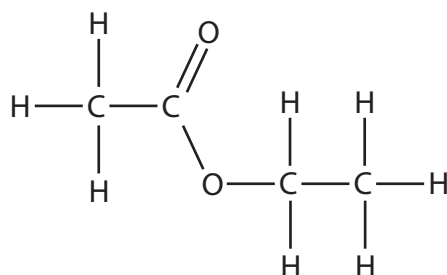


1 The structure of a molecule of an ester, ethyl ethanoate, is shown.



(a) (i) Give the molecular formula of this compound.

(1)

(ii) Write the word equation for the reaction of ethanol with another compound to form ethyl ethanoate and another product.

(2)

(iii) A hazard from the ethyl ethanoate fact sheet is shown in the box.

Exposure to the vapour of ethyl ethanoate can cause you to feel dizzy or to faint

Suggest why, despite this hazard, it is still safe to use ethyl ethanoate in sweets.

(1)

(b) Vegetable oils and fats are esters.

One of these oils is boiled with concentrated sodium hydroxide solution.
The mixture is poured into concentrated sodium chloride solution.
A white solid is formed.

(i) What type of substance is the white solid?

Put a cross (☒) in the box next to your answer.

(1)

- A alcohol
- B fat
- C polyester
- D soap

(ii) The white solid is formed in a mixture with a solution of other substances.

Describe how a pure sample of the white solid can be obtained from this mixture.

(2)

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(c) Complete the sentence by putting a cross (☒) in the box next to your answer.

Liquid oils can be converted into solid fats by hydrogenation.

In this reaction

(1)

- A a salt and water are formed
- B the liquid oil is reacted with oxygen gas
- C unsaturated molecules in the liquid oil become saturated
- D C=C bonds are formed

(Total for Question 1 = 8 marks)

2 (a) Copper is a metal.

(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

Copper conducts electricity because particles in it move through the structure.
These particles are

(1)

A positive and negative ions

B positive ions only

C atoms

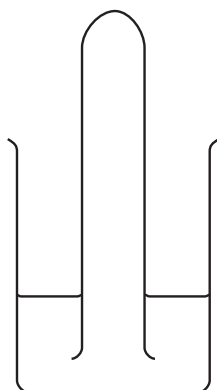
D electrons

(ii) Copper forms coloured compounds.

Give the name of the type of metals that form coloured compounds.

(1)

- (b) A test tube was filled with hydrogen chloride gas. The test tube was inverted in water and left.



The liquid level rose up to the top of the test tube.

Explain what was formed in the test tube after the water had entered.

(2)

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- (c) When chlorine is bubbled into potassium bromide solution, the solution turns orange.

Explain why this happens.

(2)

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(d) Barium sulfate can be prepared as a white precipitate.

Describe how you could prepare a pure, dry sample of barium sulfate from barium chloride solution and sodium sulfate solution.

(3)

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(Total for Question 2 = 9 marks)
