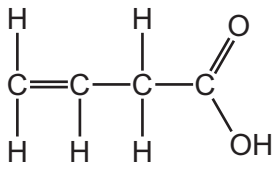
Paper 1

Questions are applicable for both core and extended candidates

1 The structure of an organic compound is shown.



The compound is tested separately with thymolphthalein and with aqueous bromine.

Which row describes the final colour observed for each test?

	thymolphthalein	aqueous bromine
A	blue	colourless
B	blue	orange
C	colourless	colourless
D	colourless	orange

2 Which row describes properties of aqueous ethanoic acid?

	pH	effect of adding magnesium	effect of adding sodium carbonate
A	1	reacts to form hydrogen	reacts to form carbon dioxide and water only
B	4	reacts to form hydrogen	reacts to form a salt, carbon dioxide and water
C	5	no reaction	reacts to form a salt, carbon dioxide and water
D	8	no reaction	reacts to form carbon dioxide and water only

3 Which substances react with aqueous ethanoic acid to form a gas?

1 magnesium

2 magnesium carbonate

3 magnesium oxide

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

4 Which statements about ethanoic acid are correct?

1 It turns universal indicator purple.

2 It reacts with magnesium to form hydrogen gas.

3 It reacts with calcium carbonate to form carbon dioxide gas.

4 It decolourises aqueous bromine.

A 1, 2 and 3 **B** 1 and 2 only **C** 2, 3 and 4 **D** 2 and 3 only

5 Which row about aqueous ethanoic acid and dilute hydrochloric acid is correct?

	both contain carbon	both contain hydrogen	both react with carbonates
A	✓	✗	✓
B	✓	✓	✗
C	✗	✓	✓
D	✗	✗	✗

key

✓ = yes

✗ = no

Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

6 Which statements about aqueous ethanoic acid are correct? **(extended only)**

1 It can be produced by oxidising ethanol with potassium iodide.

2 It reacts with magnesium to produce hydrogen gas.

3 It has an approximate pH value of 3.

4 It produces esters called methanoates.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

7 Carboxylic acids react with alcohols when warmed with an acid catalyst.

Which type of substance is formed in this reaction? **(extended only)**

A an alkene

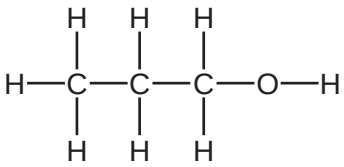
B an ester

C a salt

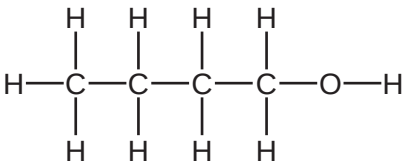
D a polymer

8 What is the structure of butanoic acid?

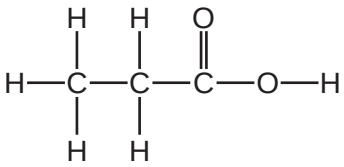
A



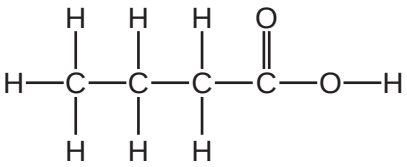
B



C



D



9 Esters are formed when a carboxylic acid reacts with an alcohol.

What is the catalyst for this reaction? **(extended only)**

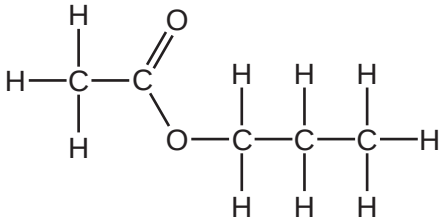
A aqueous potassium manganate(VII)

B iron

C sulfuric acid

D vanadium(V) oxide

10 The structure of an ester is shown. **(extended only)**



What are the names of the carboxylic acid and the alcohol that react together to form this ester?

	carboxylic acid	alcohol
A	ethanoic acid	ethanol
B	ethanoic acid	propan-1-ol
C	propanoic acid	ethanol
D	propanoic acid	propan-1-ol

11 Carboxylic acids are made by the oxidation of alcohols.

Which carboxylic acid is produced from CH_3CH_2OH? **(extended only)**

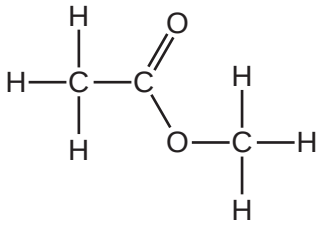
A butanoic acid

B ethanoic acid

C methanoic acid

D propanoic acid

12 The structure of ester W is shown. **(extended only)**



Which row gives the names of ester W and the carboxylic acid and alcohol from which it is made?

	name of ester W	carboxylic acid	alcohol
A	ethyl methanoate	ethanoic acid	methanol
B	ethyl methanoate	methanoic acid	ethanol
C	methyl ethanoate	ethanoic acid	methanol
D	methyl ethanoate	methanoic acid	ethanol

13 Some properties of colourless liquid L are listed.

- It boils at 65 °C.
- When added to water, two layers form which do not mix.
- It does not react with sodium carbonate.
- It has no effect on bromine water.

What is L?

A ethanol

B hexane

C hexene

D ethanoic acid

14 The reaction of ethanol with acidified potassium manganate(VII) is shown.

$$CH_3CH_2OH \xrightarrow[H^+]{KMnO_4} CH_3COOH$$

Which type of reaction is taking place? **(extended only)**

A addition

B condensation

C hydrolysis

D oxidation