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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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SUPERVISOR'S USE ONLY

Level 1 Chemistry, 2014

90933 Demonstrate understanding of aspects of selected elements

9.30 am Wednesday 19 November 2014
Credits: Four

| 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-CHEMR.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–10 in the correct order and that none of these pages is blank.

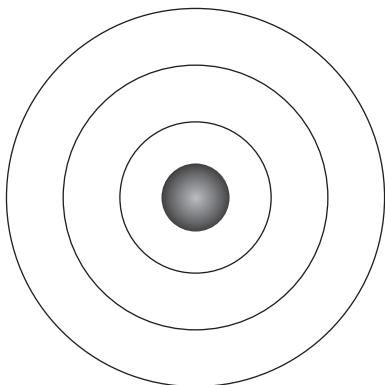
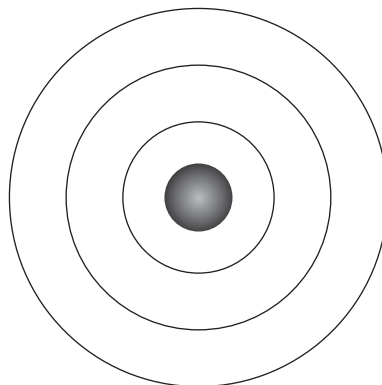
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL

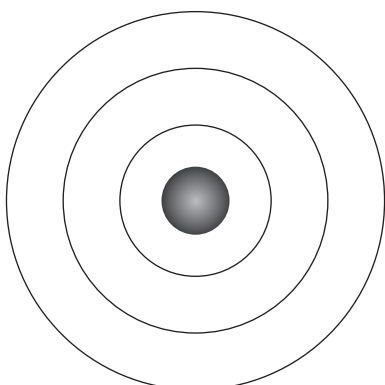
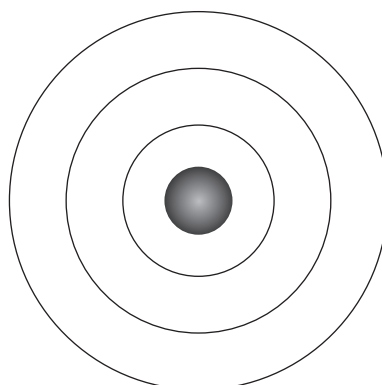
ASSESSOR'S USE ONLY

QUESTION ONE: PERIODIC TRENDS

- (a) Draw the electron arrangement for the atoms magnesium and chlorine on the diagrams below. You may refer to the periodic table in the Resource Booklet.

Magnesium**Chlorine**

- (b) Draw the electron arrangement for the magnesium and chloride ions on the diagrams below.

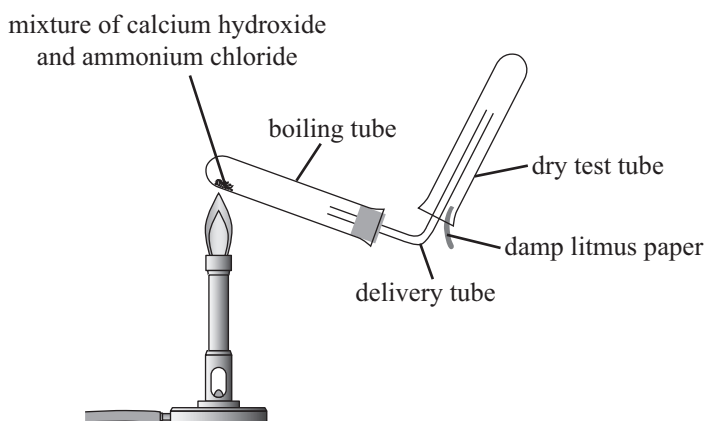
Magnesium ion**Chloride ion**

- (c) Explain how magnesium and chlorine atoms react to form ions using the electron arrangements you have drawn above.

Relate your answers to the positions of the atoms on the periodic table of elements.

QUESTION THREE: AMMONIA

Ammonia can be prepared in a school laboratory in the following manner.



For the following questions, refer to the chemical and physical properties of ammonia in your answers.

- (a) Explain the reason for the way ammonia gas is collected in the test tube, as shown above.

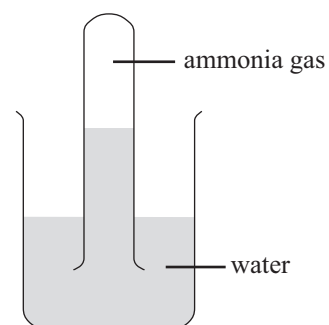
- (b) Write a balanced symbol equation for the formation of ammonia gas in the reaction shown in the diagram at the top of this page.

- (c) Damp litmus paper changes colour in ammonia gas.

- (i) Describe the colour change in the damp litmus paper.

- (ii) Explain why the litmus paper has to be damp.

- (d) When a test tube of ammonia gas is placed upside down in a beaker of water, the water will rise up into the test tube, as shown in the diagram.



- (i) Explain why the water will move up into the test tube.

- (ii) When the water moves up into the test tube, the nature of the solution changes as a chemical reaction takes place.

Justify, with a balanced symbol equation, how the nature of the solution has changed.

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