90934

909340

1

SUPERVISOR'S USE ONLY

NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Level 1 Chemistry, 2015

90934 Demonstrate understanding of aspects of chemical reactions

9.30 a.m. Tuesday 24 November 2015
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.

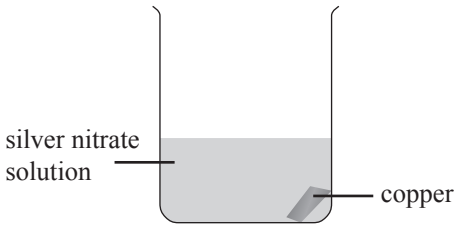
TOTAL

ASSESSOR'S USE ONLY

QUESTION ONE

ASSESSOR'S USE ONLY

(a) A piece of copper was added to a solution of silver nitrate in a beaker, and left for one day.



(i) Identify the type of reaction occurring in the beaker.

(ii) Describe the observations occurring, and link them to the reactants and products involved.

(iii) Write a balanced ionic equation for the reaction occurring in the beaker.

(b) A strip of silver-grey metal is known to be either **silver** or **magnesium**.

ASSESSOR'S USE ONLY

Explain how the identity of the metal could be determined by adding **copper sulfate** solution to the strip of metal, and leaving it for one day.

In your answer, you should:

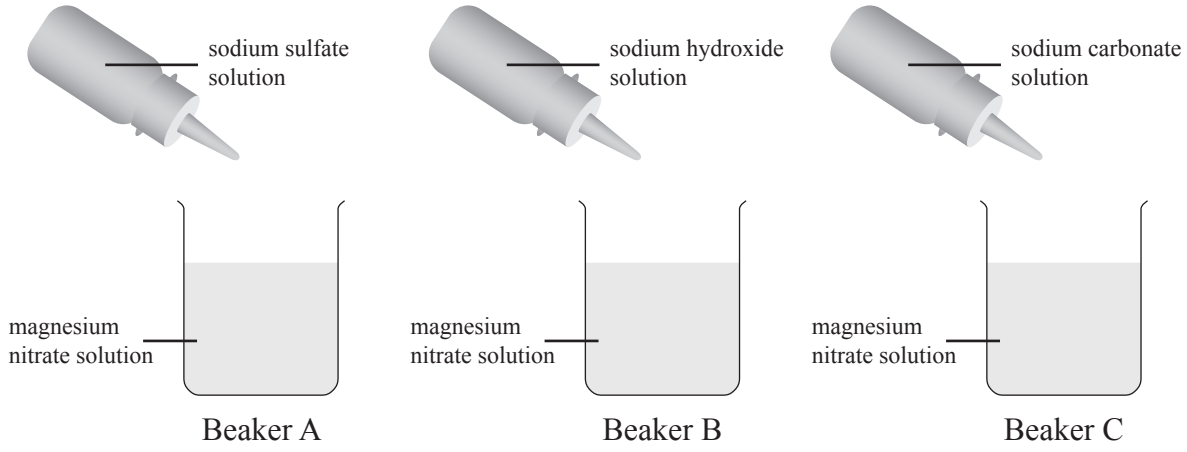
- give any observations you would expect to see if the metal is:
  - silver, and
  - magnesium,

  and link them to the relevant species present
- explain why a chemical reaction may or may not occur, depending on whether the metal is silver or magnesium.

QUESTION TWO

ASSESSOR'S USE ONLY

(a) Three different solutions were added to separate beakers containing a solution of magnesium nitrate. Only two of the mixtures produced precipitates.



Complete the table below by identifying:

- whether a precipitate forms
- the name of any precipitate that may have formed in the beakers.

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

	Precipitate forms? Yes / No	**Name of precipitate**
Beaker A		
Beaker B		
Beaker C		

(b) (i) Iron(II) sulfate solution and sodium hydroxide solution react to form a precipitate.

Complete the following ionic equation to show the formation of the precipitate.

$Fe^{2+} \quad + \quad OH^- \rightarrow$

ASSESSOR'S USE ONLY

(ii) Elaborate on the reaction occurring in (b)(i).

In your answer, you should:

- explain why the reaction is classified as a precipitation reaction by referring to the ions in both solutions and the precipitate formed
- describe any observations that would be seen, and link them to the reactants and products involved.

(c) A sample of water is required to be tested for the presence of calcium ions and silver ions. It is known that the sample of water does not contain any other positive ions / cations.

ASSESSOR'S USE ONLY

Explain how the sample of water could be tested to show whether or not it contains calcium ions, or silver ions, or both.

In your answer, you should:

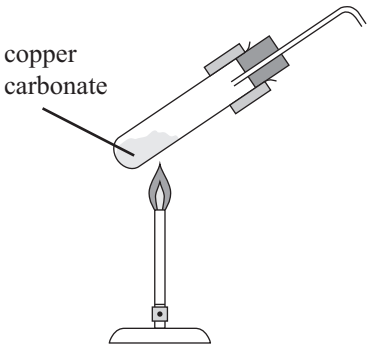
- write a method that could be carried out in a school laboratory
- name any chemicals you would use
- identify any precipitates formed and link these to any observations that would be made
- explain how the results are used to determine which ions are present or absent.

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

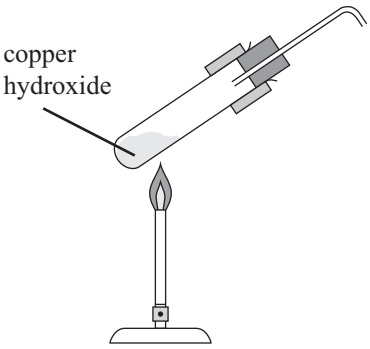
QUESTION THREE

ASSESSOR'S USE ONLY

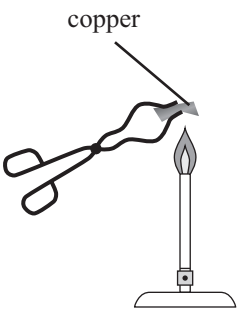
A student made samples of copper oxide using three different methods in a school laboratory.



Reaction 1



Reaction 2



Reaction 3

(a) (i) Identify the type of reaction occurring in each experiment.

Reaction 1: _____

Reaction 2: _____

Reaction 3: _____

(ii) Describe any observations that would be made during each experiment, and link them to the reactants and products involved.

Reaction 1: _____

Reaction 2: _____

Reaction 3: _____

ASSESSOR'S USE ONLY

(b) Explain how the student could identify ONE of the products for each of reactions 1 and 2.

Reaction 1: _____

_____

Reaction 2: _____

_____

(c) Compare and contrast the three reactions in part (a) on the previous page.

In your answer, you should:

- write word and balanced symbol equations for all three reactions in the boxes provided below
- explain what is occurring during each of the different reactions
- where relevant, explain the reaction(s) in terms of electron transfer.

Reaction 1

Word equation:

Balanced symbol equation:

Reaction 2

Word equation:

Balanced symbol equation:

Reaction 3

Word equation:

Balanced symbol equation:

ASSESSOR'S USE ONLY

Extra paper if required.
Write the question number(s) if applicable.

QUESTION NUMBER

ASSESSOR'S USE ONLY

Extra paper if required.
Write the question number(s) if applicable.

QUESTION NUMBER

ASSESSOR'S USE ONLY

90934