

A level Chemistry A

H432/02 Synthesis and analytical techniques

Question Set 17

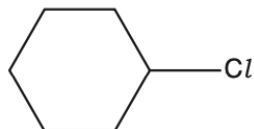
1. This question is about the hydrolysis of haloalkanes.

(a) The rate of hydrolysis of a haloalkane depends on the halogen present.

State and explain how the halogen in the haloalkane affects the rate of hydrolysis.

[2]

(b) Chlorocyclohexane, shown below, is hydrolysed with aqueous sodium hydroxide.



Outline the mechanism for this reaction.

Show curly arrows, relevant dipoles and the products.

[3]

(c) A student hydrolyses a haloalkane, **E**, using the following method.

- 0.0100 mol of haloalkane **E** is refluxed with excess NaOH(aq) to form a reaction mixture containing an organic product **F**.
- The reaction mixture is neutralised with dilute nitric acid.
- Excess AgNO₃ (aq) is added to the reaction mixture.
1.88 g of a precipitate **G** forms.

Organic product, **F**, has a molar mass of 74.0 g mol⁻¹ and has a chiral carbon atom.

(i) Draw a **labelled** diagram to show how the student would carry out the hydrolysis of haloalkane **E**.

[2]

(ii) Analyse the information to identify **E**, **F** and **G**.

Show your working.

[3]

Total Marks for Question Set 17: 10

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