

Paper 1

Questions are applicable for both core and extended candidates

1 Two experiments are described.

experiment 1 A large mass of copper(II) sulfate is stirred into a beaker of water. After a few minutes, undissolved crystals are visible on the bottom of the beaker.

experiment 2 Sea water is distilled. Distilled water and solid impure salt are separated into two containers.

Which statement is correct?

- A** In experiment 1, the undissolved crystals are the filtrate.
- B** In experiment 1, the water is the solute.
- C** In experiment 2, sea water boils at 100 °C.
- D** In experiment 2, the impure salt is a residue.

2 A mixture contains sand and an aqueous solution of sodium chloride.

Which processes are used to obtain a sample of solid sand **and** a sample of solid sodium chloride from the mixture?

- A** crystallisation followed by filtration
- B** evaporation followed by filtration
- C** filtration followed by crystallisation
- D** simple distillation followed by crystallisation

3 A student makes aqueous copper(II) chloride by adding excess copper(II) carbonate to dilute hydrochloric acid.

What is the next step in the method in the formation of solid copper(II) chloride?

- A** crystallisation
- B** evaporation
- C** filtration
- D** titration

- 4 Fermentation of sugar produces a mixture of ethanol solution and solid yeast.

How is the solid yeast removed from the mixture?

- A crystallisation
- B distillation
- C filtration
- D fractional distillation

- 5 Which method is used to separate a mixture of the following liquids?

liquid	boiling point / °C
methanol	64.5
ethanol	78.5
propan-1-ol	97.2
butan-1-ol	117.0

- A crystallisation
- B evaporation
- C filtration
- D fractional distillation

- 6 An acid is neutralised by adding an excess of an insoluble solid base.

A soluble salt is formed.

How is the pure salt obtained from the reaction mixture?

- A crystallisation → evaporation → filtration
- B evaporation → crystallisation → filtration
- C filtration → crystallisation → evaporation
- D filtration → evaporation → crystallisation

- 7** A mixture contains salt, sand and sulfur.

Salt dissolves in water but not in xylene.

Sulfur dissolves in xylene but not in water.

Sand does not dissolve in water or xylene.

What is the order of the processes used to separate the salt, the sand and the sulfur from the mixture?

- A** add water → filter → add xylene to the filtrate → filter
- B** add water → filter → add xylene to the residue → filter
- C** add xylene → filter → add water to the filtrate → filter
- D** add xylene → filter → add xylene to the residue → filter

- 8** Aqueous ammonium sulfate is made by reacting aqueous ammonia with dilute sulfuric acid.

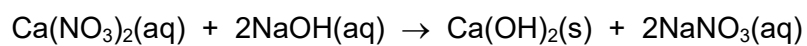
How is solid ammonium sulfate obtained from the resulting solution?

- A** crystallisation
- B** distillation
- C** filtration
- D** solvent extraction

Paper 2

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

- 9** The equation for the reaction of aqueous calcium nitrate and aqueous sodium hydroxide is shown.



Which process is used to remove calcium hydroxide from the mixture?

- A** chromatography
- B** crystallisation
- C** distillation
- D** filtration