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90173

NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Chemistry, 2007

90173 Describe selected non-metals and their compounds

Credits: Four
9.30 am Monday 19 November 2007

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 answer ALL the questions in this booklet.

A metal activity series, solubility rules, a table of ions and a periodic table are provided in 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 2–7 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.

For Assessor's use only	**Achievement Criteria**	
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Describe the properties, preparations and reactions of selected non-metals and their compounds.	Link the properties, reactions and uses of selected non-metals and their compounds.	Apply an understanding of the properties, reactions and uses of selected non-metals and their compounds.
Overall Level of Performance		

You are advised to spend 40 minutes answering the questions in this booklet.

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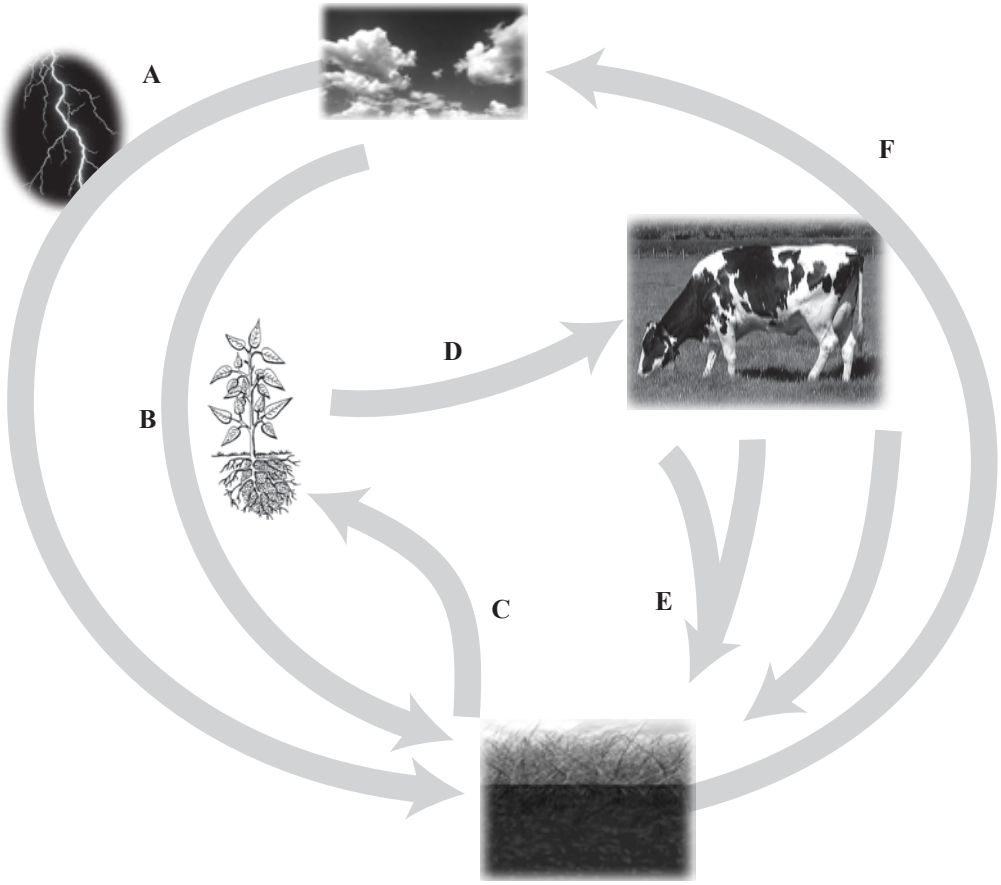
QUESTION ONE: NITROGEN

(a) Nitrogen is an element that is constantly being recycled.



Describe the processes that are represented by each of the arrows labelled A to F in the diagram above. Three of these have been completed for you.

A =
B = Nitrogen-fixing bacteria in root nodules of legumes convert nitrogen from the air to nitrates.
C = Nitrates are absorbed from the soil by plant roots.
D =
E = Decay of wastes, dead plants and animals by micro-organisms.
F =

Nitrogen oxides can be dangerous pollutants in the atmosphere.

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(b) Discuss why nitrogen oxides can be dangerous as pollutants in the air because of their impact on people AND the environment.

(c) Write a balanced equation to show the reaction of nitrogen dioxide, NO_2, with water, H_2O.

QUESTION TWO: CHLORINE

Assessor's use only

Chlorine is used commercially to prepare sodium hypochlorite.

(a) Write a word equation that shows how chlorine is used to make sodium hypochlorite.

(b) Discuss why sodium hypochlorite is effective as a household bleach **and** disinfectant.

QUESTION THREE: SULFUR

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(a) Describe TWO physical properties of sulfur.

(b) Sulfur can exist as different allotropes.

Name two of these allotropes.

(c) Write a balanced equation for the reaction that occurs when sulfur burns in air to form sulfur dioxide.

(d) Sulfur dioxide is sometimes used as a preservative in dried fruits such as apricots.

Discuss why sulfur dioxide is suitable to use as a preservative.

QUESTION FOUR: SUPERPHOSPHATE

Assessor's use only

(a) State why superphosphate is used on soils in New Zealand.

(b) Name the chemicals that make up superphosphate.

Superphosphate is made from rock phosphate, $Ca_3(PO_4)_2$.

(c) Explain why rock phosphate cannot be used as a fertiliser, but superphosphate can.

(d) Write a balanced equation to show the formation of superphosphate from rock phosphate.

Extra paper for continuation of answers if required.
Clearly number the question.

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Question number	

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