09 Salts

Set B **Exam practice**

Name | Time **45 minutes** | Total **26 marks** | Score ____ / 26

Use a copy of the Periodic Table where you need one.

Marks by notes section For the marker: total each row. A score below the target means that section of the notes needs revising.

Notes section	Questions	Marks	Target	Score
2 Preparing Salts	1, 2, 3, 4(c), 5, 6, 7(a), 7(d)(i), 7(d)(ii)	21	13	
07 · 1 Relative Masses *(Topic 06-07)*	7(c)	2	2	
1 Acids *(Topic 08)*	7(b)	1	1	
3 The pH Scale *(Topic 08)*	4(a), 4(b)	2	2	

A Multiple choice

3 MARKS

1 Which pair of reagents would be most suitable to safely prepare a pure sample of the salt in the laboratory?

	reagents	salt
A	potassium and dilute hydrochloric acid	potassium chloride
B	calcium oxide and dilute sulfuric acid	calcium sulfate
C	copper and dilute sulfuric acid	copper(II) sulfate
D	silver nitrate and dilute hydrochloric acid	silver chloride

/1

Answer ☐ [1]

Source: 2026 Chung Cheng Prelim P1 Q16

2 Which pair of chemicals is most suitable to prepare a pure sample of copper(II) nitrate?

	chemical 1	chemical 2
A	copper	dilute nitric acid
B	copper	aqueous potassium nitrate
C	copper(II) carbonate	dilute nitric acid
D	copper(II) carbonate	aqueous potassium nitrate

/1

Answer ☐ [1]

Source: Broadrick Prelim P1 Q22

3 Which set of reactants is most appropriate to prepare a pure sample of copper(II) chloride crystals?

A copper and hydrochloric acid

B copper(II) carbonate and hydrochloric acid

C copper(II) hydroxide and ammonium chloride

D copper(II) nitrate and potassium chloride

Answer ☐ **[1]**

/1

Source: 2024 AMKSS Prelim P1 Q12

B Structured questions

23 MARKS

4 Dilute sulfuric acid reacts with aqueous sodium hydroxide: $H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$. Sodium sulfate solution is obtained at the end of the reaction.

(a) Describe what would be observed if a few drops of Universal Indicator were added to the sodium sulfate solution.

..... **[1]**

(b) Describe the concentrations of H^+ and OH^- ions in the sodium sulfate solution at the end of the reaction.

..... **[1]**

(c) Describe the steps to prepare pure, dry sodium sulfate crystals from sulfuric acid and sodium hydroxide.

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..... **[5]**

/7

Source: 2023 GESS Sec 3 End-of-Year P2 B11(c) and (d)

5 Magnesium reacts with dilute nitric acid to form magnesium nitrate and hydrogen.

Describe the steps to prepare pure, dry magnesium nitrate crystals from nitric acid and magnesium.

/4 **[4]**

Source: 2023 GESS Sec 3 End-of-Year P2 B12(d)

6 Salts that are insoluble in water are prepared by precipitation.

Describe how you would prepare a pure, dry sample of lead(II) iodide, PbI_2, by precipitation. Your answer should include the starting reagents you would use, practical details, and an ionic equation for the precipitation.

/4 **[4]**

Source: 2024 TKGS Prelim P2 Q3(a)

7 Barium forms several compounds. The table shows some of their properties.

compound	solubility in water	uses
barium carbonate	insoluble	rat poison (toxic due to barium ions)
barium chloride	soluble	heat treatment of steel tools
barium hydroxide	soluble	used in acid-base titrations
barium sulfate	insoluble	contrast agent for X-rays

(a) To prepare a pure, dry sample of barium chloride, an excess of barium carbonate is added to hydrochloric acid. Describe the steps that follow.

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..... **[3]**

(b) Suggest why barium carbonate is toxic when it enters the stomach, while barium sulfate is not.

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..... **[1]**

(c) Hydrated barium chloride has the formula $BaCl_2 \cdot 2H_2O$. Calculate the mass of barium chloride in a 4.88 g sample of hydrated barium chloride.

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..... **[2]**

(d) Aqueous barium hydroxide reacts with dilute sulfuric acid.

(i) Complete the equation with state symbols: $Ba(OH)_2(.....) + H_2SO_4(.....) \rightarrow BaSO_4(.....) + 2H_2O(.....)$

..... **[1]**

(ii) State what is observed in the reaction.

..... **[1]**

/8

Source: 2026 NAS Prelim P2 Q11