Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Carboxylic Acids & Derivatives

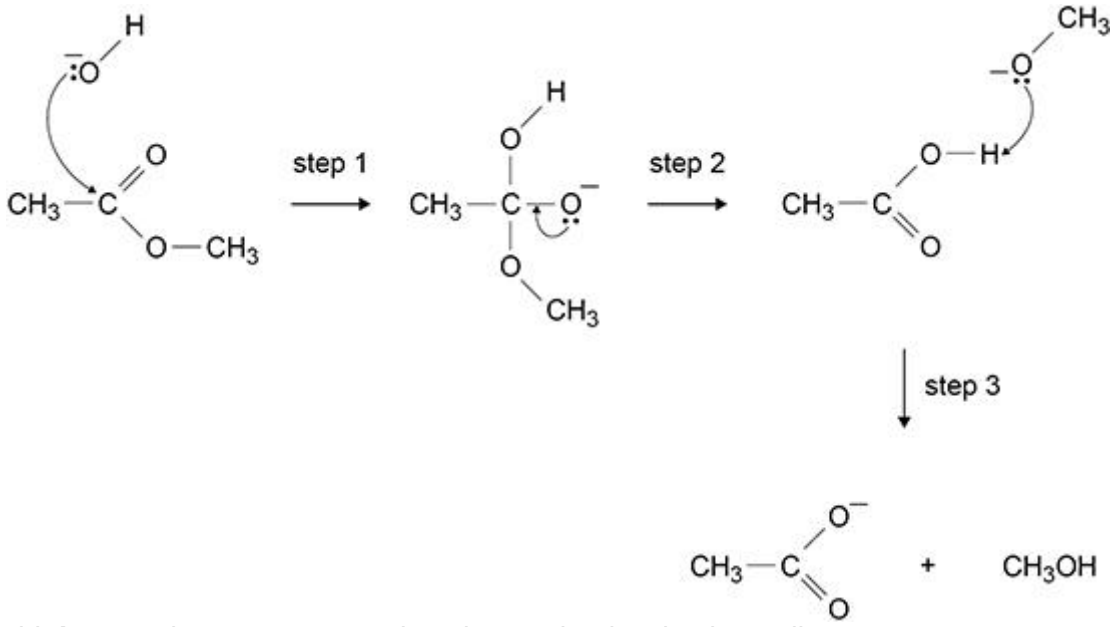
Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Q1.

This question is about esters.

The diagram below shows an incomplete mechanism for the reaction of an ester with aqueous sodium hydroxide.



(a) Add **three** curly arrows to complete the mechanism in above diagram.

_____

(3)

(b) Name the type of reaction shown in the diagram above.

_____

(1)

(c) Deduce the role of the CH_3O^- ion in step **3** shown in the diagram above.

_____

(1)

(d) A triester in vegetable oil reacts with sodium hydroxide in a similar way.

Give a use for a product of this reaction.

_____

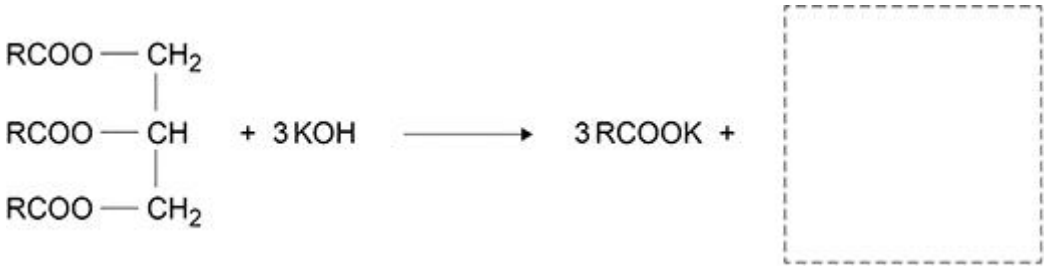
(1)

(Total 6 marks)

Downloaded from www.merit-minds.com

Q2.

Coconut oil contains a triester with three identical R groups.
This triester reacts with potassium hydroxide.



(a) Complete the equation by drawing the structure of the other product of this reaction in the box.

Name the type of compound shown by the formula RCOOK

Give **one** use for this type of compound.

Type of compound _____

Use _____

(3)

(b) The triester in coconut oil has a relative molecular mass, M_r = 638.0
In the equation shown at the start of this question, R represents an alkyl group that can be written as $CH_3(CH_2)_n$

Deduce the value of n in $CH_3(CH_2)_n$
Show your working.

n _____

(3)

(c) A 1.450 g sample of coconut oil is heated with 0.421 g of KOH in aqueous ethanol until all of the triester is hydrolysed.
The mixture is cooled.
The remaining KOH is neutralised by exactly 15.65 cm^3 of 0.100 mol dm^{-3} HCl

Calculate the percentage by mass of the triester (M_r = 638.0) in the coconut oil.

Downloaded from www.merit-minds.com

Percentage by mass _____

(6)

(d) Suggest why aqueous ethanol is a suitable solvent when heating the coconut oil with KOH.

Give a safety precaution used when heating the mixture.
Justify your choice.

Reason _____

_____

Safety precaution _____

_____

Justification _____

_____

(3)

(Total 15 marks)

Downloaded from www.merit-minds.com