09 Salts

Set A **Foundations**

Name | Time **45 minutes** | Total **20 marks** | Score ____ / 20

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

A From the lesson

6 MARKS

1 Which salt is insoluble in water?

A ammonium sulfate **B** lead(II) nitrate **C** silver chloride **D** sodium carbonate

Answer ☐ [1]

/1

Source: Learners' Alley, Salts slides

2 Which method is best for preparing potassium sulfate?

A potassium metal with dilute sulfuric acid

B excess potassium carbonate with dilute sulfuric acid, then filter

C titration of aqueous potassium hydroxide with dilute sulfuric acid

D precipitation from two solutions

Answer ☐ [1]

/1

Source: Learners' Alley, Salts slides

3 Answer these questions about salts.

(a) Name two insoluble sulfates.

..... [1]

(b) Why is the solid added in excess when a salt is made from an acid and an insoluble base?

.....

..... [1]

(c) Which method is used to make sodium chloride, and from which reagents?

..... [1]

(d) Write the ionic equation, with state symbols, for the precipitation of barium sulfate.

..... [1]

/4

Source: Learners' Alley, Salts slides

B Practice

14 MARKS

4 Which of the following pairs of reagents should be mixed to prepare a sample of lead(II) sulfate salt?

A lead metal and sulfuric acid

B lead(II) carbonate and sulfuric acid

C lead(II) chloride and barium sulfate

D lead(II) nitrate and sodium sulfate

/1

Answer [1]

Source: 2023 GESS Sec 3 End-of-Year P1 Q32

5 When preparing a salt by titration, the experiment is usually repeated without the indicator after the volume needed for neutralisation has been found. Why is the indicator left out when preparing the salt crystals?

A The indicator acts as a drying agent and removes moisture from the crystals.

B The indicator is an impurity and will lead to impure crystals.

C The indicator slows down crystal formation during crystallisation.

D The indicator will dye and change the original colour of the crystals.

/1

Answer [1]

Source: 2023 GESS Sec 3 End-of-Year P1 Q33

6 Which of the following does **not** show suitable reagents for preparing the named salt?

	salt	reagents
A	copper(II) sulfate	copper(II) carbonate + sulfuric acid
B	lead(II) nitrate	lead(II) oxide + nitric acid
C	magnesium chloride	magnesium nitrate + hydrochloric acid
D	zinc chloride	zinc hydroxide + hydrochloric acid

/1

Answer [1]

Source: 2024 SMSS Sec 3 End-of-Year P1 Q13

7 How can a pure sample of lead(II) sulfate be obtained from lead(II) carbonate?

A Add lead(II) carbonate directly to dilute sulfuric acid, filter the mixture and wash the residue.

B Add lead(II) carbonate directly to dilute sulfuric acid, filter the mixture and crystallise the filtrate.

C Add lead(II) carbonate to dilute nitric acid, then add dilute sulfuric acid, filter the mixture and wash the residue.

D Add lead(II) carbonate to dilute nitric acid, then add dilute sulfuric acid, filter the mixture and crystallise the filtrate.

/1

Answer [1]

Source: 2024 SMSS Sec 3 End-of-Year P1 Q15

8 Titration of an acid against a base is a method often used in the preparation of salts. Which properties of the acid, the base and the salt are required if this method is to be used?

	acid	base	salt
A	insoluble	insoluble	insoluble

B	soluble	insoluble	insoluble
C	soluble	soluble	insoluble
D	soluble	soluble	soluble

/1

Answer [1]

Source: 2023 XMS Sec 3 WA3 Q3

9 Salt ST is to be prepared by reacting the carbonate of S with the acid HT using titration. What are the solubilities of the carbonate, the acid and the salt?

	carbonate of S	acid HT	salt ST
A	insoluble	soluble	insoluble
B	insoluble	soluble	soluble
C	soluble	insoluble	insoluble
D	soluble	soluble	soluble

/1

Answer [1]

Source: 2023 HYSS Sec 3 End-of-Year P1 Q9

10 An excess of barium chloride solution is added to a solution of magnesium sulfate and a white precipitate is formed. The mixture is then filtered. Which solution would **not** produce a precipitate when added to the filtrate?

A iron(II) sulfate **B** potassium nitrate **C** silver nitrate **D** sodium carbonate

/1

Answer [1]

Source: 2024 SMSS Sec 3 End-of-Year P1 Q16

11 Darren wants to prepare a pure, dry sample of zinc nitrate. He decides to use zinc oxide and nitric acid.

Using these reactants, describe the steps Darren must carry out to obtain a pure, dry sample of zinc nitrate.

.....

.....

.....

.....

.....

/3

[3]

Source: Woodlands Prelim P2 Q(b)

12 The table shows information about the preparation of pure samples of two solid salts.

salt	reagents used	method used to prepare the salt	method used to obtain the solid from the reaction mixture

potassium chloride	1: dilute hydrochloric acid 2:	.....	crystallisation
lead(II) sulfate	1: dilute sulfuric acid 2:	precipitation	.....

/4

Complete the table by filling in the missing information. **[4]**

Source: 2024 CHS Sec 3 End-of-Year Section B Q6(a)