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

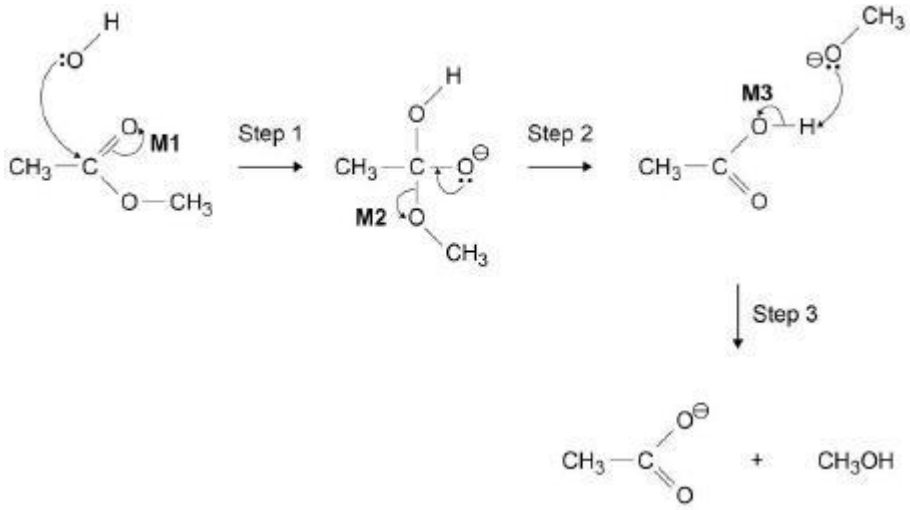
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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Mark Schemes

Q1.

(a)



M1: Arrow from C=O bond to O
M2: Arrow from correct C-O bond to O
M3: Arrow from O-H bond to O

3

(b) (Alkaline/base) hydrolysis

1

(c) Base

Allow proton acceptor
Ignore ref to Bronsted Lowry

1

(d) Soap only

1

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Q2.

(a) $CH_2OHCH(OH)CH_2OH$

1

(Potassium) Carboxylate salt

Allow fatty acid salt / salt

Salt of a carboxylic acid

1

Soap

Allow detergent / surfactant

1

(b) 638 = 173 + 3(15 + 14n)
M_r ester fragment = 173

M1

Show subtract 638 – (M1 + 45)

M2

Division of M2 by 42
n = 10

n must be an integer

M3

(c) Amount HCl = 0.100 × 0.01565 = 1.565 $\times 10^{-3}$ mol

M1

Initial amount KOH = $\frac{0.421}{56.1}$ = 7.50 $\times 10^{-3}$ mol

M2

Amount KOH used = M2 – M1 = 5.939 $\times 10^{-3}$ mol

M3

Amount ester = $\frac{5.935 \times 10^{-3}}{3}$ = 1.980 $\times 10^{-3}$ mol (M3 / 3)

M4

Mass ester = (1.980 $\times 10^{-3}$) × 638 = 1.263 g (M4 x 638)

M5

%age by mass = $\frac{1.263}{1.45}$ × 100 = 87.1 % ((M5 / 1.45) x 100)

Allow 87.0 to 87.1

Allow 2 sf

Don't allow M6 for an answer >100%

M6

(d) Allow to dissolve both oil and KOH

*To act as a mutual solvent **OR** To ensure reactants are miscible*

M1

Precaution must be linked to heating
e.g. Use a water bath for heating mixture

Allow electrical heater / mantle

Allow sand bath

M2

Prevents risk of fire / Ethanol is flammable

Allow KOH is corrosive/caustic/damages eyes if matches alternative

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precaution given

M3

[15]

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