AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 5.10.1.3

Waste water treatment

Past-paper questions

Tier	**Foundation**
Question groups	**3**
Available paper years	**2021–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

5.10.1.3 Waste water treatment

Question 01

November 2021 | 8464/C/2F | Original Q1

0 1 Fresh water contains low levels of dissolved salts.

Water reacts with anhydrous copper sulfate in a reversible reaction.

The word equation for the reaction is:

water + anhydrous copper sulfate ⇌ hydrated copper sulfate

0 1 . 1 How does the equation show that the reaction is reversible?

[1 mark]

_____

_____

0 1 . 2 Complete the sentences.

Choose answers from the box.

[2 marks]

blue	**green**	**orange**	**white**	**yellow**

The colour of anhydrous copper sulfate is _____ .

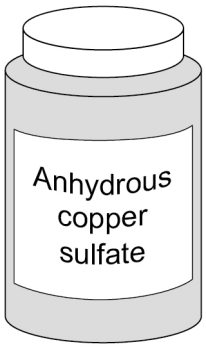
The colour of hydrated copper sulfate is _____ .

5.10.1.3 Waste water treatment

Question 01 · continued

0 1 . 3 **Figure 1** shows anhydrous copper sulfate in a sealed container.

Figure 1



Suggest **one** reason why anhydrous copper sulfate is kept in a sealed container.

[1 mark]

Question 1 continues on the next page

5.10.1.3 Waste water treatment

Question 01 · continued

Sodium chloride dissolves in water to form sodium chloride solution.

0 1 . 4 Draw **one** line from each substance to the description of the substance.

[2 marks]

Substance	Description of substance
Sodium chloride solution	Compound
Water	Element
	Hydrocarbon
	Mixture

0 1 . 5 Name the process used to obtain solid sodium chloride from sodium chloride solution.

[1 mark]

_____

5.10.1.3 Waste water treatment

Question 01 · continued

0 1 . 6 Two processes used to obtain potable water from fresh water are:

- filtering
- sterilising.

Give **one** reason why each process is used.

[2 marks]

Filtering _____

_____

Sterilising _____

_____

0 1 . 7 Which type of water is the easiest to obtain potable water from?

[1 mark]

Tick (✓) **one** box.

Ground water ☐

Salt water ☐

Waste water ☐

0 1 . 8 Which of the following is the first stage of waste water treatment?

[1 mark]

Tick (✓) **one** box.

Aerobic biological treatment of effluent ☐

Anaerobic digestion of sewage sludge ☐

Screening and removal of grit ☐

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5.10.1.3 Waste water treatment

Question 02

June 2022 | 8464/C/2F | Original Q7

0 7 . 1 Water that is safe to drink is called potable water.

Compare how easily potable water can be obtained from:

- waste water (sewage)
- ground water (fresh water).

[6 marks]

Question 7 continues on the next page

5.10.1.3 Waste water treatment

Question 02 · continued

A scientist produced potable water from 150 cm^3 of salty water.

0 7 . 2 Which process can be used to produce potable water from salty water?

[1 mark]

Tick (✓) **one** box.

- Distillation ☐
- Electrolysis ☐
- Filtration ☐
- Sterilisation ☐

0 7 . 3 The salty water contains sodium chloride.

The scientist collected 2.40 g of sodium chloride from 150 cm^3 of salty water.

Calculate the concentration of sodium chloride in grams per dm^3

[3 marks]

Concentration of sodium chloride = _____ g/dm^3

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5.10.1.3 Waste water treatment

Question 03

June 2025 | 8464/C/2F | Original Q4

0 4 Humans use many different resources.

Water is an important natural resource.

0 4 . 1 What is meant by 'potable water'?

[1 mark]

Tick (✓) **one** box.

- Water from the ground ☐
- Water that is pure ☐
- Water that is safe to drink ☐

0 4 . 2 Waste water needs treatment before the water is put back into rivers and the sea.

The first stage of waste water treatment is to pass the waste water through metal grids.

Why is the waste water passed through metal grids?

[1 mark]

Tick (✓) **one** box.

- To remove dissolved salts ☐
- To remove large solid objects ☐
- To remove microbes ☐
- To remove oxygen gas ☐

5.10.1.3 Waste water treatment

Question 03 · continued

Clothes can be made from different materials.

Some clothes are made from wool and some clothes are made from poly(propene).

0 4 . 3 One sheep produces 4.5 kg of wool.

50 g of wool is needed to make a hat.

Calculate the number of hats that can be made from the wool of one sheep.

1 kg = 1000 g

[3 marks]

Number of hats = _____

5.10.1.3 Waste water treatment

Question 03 · continued

0 4 . 4 **Table 4** gives information about poly(propene) and wool.

Table 4

	Poly(propene)	Wool
Source of material	Crude oil	Sheep
Level of insulation	High	Medium
Cost	Low	High
Durability	High	Medium

Explain the advantages of using poly(propene) and of using wool for clothing.

[4 marks]

Extra space

Question 4 continues on the next page

5.10.1.3 Waste water treatment

Question 03 · continued

0 4 . 5 After being used, clothes can be:

- given to other people to wear
- used to make insulation blocks for buildings.

Complete the sentences.

Choose answers from the box.

[2 marks]

recycled	**reduced**	**released**	**reused**	**reversed**

When clothes are given to other people to wear,

the clothes are _____.

When clothes are used to make insulation blocks for buildings,

the clothes are _____.

5.10.1.3 Waste water treatment

Question 03 · continued

Poly(propene) is made from an alkene.

Alkenes are produced by cracking alkanes.

0 4 . 6 A high temperature is used for cracking alkanes.

Which **two** of the following can also be used to crack alkanes?

[2 marks]

Tick (✓) **two** boxes.

- A catalyst ☐
- A solvent ☐
- Carbon dioxide ☐
- Steam ☐
- Sulfuric acid ☐

0 4 . 7 Which chemical is used to test for alkenes?

[1 mark]

Tick (✓) **one** box.

- Ammonia ☐
- Bromine water ☐
- Copper sulfate ☐
- Nitrogen ☐

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