

(Pure substances and mixtures)

Q1.(2018)

Calculate the mass of anhydrous copper sulfate produced.

[1 mark]

Mass of anhydrous copper sulfate = _____ g

Q2.(2018)

Calculate the percentage of water contained in 2.5 g of hydrated copper sulfate.

[2 marks]

Percentage of water = _____ %

Q3.(2018)

Draw **one** line from each compound to the formula for the compound.

[2 marks]

Compound	Formula for the compound
Copper sulfate	CuO
	CuS
	CuSO ₄
Water	H ₂ O
	H ₂ SO ₄

Q4.(2019)

Chemical Analysis

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A large amount of aluminium sulfate was accidentally added to the drinking water supply at a water treatment works.

Scientists tested a sample of the drinking water to show that it contained dissolved solids.

Which **two** methods show the presence of dissolved solids in the sample of drinking water?

[2 marks]

Tick (✓) **two** boxes.

Add damp litmus paper to the sample.

☐

Evaporate all water from the sample.

☐

Measure the sample's boiling point.

☐

Test the sample with a glowing splint.

☐

Q5.(2019)

8 g of methane has a volume of 12 dm^3 at room temperature and pressure.

Calculate the mass of 36 dm^3 of methane.

[2 marks]

Mass = _____ g

Q6.(2019)

This question is about the corrosion of metals.

The corrosion of iron is called rusting.

Plan an investigation to show that both water and air are needed for iron to rust.

You should include the results you expect to obtain.

Use apparatus and materials from the list:

- test tubes
- stoppers
- iron nails
- tap water
- boiled water
- drying agent
- oil.

[6 marks]

Q7.(2020)

The balance used to weigh 10.0 g of calcium carbonate lumps caused an error.

The balance always read 0.2 g before being used.

What type of error was caused by the balance?

[1 mark]

Tick (✓) **one** box.

Human error

☐

Random error

☐

Systematic error

☐

Q8.a)(2021)

This question is about water.

A student investigated the concentration of salt in sea water.

This is the method used.

1. Filter the sea water to remove sand.
2. Measure the mass of an empty evaporating dish.
3. Measure 50 cm³ of sea water into the evaporating dish.
4. Heat the evaporating dish and sea water.
5. Evaporate the sea water to dryness.
6. Measure the mass of the evaporating dish and salt.

What equipment should the student use to measure:

- the mass of the evaporating dish
- the volume of sea water?

[2 marks]

Mass of evaporating dish _____

Volume of sea water _____

Q8.b)(2021)

Table 2 shows the student's results.

Table 2

	Mass in g
Evaporating dish	30.44
Evaporating dish and salt	30.49

The student used 50 cm³ of sea water.

Calculate the mass of salt in 1000 cm³ of this sea water.

[3 marks]

Mass of salt = _____ g

Q8.c)(2021)

The salt must be completely dry.

Which **two** extra steps are needed to show that the salt is completely dry?

[2 marks]

Tick (✓) **two** boxes.

Filter the sea water again.

☐

Heat the evaporating dish and salt again.

☐

Measure the 50 cm³ of sea water again.

☐

Measure the mass of the empty evaporating dish again.

☐

Measure the mass of the evaporating dish and salt again.

☐

Q9.(2021)

A solution of potash alum has a concentration of 258 g/dm^3

Calculate the mass of potash alum needed to make 800 cm^3 of a solution of potash alum with a concentration of 258 g/dm^3

Give your answer to 3 significant figures.

[4 marks]

Mass (3 significant figures) = _____ g

Q10.a)(2022)

A different student investigated sea water.

Sea water contains dissolved solids.

This is the method used.

1. Measure a 50 cm^3 sample of the sea water.
2. Heat the sample until all the water has evaporated.
3. Measure the mass of solid that remains.
4. Repeat steps 1 to 3 three more times.

Which **two** pieces of equipment were needed in this investigation?

[2 marks]

Tick (✓) **two** boxes.

Balance

☐

Measuring cylinder

☐

Ruler

☐

Thermometer

☐

Timer

☐

Q10.b)(2022)

Table 1 shows the results.

Table 1

Sea water sample	Mass of solid that remained in grams
1	1.73
2	1.70
3	1.75
4	1.78

Calculate the mean mass of solid that remained.

[2 marks]

Mean mass = _____ g

Q10.c)(2022)

A 50 cm³ sample of sea water from a different source contained 1.50 g of dissolved solids.

Calculate the mass of dissolved solids in 1000 cm³ of this sea water.

[2 marks]

Mass = _____ g

Q11.(2024)

Chemical Analysis

<http://www.pcfgstudy.com>

The student calculated the concentration of sodium chloride in the salt solution.

Table 5 shows the results.

Table 5

Concentration of sodium chloride in g/dm ³			
Trial 1	Trial 2	Trial 3	Trial 4
35.2	34.6	36.4	33.8

The percentage by mass of sodium ions in sodium chloride is 39.3%.

Calculate the mean concentration of sodium ions in the salt solution.

[4 marks]

Mean concentration = _____ g/dm³