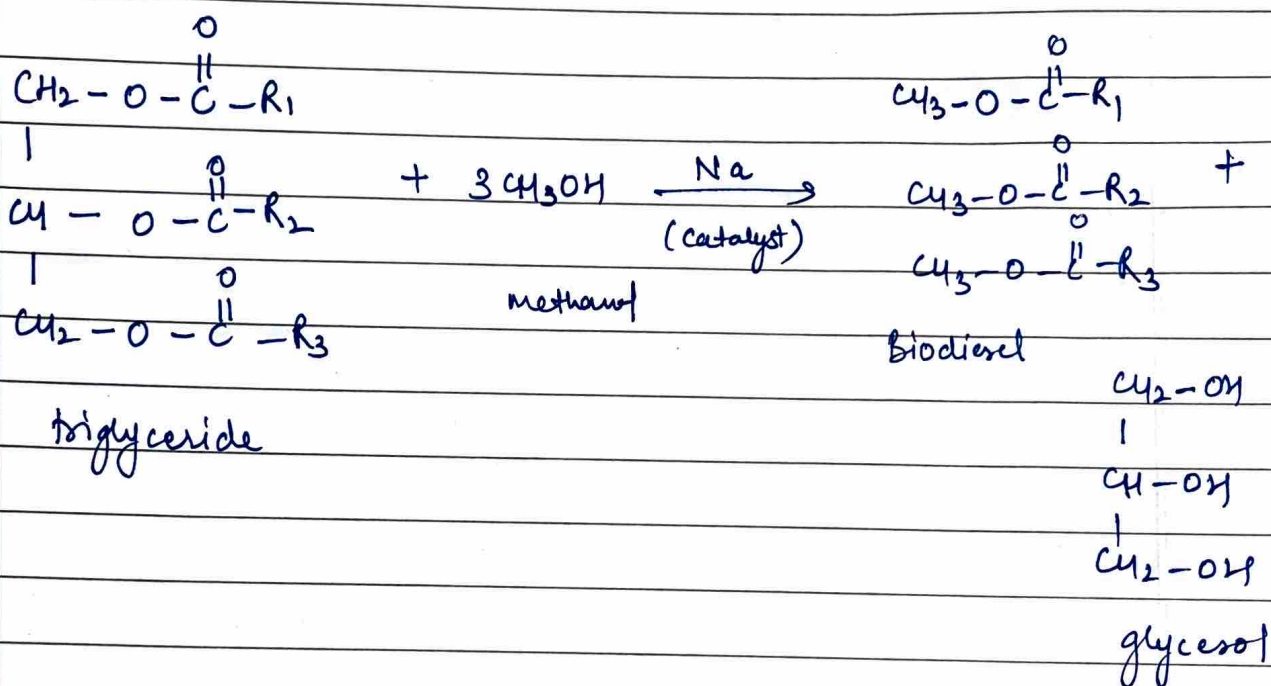


Bio-diesel

- Bio-diesel is a type of liquid combustible fuel made from vegetable oils and animal fats.
- It is ~~Biodg~~ Biodegradable and can also be combined with the conventional hydrocarbon based fuels.
- Bio diesel is alkyl esters of fatty acid found in vegetable oil.



Advantages -

1. Bio-diesel is Renewable fuel as it is obtained from vegetable oil or animal fats.
2. Non-polluting in nature.
3. Biodegradable, non-toxic, free from sulphur and aromatic compounds.
4. Helps in reducing the dependency on foreign countries for fuel.

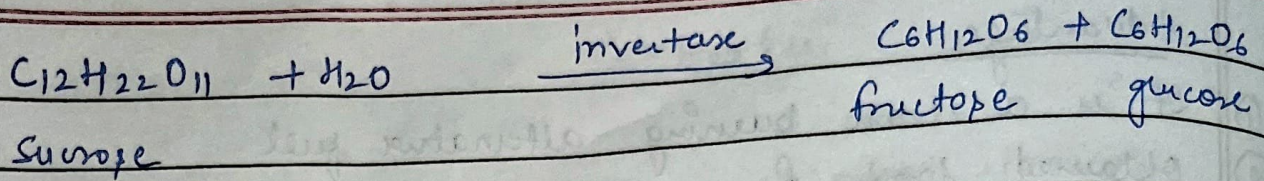
Disadvantages of Biodiesel.

- It leads to deforestation as \neq Because of cultivation of soybean, sunflower, palm etc.
- High production cost, expensive.
- Choking of engines.

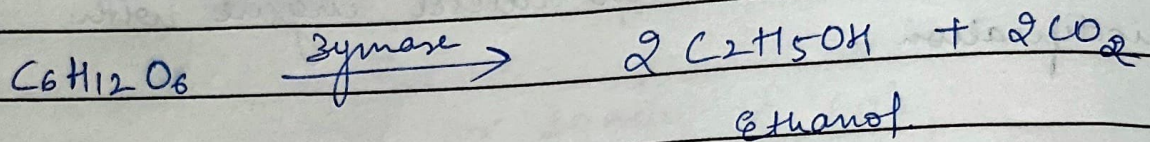
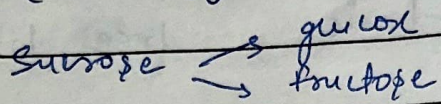
ETHANOL.

- Ethanol is a renewable fuel made from plant materials.
- It is used as an additive to the petrol or motor fuels.
- Blends containing up to 25% ethanol with rest petrol can be successfully employed with a considerable reduction in knocking of ~~eng~~ engine.
- It is obtained from biomass such as sugarcane molasses, starchy crops such as potatoes, maize.

Chemical reactions taking place during fermentation-



invertase (an enzyme liberated by yeast)



zymase (an enzyme liberated by yeast)

Advantages -

- ① Eco friendly, a green fuel. (environment friendly)
- ② It is renewable that can be produced from agricultural feedstock.
- ③ Ethanol is Bio-degradable
- ④ Because of its high oxygen content, ~~ethanol is a~~ naturally ethanol burns more completely than any other fuel.