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SUPERVISOR'S USE ONLY

Level 1 Chemistry, 2018

90934 Demonstrate understanding of aspects of chemical reactions

2.00 p.m. Thursday 15 November 2018
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of aspects of chemical reactions.	Demonstrate in-depth understanding of aspects of chemical reactions.	Demonstrate comprehensive understanding of aspects of chemical reactions.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

A periodic table and other reference material are provided in the Resource Booklet L1–CHEMR.

If you need more room for any answer, use the extra space provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–11 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL

ASSESSOR'S USE ONLY

QUESTION ONE

You may use the solubility rules provided in the resource booklet.

Magnesium chloride solution and sodium hydroxide solution react to form a precipitate.

- (a) (i) Complete and balance the following ionic equation showing the formation of the precipitate.



- (ii) What would be observed during this reaction?

Link the observations to the species involved.

- (b) Three unlabelled solutions, A, B, and C, are known to be lead nitrate, magnesium nitrate, and barium nitrate.

- (i) Complete the following table by giving the expected observations and the formulae of any precipitates formed when solutions of sodium iodide, sodium sulfate, and sodium carbonate are added to A, B, and C.

You may use the colours of selected ions and solids provided in the resource booklet.

Unknown solution		Sodium iodide	Sodium sulfate	Sodium carbonate
Lead nitrate	Expected observations:			
	Formula of precipitate:			
Magnesium nitrate	Expected observations:			
	Formula of precipitate:			

Barium nitrate	Expected observations:			
	Formula of precipitate:			

- (ii) Solutions of sodium iodide, sodium sulfate, and sodium carbonate available for use to determine the identity of A, B, and C.

Explain how A, B, and C could be identified using the available solutions.

In your answer, you should:

- describe a method that could be used to identify each of A, B, and C
- give the balanced ionic equation(s) for any precipitates formed with sodium sulfate.

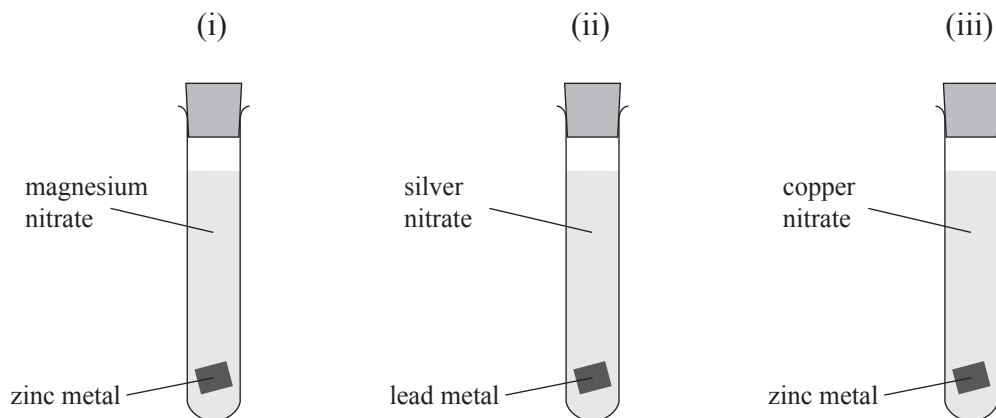
Description of method: _____

Balanced ionic equation(s) for any precipitates formed with sodium sulfate:

QUESTION TWO

You may use the activity series provided in the resource booklet.

Small pieces of cleaned metal were added to solutions containing metal ions, as shown below. The test tubes were left for three days.



- (a) After three days, changes had occurred in two of the test tubes, but in one test tube, there was no indication that a reaction had occurred.

Identify the test tube where no reaction had occurred, by circling your choice below.

(i)

(ii)

(iii)

Explain why no reaction had occurred.

- (b) The colour of the **solution** in one of the test tubes had changed at the end of the three days.

Identify the test tube where the solution changed colour, by circling your choice below.

(i)

(ii)

(iii)

Explain why the colour of the **solution** changed, by linking the colour changes to the species involved.

No equations are required.

QUESTION THREE

(a) Some chemical reactions are listed in the table below:

Reaction 1	Some manganese dioxide is added to hydrogen peroxide in a test-tube.
Reaction 2	A sample of barium hydroxide is heated in a boiling tube.
Reaction 3	A sample of sodium hydrogen carbonate is heated in a boiling tube.

(i) What type of chemical reactions are these?

(ii) Explain your answer, with reference to **Reaction 2**.

(iii) What would be observed during **Reaction 1**?

Link the observations to the species involved.

(iv) Write a word and a balanced symbol equation for **Reaction 3**.

Word equation:

Balanced symbol equation:

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