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NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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SUPERVISOR'S USE ONLY

Level 1 Chemistry, 2011

90934 Demonstrate understanding of aspects of chemical reactions

9.30 am Tuesday 22 November 2011
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.

Check that this booklet has pages 2–7 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

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You are advised to spend 60 minutes answering the questions in this booklet.

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QUESTION ONE: PRECIPITATION

A chemical reaction occurs when a solution of calcium nitrate is added to a solution of sodium hydroxide.

Analyse this reaction by:

- describing any observations that would be made
- identifying the products
- explaining what happens to EACH ion that is present in these two solutions
- writing a balanced symbol equation for this reaction. (Spectator ions may be omitted.)

Balanced symbol equation

QUESTION TWO: DISPLACEMENT REACTION

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A piece of copper wire placed in a solution of silver nitrate undergoes a displacement reaction.

Give a detailed account of this reaction. You may refer to the Activity series in the Resource Booklet.
In your answer you should:

- describe any observations that would be made
- link these observations to the chemical species involved
- explain why the displacement reaction occurs
- write a balanced **ionic** equation for this reaction.

Balanced ionic equation

QUESTION THREE: DECOMPOSITION

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Students in a laboratory are asked to identify three powders by using a thermal decomposition reaction.

The powders are copper hydroxide, $Cu(OH)_2$, sodium carbonate, Na_2CO_3, and sodium hydrogen carbonate, $NaHCO_3$.

Explain how you could identify each of these powders by heating them.

Your answer should include:

- any observations that would be made
- any tests that would be carried out on products formed to confirm their presence
- balanced symbol equations for any reactions occurring.

Balanced symbol equations

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QUESTION FOUR: COMBINATION REACTIONS

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Different elements can be reacted together to form compounds with properties that are different to the original elements.

The reaction of iron and sulfur to form iron(II) sulfide is an example of a combination reaction where all species (reactants and products) have different properties.

Give a detailed account of this combination reaction.

In your answer you should:

- state the conditions required for this reaction to occur
- describe any observations that would be made
- outline the physical and chemical properties of EACH of the species
- explain why the properties of the reactants differ from those of the products
- write a balanced symbol equation for the reaction.

Balanced symbol equation

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

QUESTION NUMBER

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