



Higher Still
Notes
www.hsn.uk.net

Higher Chemistry

HSN14210
Unit 2 PPAs

Contents

Oxidation	1
Procedure	1
Results	1
Conclusion	1
Making Esters	2
Procedure	2
Results	2
Conclusion	2
Factors Affecting Enzyme Activity	3
Procedure	3
Results	3
Conclusion	3

These notes were created specially for the Higher Still Notes website, and we require that any copies or derivative works attribute the work to us.

For more details about the copyright on these notes, please see <http://creativecommons.org/licenses/by-nc-sa/1.0/>

Oxidation

State the aim of the experiment.

To distinguish between two carbonyl compounds, an aldehyde and a ketone, using mild oxidising agents.

Why can mild oxidising agents be used to distinguish between aldehydes and ketones?

Aldehydes can be oxidised to give carboxylic acids, whereas ketones do not oxidise.

Procedure

Why were the reaction mixtures not heated directly using a Bunsen burner?

The reaction mixtures contained inflammable substances which could be ignited by a naked flame.

Results

Present your observations in tabular form.

<i>Oxidiser</i>	<i>Compound X</i>	<i>Compound Y</i>
<i>Acidified potassium dichromate</i>	<i>The solution changed from orange to green</i>	<i>Nothing happened</i>
<i>Tollen's reagent</i>	<i>A silver mirror formed on the test tube</i>	<i>Nothing happened</i>
<i>Benedict's solution</i>	<i>The solution changed from blue to red/orange</i>	<i>Nothing happened</i>

Conclusion

State the conclusion of the experiment.

Since compound X was oxidised, it is the aldehyde. Compound R, which did not react, is the ketone.

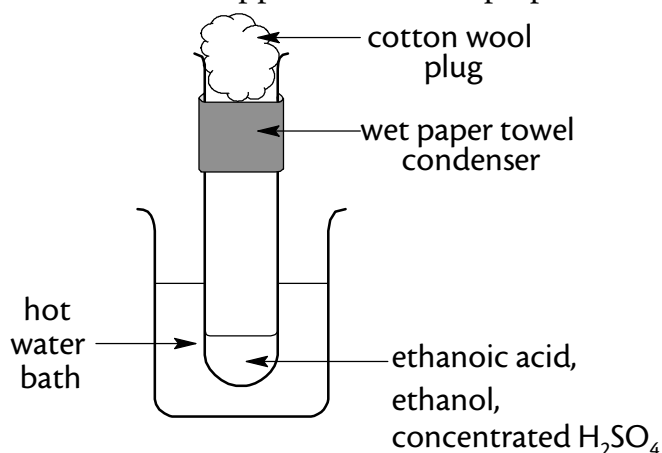
Making Esters

State the aim of the experiment.

To prepare an ester, ethyl ethanoate, and identify some of its properties.

Procedure

Draw a labelled diagram of the assembled apparatus used to prepare an ester.



How was the reaction rate increased?

The reaction was catalysed by concentrated H_2SO_4 and its temperature was increased by the water bath.

What was the function of the 'wet paper towel' condenser?

The condenser prevented the chemicals boiling off by cooling the vapours.

What was the purpose of the sodium hydrogencarbonate?

Sodium hydrogencarbonate was added to the products to neutralise the H_2SO_4 and any excess carboxylic acid.

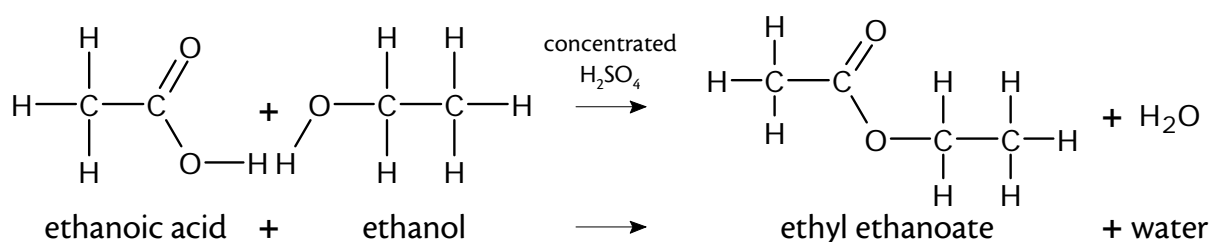
Results

State two pieces of evidence which suggested that an ester had been formed.

The product had a strong smell, and formed a layer over the water since esters are immiscible in water.

Conclusion

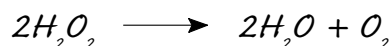
Using full structural formulae, write an equation for the condensation reaction you carried out and name the ester formed.



Factors Affecting Enzyme Activity

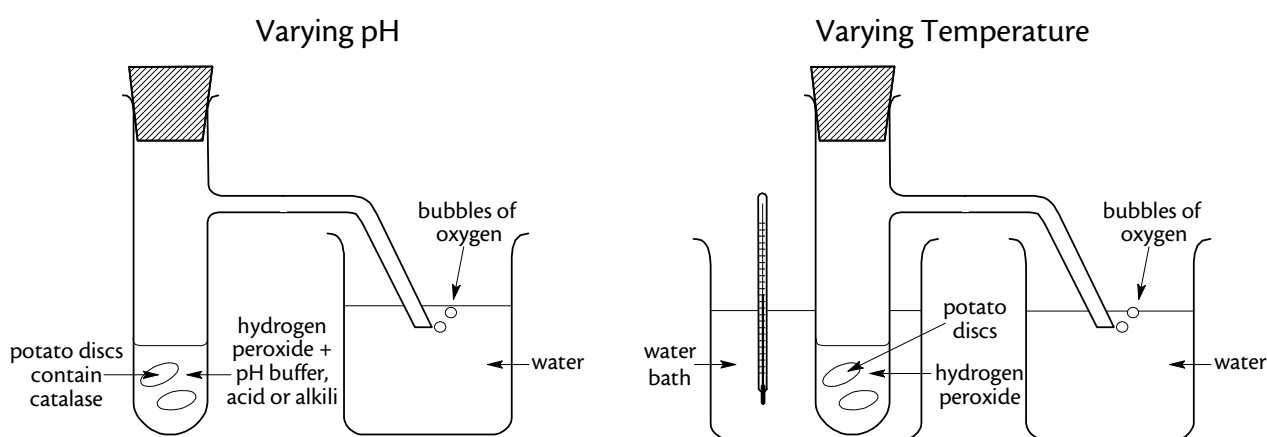
State the aim of the experiment.

*To investigate the effect of a pH change and a temperature change on enzyme activity.
The enzyme was catalase, which catalyses the decomposition of hydrogen peroxide:*



Procedure

Draw a labelled diagram of the assembled apparatus.



How was the activity of the enzyme measured?

By counting the number of oxygen bubbles given off in 3 minutes.

Results

Record your results in a tabular form.

<i>pH</i>	<i>No. of bubbles</i>
1	4
4	10
7	21
10	11
13	2

<i>Temp. (°C)</i>	<i>No. of bubbles</i>
18	6
32	18
39	28
53	14
61	4

Conclusion

State the conclusion of the experiment.

The optimum pH was 7, and the optimum temperature was 39°C. The absolute optimum temperature is probably 37°C, since the enzyme functions in the human body.