Paper 1

Questions are applicable for both core and extended candidates

1 Why is distilled water used in chemical experiments rather than tap water?

A Distilled water contains fewer chemical impurities.

B Distilled water has a better colour.

C Distilled water has a higher boiling point.

D Distilled water is a better solvent.

2 Water is treated at a waterworks to make it safe to drink.

What is present in the water when it leaves the waterworks?

A bacteria and insoluble substances

B bacteria only

C soluble substances, including chlorine compounds

D chlorine compounds only

3 Several processes are used to treat domestic water.

Which row identifies a reason for the given process?

	process	reason
A	chlorination	removes impurities
B	filtration	removes insoluble solids
C	sedimentation	removes soluble solids
D	use of carbon	kills bacteria

4 Which process is used to produce drinking water from sea water?

A crystallisation

B distillation

C filtration

D chlorination

5 Solid S changes colour from white to blue when water is added.

What is S?

A anhydrous cobalt(II) chloride

B anhydrous copper(II) sulfate

C hydrated cobalt(II) chloride

D hydrated copper(II) sulfate

6 Which row correctly matches the experiment and observations to the identity of the underlined substance?

	experiment and observations	identity of the underlined substance
A	<u>Blue crystals</u> are heated. The crystals turn white and steam is given off.	hydrated cobalt(II) chloride
B	<u>Pink crystals</u> are heated. The crystals turn blue and steam is given off.	anhydrous cobalt(II) chloride
C	Water is added to a <u>blue solid</u>. The blue solid turns pink.	hydrated copper(II) sulfate
D	Water is added to a <u>white solid</u>. The white solid turns blue.	anhydrous copper(II) sulfate

7 Which row describes the colour changes when water is added to anhydrous cobalt(II) chloride and anhydrous copper(II) sulfate?

	anhydrous cobalt(II) chloride	anhydrous copper(II) sulfate
A	blue to pink	white to blue
B	blue to white	blue to pink
C	pink to blue	blue to white
D	white to blue	pink to blue

8 Water is added to anhydrous copper(II) sulfate.

What happens during the reaction?

A The copper(II) sulfate turns blue and the solution formed gets colder.

B The copper(II) sulfate turns blue and the solution formed gets hotter.

C The copper(II) sulfate turns white and the solution formed gets colder.

D The copper(II) sulfate turns white and the solution formed gets hotter.

9 Substance Y is a pink solid.

When substance Y is heated gently it becomes a blue solid.

When the blue solid is cooled down it remains blue.

When water is added to the blue solid it becomes pink.

What is substance Y?

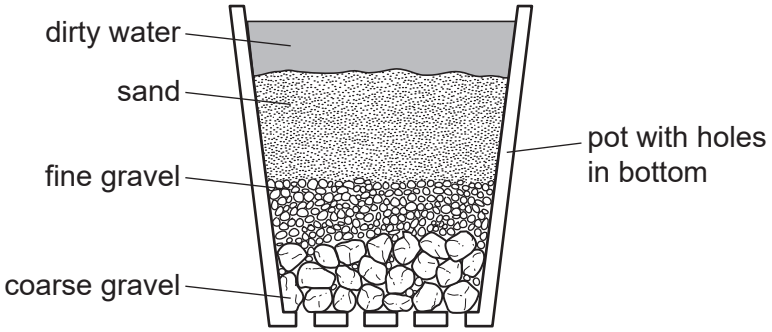
A anhydrous cobalt(II) chloride

B anhydrous copper(II) sulfate

C hydrated cobalt(II) chloride

D hydrated copper(II) sulfate

10 The diagram shows a stage in the purification of dirty water.



Which process does this apparatus show?

A chlorination

B condensation

C distillation

D filtration

Paper 2

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

11 What is the colour change when water is added to anhydrous cobalt(II) chloride?

A blue to white

B blue to pink

C white to blue

D white to pink

12 Solid copper(II) sulfate exists in two different forms, anhydrous and hydrated.

One of these forms is blue and the other is white.

The change between these two forms is reversible.

$$\text{blue form} \rightleftharpoons \text{white form}$$

What is the blue form and how is the change from the blue form to the white form brought about?

	blue form	change to white form
A	anhydrous	add water
B	anhydrous	heat
C	hydrated	add water
D	hydrated	heat

13 Which test is used to show that a sample of water is pure?

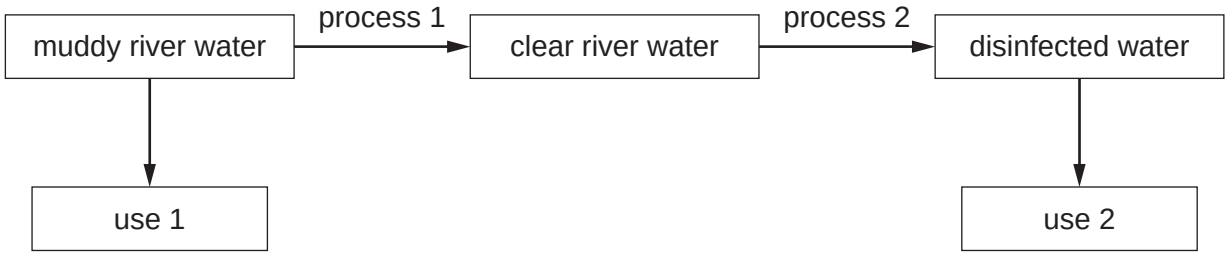
A Evaporate the water to see if any solids remain.

B Heat the water to check its boiling point.

C Test with anhydrous cobalt(II) chloride.

D Use universal indicator paper to check its pH.

14 The diagram shows the uses and treatment processes of muddy river water.



Which row identifies uses 1 and 2 and processes 1 and 2?

	use 1	use 2	process 1	process 2
A	drinking	watering crops	chlorination	filtration
B	drinking	watering crops	filtration	chlorination
C	watering crops	drinking	chlorination	filtration
D	watering crops	drinking	filtration	chlorination