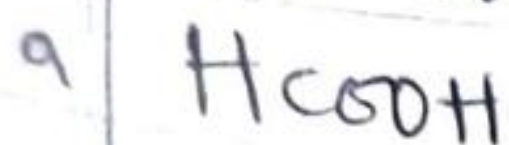


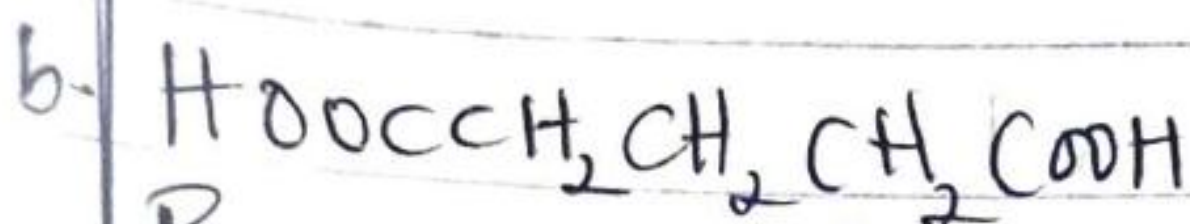
NAME: ODERWO FAITH OGHENEKOME
DEPT: PHARMACY
MAT NO: 19/MHSII/094
COURSE CODE: CHM 102

Assignment solution

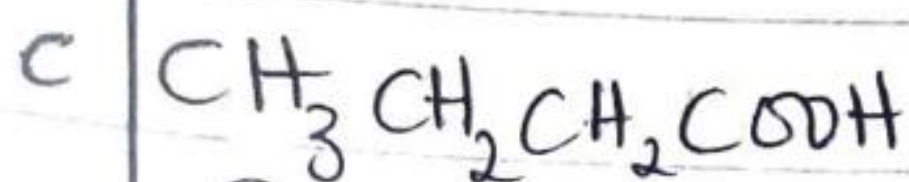
1. Give the IUPAC names of the following compounds.



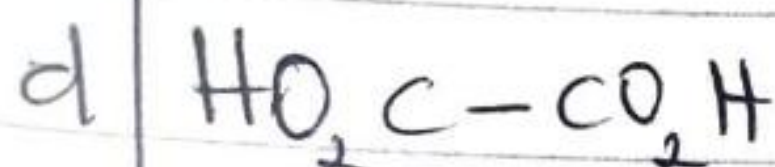
Methanoic acid



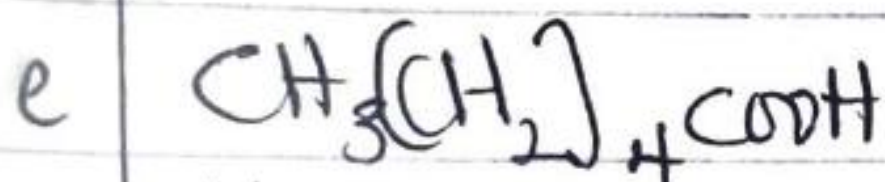
Pentanedioic acid



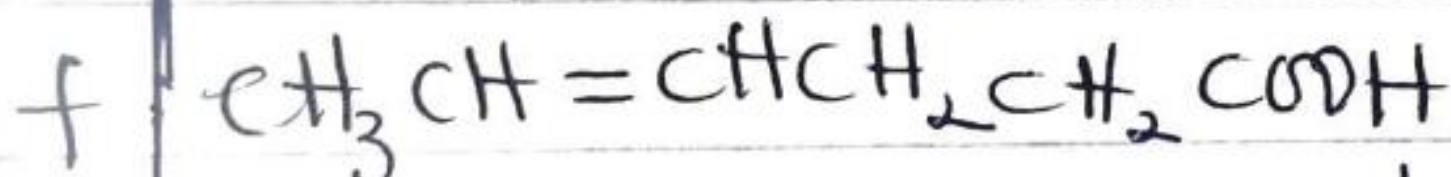
Butanoic acid



Ethane dioic acid



Hexanoic acid



Hex-4-enoic acid

2a. Physical appearance

All simple aliphatic carboxylic acids up to C_{10} are liquid at room temperature. Most other carboxylic acids are solid at room temperature.

b. Boiling Point

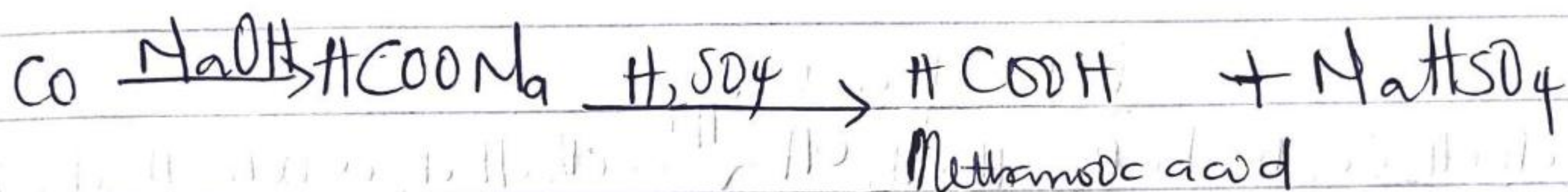
The boiling point increases with increasing relative molecular mass. Aromatic carboxylic acids are crystalline and have higher melting points than their aliphatic counterparts of comparable relative molecular mass.

c. Solubility —

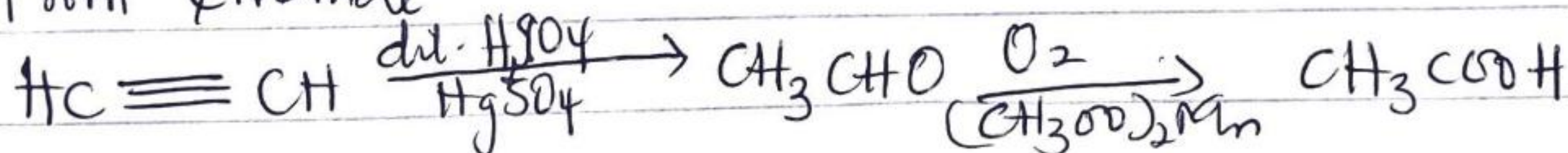
Lower molecular mass carboxylic acids, with up to four carbon atoms in their molecules are soluble in water. This is largely due to their ability to form hydrogen bonds with water molecules.

3. From Carbon (II) oxide

Methanoic (formic acid) is manufactured by adding carbon(II) oxide under pressure to hot aqueous solution of sodium hydroxide.

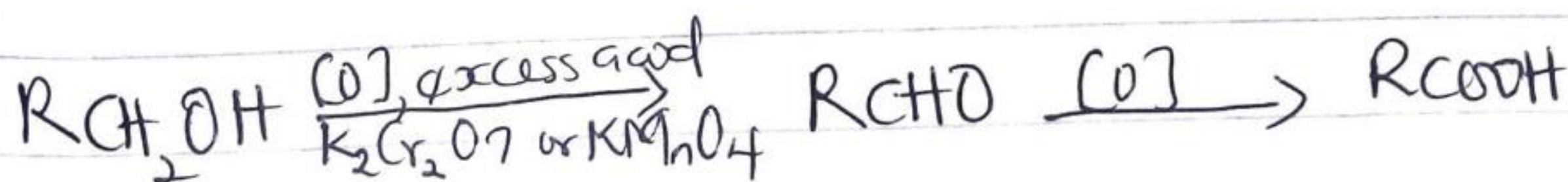


b. From Ethanal



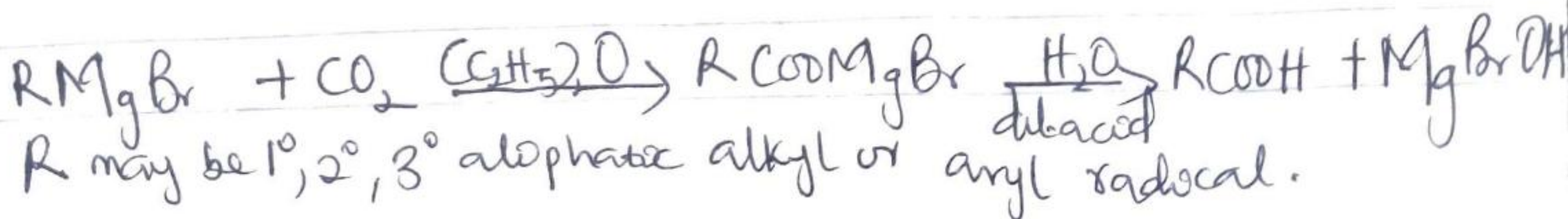
4. Oxidation of primary alcohols and aldehydes

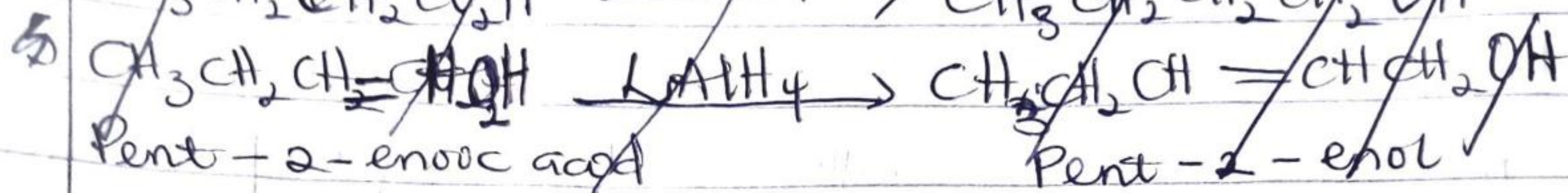
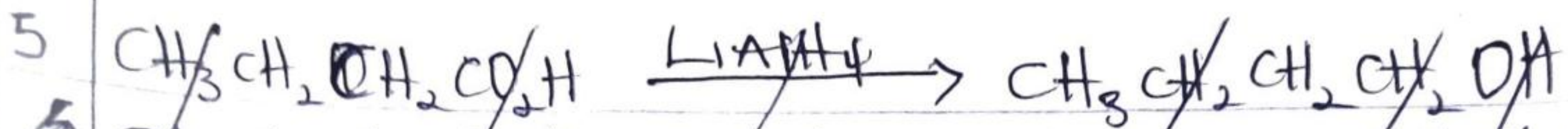
This can be used to prepare carboxylic acids using the usual oxidising agents (i.e. $\text{K}_2\text{Cr}_2\text{O}_7$ or KMnO_4 in acid solution)



b) Carbonation of Grignard reagent

Aliphatic carboxylic acids are obtained by bubbling carbon dioxide into the Grignard reagent and then hydrolyzed with dilute acid

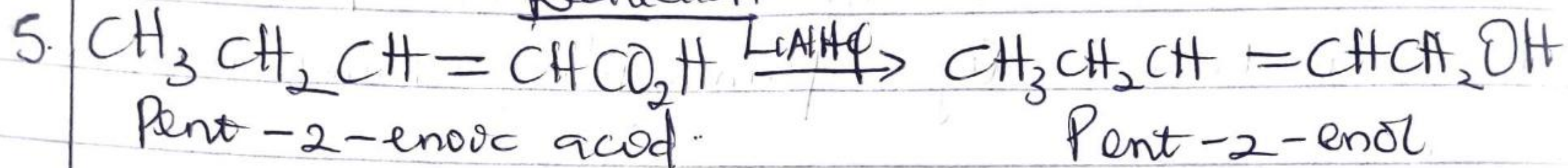




Pent-2-enoic acid

Pent-2-enol

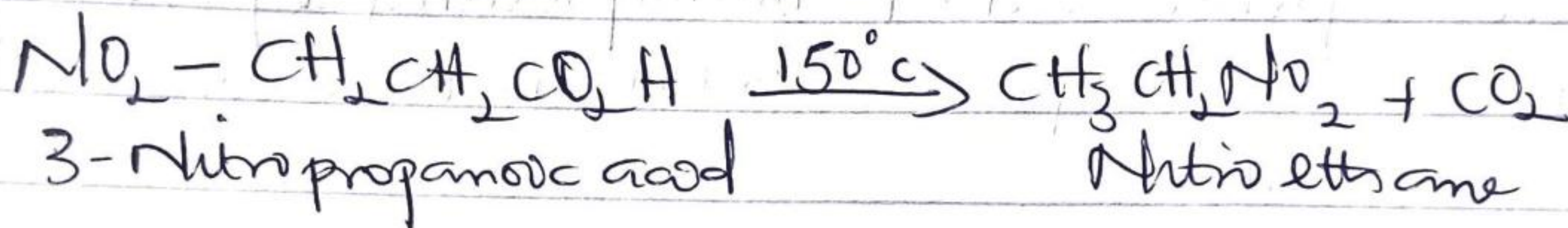
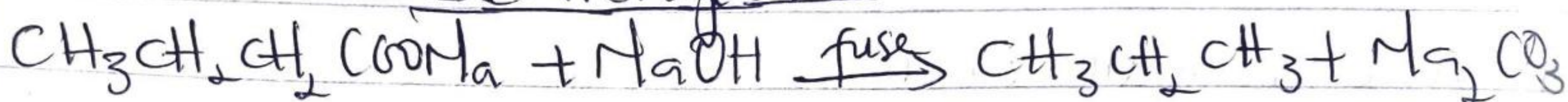
Reduction



Pent-2-enoic acid

Pent-2-enol

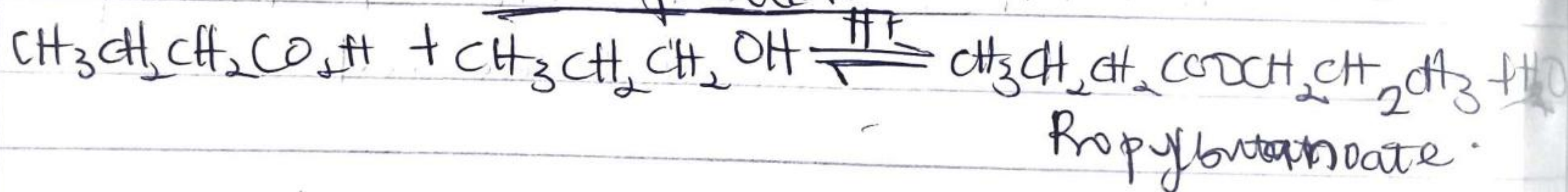
Decarboxylation



3-Nitropropanoic acid

Nitro ethane

Esterification



Propylbutanoate