



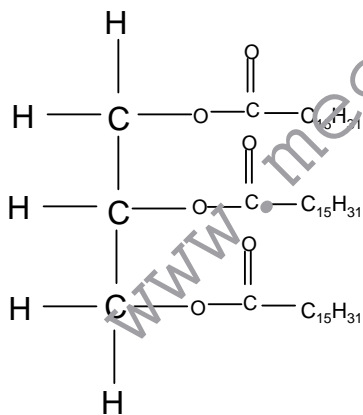
Topic 17 Exercise 2 – carboxylic acids and esters

1. Write equations for the following reactions:
 - a) propanoic acid with sodium hydroxide
 - b) butanoic acid with sodium carbonate
 - c) sodium methanoate with hydrochloric acid
 - d) sodium ethanoate with sulphuric acid
 - e) 2-methylpropanoic acid with sodium carbonate

2. Write equations for the following reactions and name any organic products:
 - a) propanoic acid with methanol
 - b) ethanoic acid with propan-2-ol
 - c) methanoic acid with propan-1-ol
 - d) butanoic acid with butan-1-ol

3. Write equations, using displayed formulae, for the following reactions:
 - a) ethyl methanoate with conc. H_2SO_4
 - b) methyl propanoate with NaOH
 - c) methylethyl ethanoate with H_2SO_4
 - d) propyl methanoate with NaOH

4. Write equations for the reaction of the following oil:



with

- a) dilute hydrochloric acid in the presence of lipase
- b) sodium hydroxide

Suggest where each of the reactions might take place and state a use for each of the products in each case.