1 The results of some tests on a colourless liquid X are shown.

- Boiling point = 102 °C
- Universal Indicator turns green

What is X?

A ethanol

B hydrochloric acid

C pure water

D sodium chloride (salt) solution

2 A blue solid, X, is soluble in water.

Which method is used to obtain pure solid X from an aqueous solution?

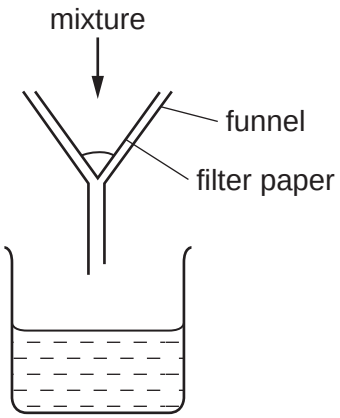
A chromatography

B crystallisation

C filtration

D neutralisation

3 A mixture is separated using the apparatus shown.



What is the mixture?

A aqueous copper chloride and copper

B aqueous copper chloride and sodium chloride

C ethane and methane

D ethanol and water

4 Ethanol is made by fermentation.

How is ethanol obtained from the fermentation mixture?

A chromatography

B crystallisation

C electrolysis

D fractional distillation

5 Alcohol and water are completely miscible. This means when mixed together they form only one liquid layer.

Which method is used to separate alcohol from water?

A crystallisation

B filtration

C fractional distillation

D precipitation

6 Which two methods can be used to separate a salt from its solution in water?

1 crystallisation

2 decanting

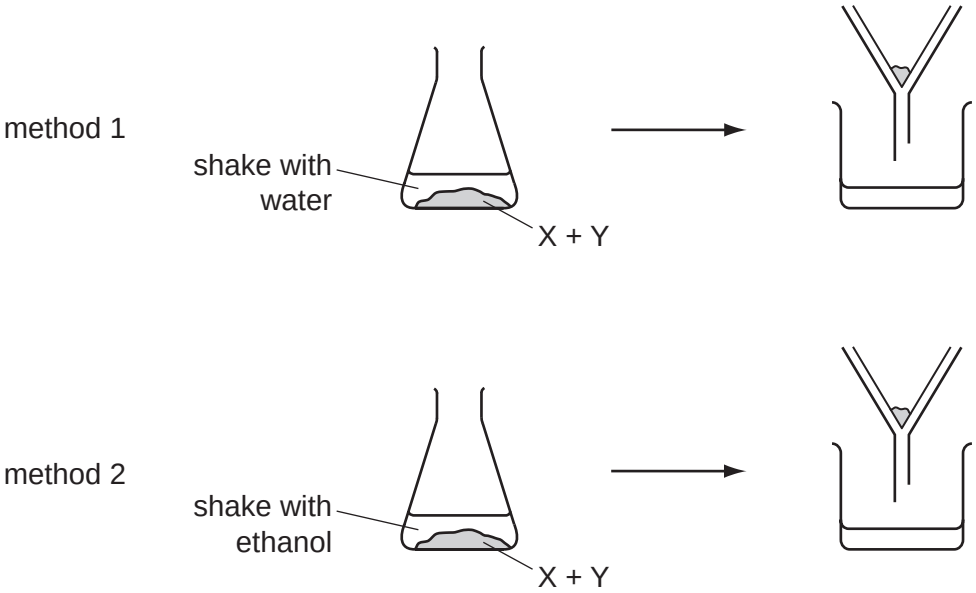
3 distillation

4 filtration

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

7 A solid mixture contains an ionic salt, X, and a covalent organic compound, Y.

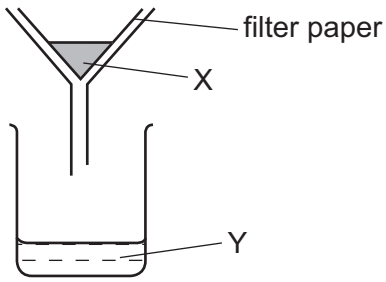
Two students suggest methods of separating the mixture as shown.



Which methods of separation are likely to work?

	1	2
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

8 The diagram shows a method for separating a substance that contains X and Y.



Which types of substance can be separated as shown?

A compounds

B elements

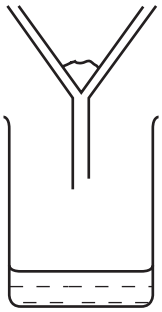
C mixtures

D molecules

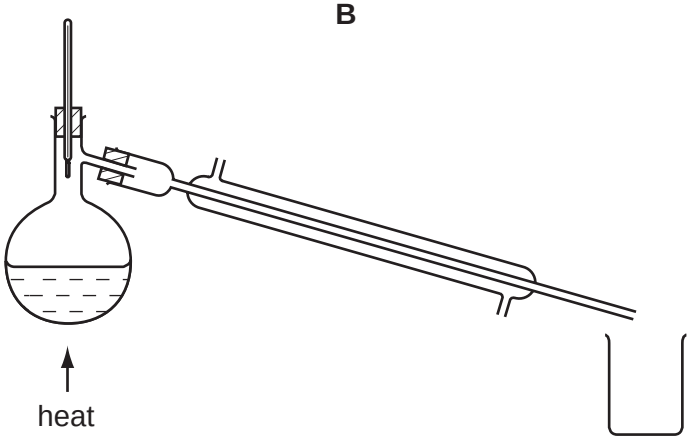
9 Methanol, CH_3OH, and ethanol, C_2H_5OH, are miscible liquids.

Which diagram shows apparatus that is used to obtain methanol from a mixture of ethanol and methanol?

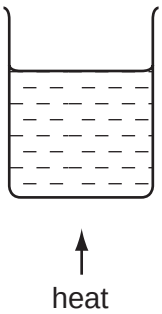
A

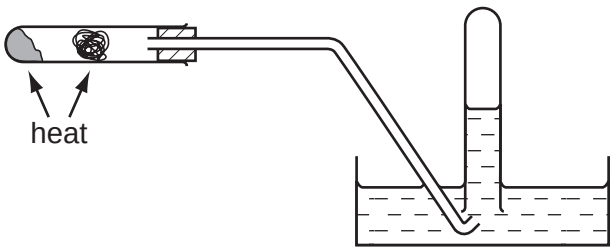


B



C





10 A mixture of sulfur and iron filings needs to be separated. The solubilities of sulfur and iron filings in water and carbon disulfide are shown in the table below.

	solubility in water	solubility in carbon disulfide
sulfur	✗	✓
iron filings	✗	✗

What are possible methods of separating the sulfur and iron filings?

	using water	using carbon disulfide	using a magnet
A	✓	✓	✗
B	✗	✓	✓
C	✓	✗	✓
D	✗	✓	✗

11 Which method is most suitable to obtain zinc carbonate from a suspension of zinc carbonate in water?

A crystallisation

B distillation

C evaporation

D filtration

12 Mixture 1 contains sand and water.

Mixture 2 contains salt and water.

Which method of separation could be used to obtain each of the required products from each mixture?

	mixture 1		mixture 2	
	to obtain sand	to obtain water	to obtain salt	to obtain water
A	crystallisation	distillation	filtration	filtration
B	crystallisation	filtration	filtration	distillation
C	filtration	distillation	crystallisation	filtration
D	filtration	filtration	crystallisation	distillation

13 The table gives the solubility of four substances in ethanol and in water.

A mixture containing all four substances is added to ethanol, stirred and filtered.

The solid residue is added to water, stirred and filtered.

The filtrate is evaporated to dryness, leaving a white solid.

Which is the white solid?

	solubility in	
	ethanol	water
A	insoluble	insoluble
B	insoluble	soluble
C	soluble	insoluble
D	soluble	soluble

14 A mixture of ethanol and methanol are separated by fractional distillation.

This method of separation depends on a difference in property X of these two alcohols.

What is property X?

A boiling point

B colour

C melting point

D solubility

15 A fruit drink coloured orange contains a dissolved mixture of red and yellow colouring agents. One of these colouring agents is suspected of being illegal.

Which method could be used to show the presence of this illegal colouring agent?

A chromatography

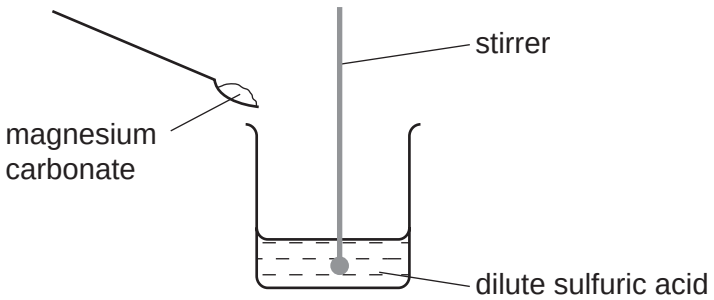
B distillation

C evaporation

D filtration

16 A student carries out an experiment to prepare pure magnesium sulfate crystals.

The diagram shows the first stage of the preparation.



He adds magnesium carbonate until no more reacts.

Which process should he use for the next stage?

A crystallisation

B evaporation

C filtration

D neutralisation

17 A student separates salt from a mixture of salt and sand.

What is the correct order of steps for the student to take?

A filter → evaporate → shake with water

B filter → shake with water → evaporate

C shake with water → evaporate → filter

D shake with water → filter → evaporate