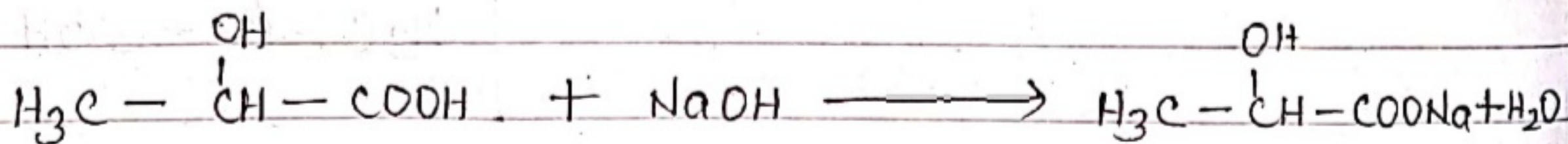
CHEMICAL PROPERTIES

Lactic acid molecule contains a secondary alcohol group ($-\text{CHOH}$) and a carboxyl group ($-\text{COOH}$) and gives reactions of both.

Reaction Involving $-\text{COOH}$ group

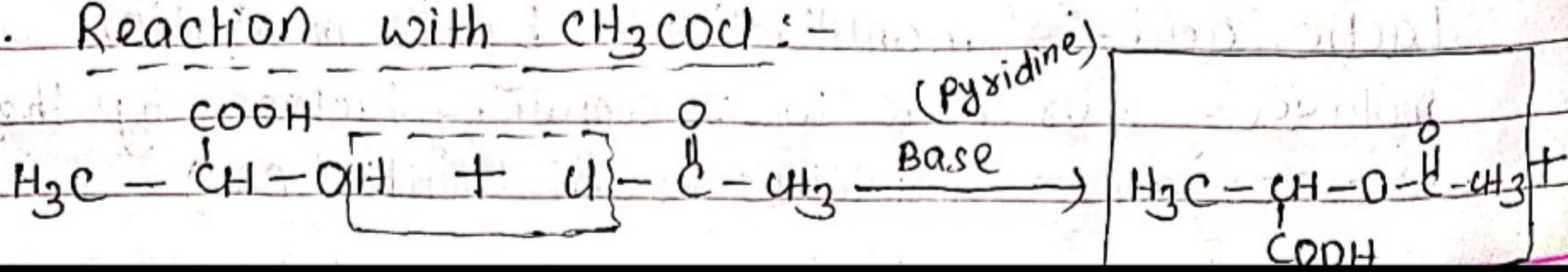
1. Formation of salts :-

It reacts with alkali to form salts.



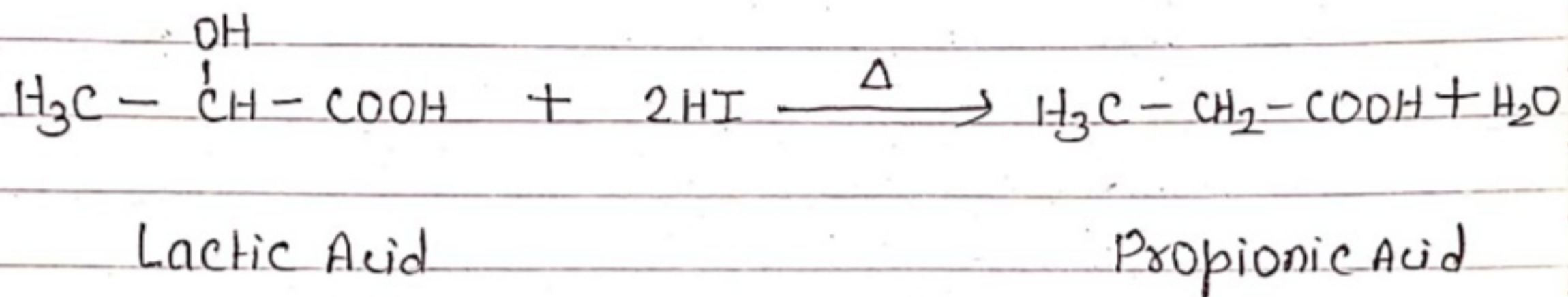
Reaction Involving $-\text{OH}$ group

2. Reaction with CH_3COCl :-



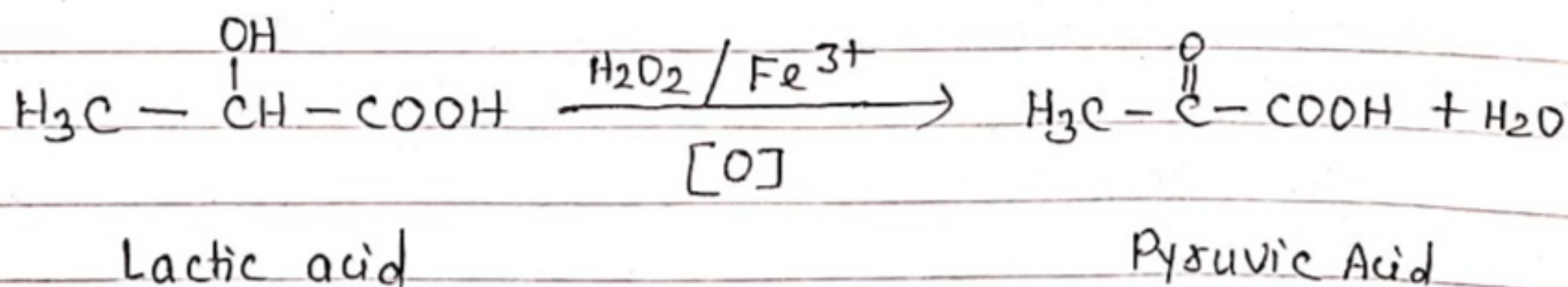
3. Reduction

When heated with HI, it reduced to propionic acid.



4. Oxidation

On oxidation with Fenton's reagent ($\text{H}_2\text{O}_2/\text{Fe}^{3+}$) it is converted to pyruvic acid with KMnO_4 it yields acetic acid.

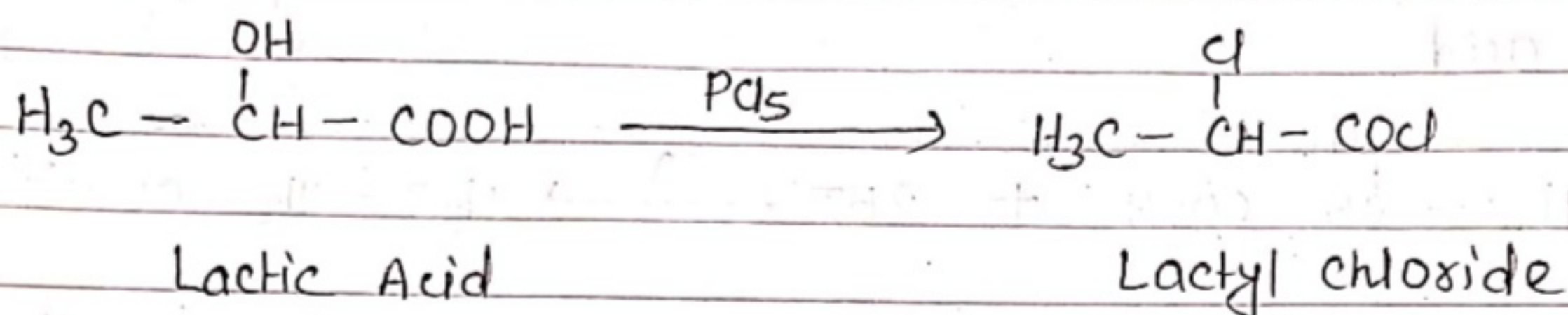


Reaction Involving Both -OH & -COOH

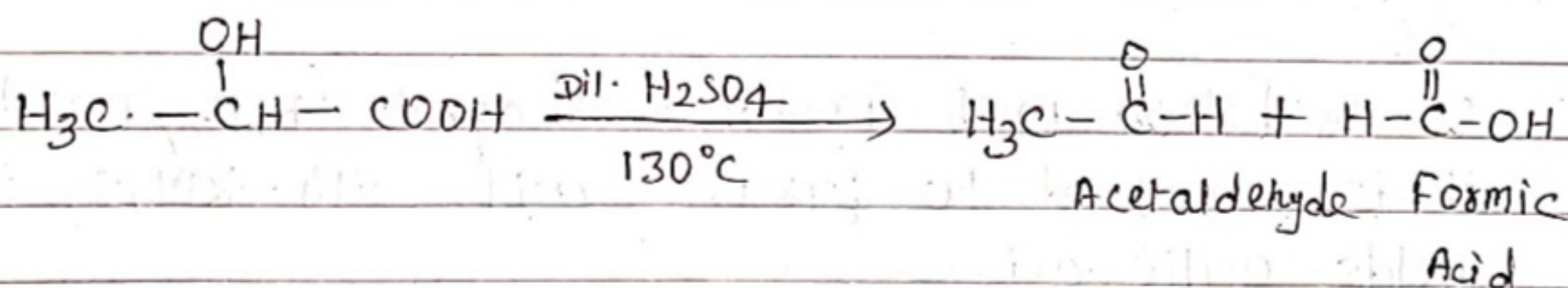
5. Reaction with PCl_5 :-

Both the OH and COOH group

are attacked by phosphorus pentachloride to form Lactyl chloride.



6. Reaction with H₂SO₄



With conc. H₂SO₄, formic acid is further decomposed to CO and H₂O.

USES

1. In dairy product.
2. As a mordant.
3. As acidulant in beverages.
4. Ethyl and butyl lactates are used as plasticizers.

Completed..