SUBJECT - CHEMISTRY
CLASS - BSc (Hons) PART - I
PAPER - I
GROUP - A
TOPIC - SOAP

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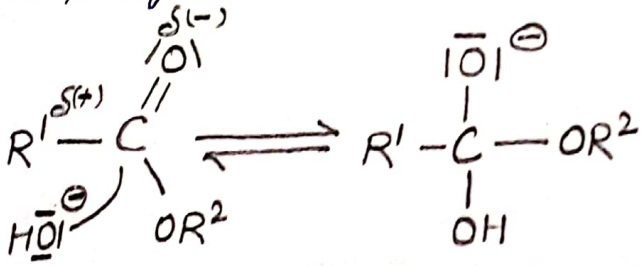
Soaps are an integral part to maintain good health and hygiene of the individuals. Soaps are essential to cleanse dirt and oil of the objects including skin surface. Soaps are widely used in bathing cleaning[washing] and in other household chores.

Saponification Definition

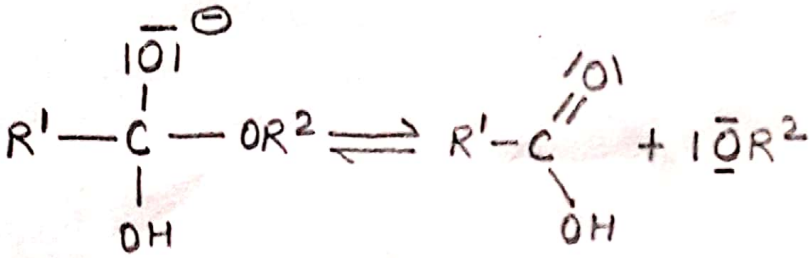
saponification is the hydrolysis of an ester with NaOH or KOH to give alcohol and Sodium or potassium salt of the acid.

Generally, it occurs when triglycerides are reacted with potassium or Sodium hydroxide (lye) to produce glycerol and fatty acid salt, called soap.

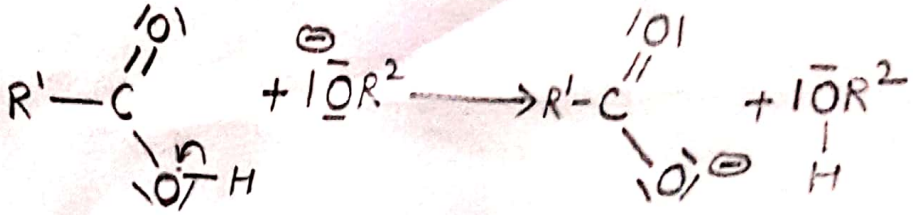
Saponification Reaction Mechanism



Expulsion of Carboxylic acid and alkoxide

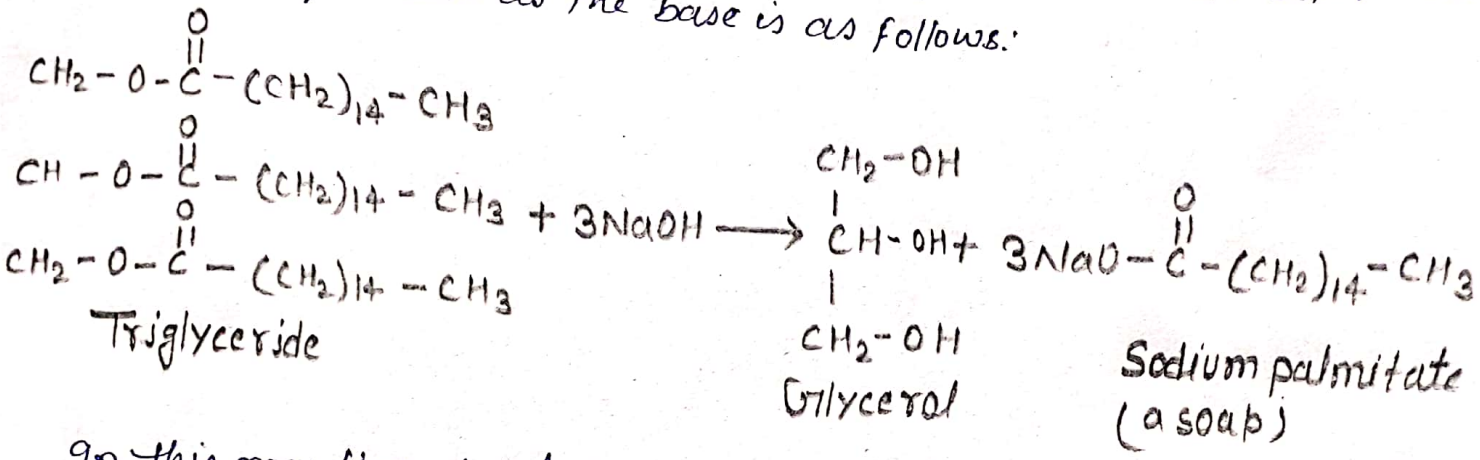


Creation of alcohol

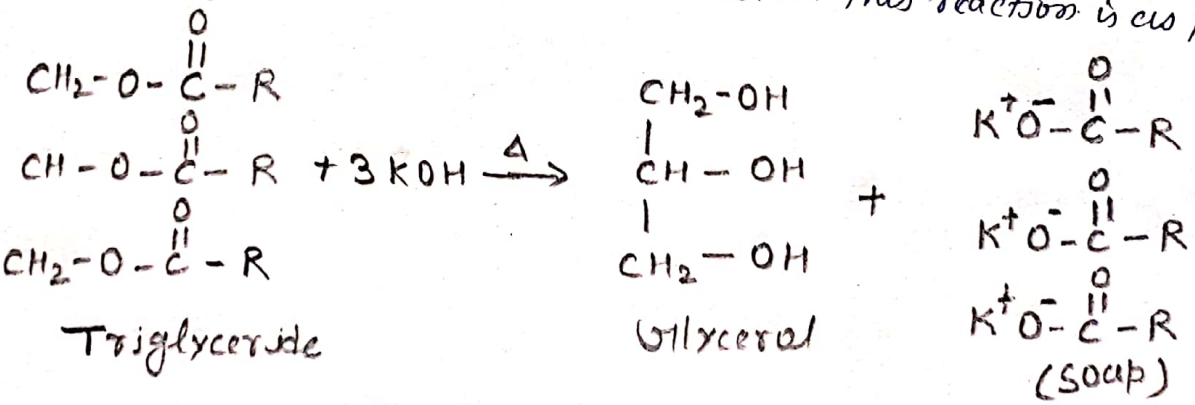


Example of Saponification Reaction

In a saponification reaction, a base (for example Sodium hydroxide) reacts with any fat to form glycerol and soap molecules. one of the saponification reaction taking triglyceride as an ester and Sodium hydroxide as the base is as follows:



In this reaction, triglyceride reacts with Sodium hydroxide (a strong base) and glycerol is produced (an acid) along with Soap (Sodium palmitate). Similarly, potassium Soap can be formed if a strong potassium base (like KOH) is reacted with an ester. This reaction is as follows



Uses of Saponification

- wet chemical fire extinguishers To extinguish cooking oils and fats, we use a Saponification reaction. This is because cooking oils and fats have a flashpoint which is above 37 degrees which render regular fire extinguishers useless.
- Creating hard and soft Soap: By using different types of alkali in the process the type of reaction product can be altered between hard and Soft
  - Using KOH: We can obtain Soft Soap.
  - Using NaOH: We can obtain hard Soaps