

Solutions

Each answer shows the steps, then the **result**.

2.1

- ethyl ethanoate

2.2

- hydrogen chloride, HCl

3.1 B

- The reaction is fast and goes essentially to completion (not reversible)

3.2 C

- HCl fumes are released

3.3

(a)

- $\text{CH}_3\text{CH}_2\text{COCl} + \text{CH}_3\text{CH}_2\text{CH}_2\text{OH} \rightarrow \text{CH}_3\text{CH}_2\text{COOCH}_2\text{CH}_2\text{CH}_3 + \text{HCl}$

(b)

- propyl propanoate

3.4

- the acyl chloride reaction is fast and goes to completion; whereas esterification with a carboxylic acid is slow, reversible and needs an acid catalyst and heat