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Faculty of Sciences and technology

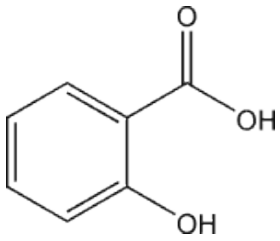
Lab work: industrial organic chemistry
Specialty: Process Engineering
Level: 2nd year

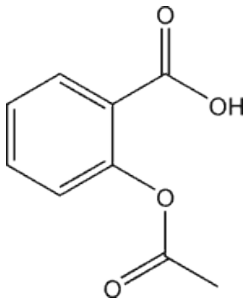
Lab exam

First name		**Mark :**
Last name		

Exercise 01:

1- Circle and name the functional groups in salicylic acid and acetylsalicylic acid.





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To synthesize aspirin from salicylic acid, acetic anhydride is used. Complete the overall equation given below :

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2- What type of reaction is this?

- Addition
- Elimination
- Substitution

Exercise 02:

Sodium palmitate, with the chemical formula $C_{15}H_{31}COONa$, is a soap obtained by the action of soda (sodium hydroxide, NaOH) on a triglyceride. The latter results from the reaction between a fatty acid and an alcohol.

1- Write the equation for this reaction specifying: the name of the reaction, the reactants used, and the products formed.

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2- Give the name of the reaction that allows for soap production ……
3- Complete the overall equation of the reaction, name the compound formed simultaneously with the soap:

$$+ \ (Na^+ + OH^-) \ \rightarrow \ 3 \ (C_{15}H_{31}COO^- + Na^+) \ +$$

An industrialist carries out the saponification of 916 kg of palm oil, which contains 44% of the aforementioned triglyceride.

4- Verify that the mass of triglyceride saponified is equal to 403 kg.

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5- Calculate the molar mass of the triglyceride used.
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6- Calculate the amount of substance in saponified triglyceride.
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7- Deduce the amount of substance in soap obtained.
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8- What is the operation called that consists of pouring soap into brine? Why is salt water used instead of fresh water?

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9- The carboxylate ions present in this soap have two parts: a hydrophilic part and a hydrophobic part. Define these two terms.

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10- Provide the topological formula of the carboxylate ion indicating the two previously mentioned parts.
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