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90933M



909335



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

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Te Mātauranga Matū, Kaupae 1, 2016

90933M Te whakaatu māramatanga ki ngā āhuatanga o ētahi pūmotu

2.00 i te ahiahi Rāhina 21 Whiringa-ā-rangi 2016
Whiwhinga: Whā

| Paetae | Kaiaka | Kairangi |
|--|---|---|
| Te whakaatu māramatanga ki ngā āhuatanga o ētahi pūmotu. | Te whakaatu māramatanga hōhonu ki ngā āhuatanga o ētahi pūmotu. | Te whakaatu māramatanga matawhānui ki ngā āhuatanga o ētahi pūmotu. |

Tirohia mēnā e rite ana te Tau Ākonga ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi.

Me whakamātau koe i ngā tūmahi KATOA kei roto i tēnei pukapuka.

He taka pūmotu me ētahi atu rauemi tautoko kei te Pukapuka Rauemi L1-CHEMMR.

Mēnā ka hiahia whārangi atu anō koe mō ō tuinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i te tau tūmahi.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–17 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

ME HOATU RAWA KOE I TĒNEI PUKAPUKA KI TE KAIWHAKAHAERE Ā TE MUTUNGA O TE WHAKAMĀTAUTAU.

TAPEKE

MĀ TE KAIMĀKA ANAKE

TŪMAHI TUATAHI

(a) (i) Tuhia kia RUA ngā āhuatanga ōkiko mō tēnā me tēnā o ngā pūmotu konupora me te hauota.

(ii) Whakamāramahia he pēhea te rerekē o te hanganga o ngā katote konupora ki te hanganga o ngā katote hauota, ka tūhono ai i tēnei ki ngā pūwāhi o te konupora me te hauota i te taka pūmotu.

QUESTION ONE

- (a) (i) Give TWO physical properties each for the elements magnesium and nitrogen.

- (ii) Explain how the formation of magnesium ions differs from the formation of nitrogen ions, and link this to the positions of magnesium and nitrogen on the periodic table.

(b) He aha ngā ōritetanga me ngā rerekētanga e whakaatuhia ana e ngā pūmotu o te **rōpū** kotahi o te taka pūmotu, e pā ana ki:

- ngā tauhohenga e whai wāhi ai aua pūmotu?
- te kaha o te tauhohenga?

Whakamahia ngā pūmotu Li, Na, F, me te Cl hei whakatauirā, hei whakamārama hoki i tō whakautu.

I tō whakautu, me whakauru mai e koe ngā hononga ki ngā whakanahatanga irahiko o ēnei pūmotu.

Kāore e hiahiatia ana ngā whārite matū.



- (b) What similarities and differences do elements in the same **group** of the periodic table show, in:
- the reactions they take part in?
 - their reactivity?

Use the elements Li, Na, F, and Cl to illustrate and explain your answer.

In your answer, you should include links to the electron arrangements of these elements.

No chemical equations are needed.



TŪMAHI TUARUA

He konganuku tino whaitake te rino nā te mea he pai ōna āhuatanga ōkiko mō ngā anga motoka, te hanganga, ngā tuanui hoki. I te nuinga o te wā ka whakaranua te rino me te waro hei mahi maitai.

- (a) (i) Whakaahuahia he aha i whaitake ake ai te whakaranu i te rino me te waro hei mahi matai, me te kōrero anō hoki mō ngā āhuatanga ōkiko me te matū e hāngai ana o te maitai.

- (ii) Mō te tauhohenga o te rino ki te hāora:

- whakaotihia te whārite kupu kei te pouaka i raro
- tuhia te whārite tohu taurite kei te pouaka i raro.

Whārite kupu:

rino + hāora →

Whārite tohu taurite:

QUESTION TWO

Iron is a very useful metal because its physical properties make it suitable for uses such as car bodies, framing, and roofs. Iron is often alloyed (combined) with carbon to form steel.

- (a) (i) Describe why alloying iron with carbon to form steel makes it more useful, with reference to the relevant physical and chemical properties of steel.

- (ii) For the reaction of iron with oxygen:

- complete the word equation in the box below
- give the balanced symbol equation in the box below.

Word equation:

iron + oxygen →

Balanced symbol equation:

TŪMAHI TUATORU

He hira ngā pūmotu pūngāwhā, S_8 , me te taimana, C, i roto i ngā tukanga ahumahi maha.

<http://www.pbase.com/merlotadl/image/55921128>

<http://www.safarinsouthafrica.com/day-safaris/diamonds-tour.html>

- (a) Tuhia kia RUA ngā āhuatanga e rerekē ana ngā pūmotu e rua e ai ki ō rāua āhuatanga ōkiko.

- (b) He maha ngā āhuatanga rerekē o te waro, e kīia ana he āhuatini, e tāea ai te whakamahi mō ngā āhuatanga rerekē maha. Ko ētahi tikanga noa e rua mō te whakamahi i ngā tiniāhua waro ko ngā:

- mata koikoi o ngā pene rākau
- waea tino iti i roto i ngā ara iahiko.

Whakaotihia te tūtohi i raro mā te whakaingoa i te āhuatini o te waro tērā tonu pea ka tino whakamahia mō ia whakamahitanga i runga ake.

Whakamāramahia mai tō kōwhiringa mā te hono i ngā whakamahitanga ki ngā āhuatanga o ia āhuatini.

| Whakamahitanga | Āhuatini waro |
|---|---------------|
| ngā mata koikoi o ngā pene rākau | |
| ngā waea tino iti i roto i ngā ara iahiko | |

QUESTION THREE

The elements sulfur, S₈, and diamond, C, are both important in many manufacturing processes.

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<http://www.pbase.com/merlotadl/image/55921128>

<http://www.safarinsouthafrica.com/day-safaris/diamonds-tour.html>

- (a) Give TWO ways that the two elements are different in their physical properties.

- (b) Carbon exists in different forms, called allotropes, which allow it to be used for a wide variety of uses. Two common uses for carbon allotropes are:

- pencil tips
- miniature wires in electrical circuits.

Complete the table below by naming the allotrope of carbon that is most likely to be used for each of the uses given above.

Explain your choice by linking the uses to the properties of each allotrope.

| Use | Carbon allotrope |
|--|------------------|
| pencil tips | |
| miniature wires in electrical circuits | |

Whakamāramatanga

Ngā mata koikoi o ngā pene rākau: _____

Ngā waea tino iti: _____

**Ka haere tonu te Tūmahi
Tuatoru i te whārangi 14.**

Explanation

Pencil tips: _____

Miniature wires: _____

ASSESSOR'S
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on page 15.**

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

QUESTION
NUMBER

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English translation of the wording on the front cover

Level 1 Chemistry, 2016

90933 Demonstrate understanding of aspects of selected elements

2.00 p.m. Monday 21 November 2016
Credits: Four

90933M

| Achievement | Achievement with Merit | Achievement with Excellence |
|--|---|--|
| Demonstrate understanding of aspects of selected elements. | Demonstrate in-depth understanding of aspects of selected elements. | Demonstrate comprehensive understanding of aspects of selected elements. |

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–CHEMMR.

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 2–17 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.