For Supervisor's use only

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90648

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 1 Chemistry, 2006

90648 Describe properties and reactions of carbon and its compounds

Credits: Three
9.30 am Monday 27 November 2006

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.

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 properties and reactions of carbon and its compounds.	Link properties and reactions of carbon and its compounds.	Apply an understanding of properties and reactions of carbon and its compounds.
Overall Level of Performance		

You are advised to spend 30 minutes answering the questions in this booklet.

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QUESTION ONE: ALLOTROPES

Carbon has several different forms called allotropes.

(a) Define the term allotrope.

_____

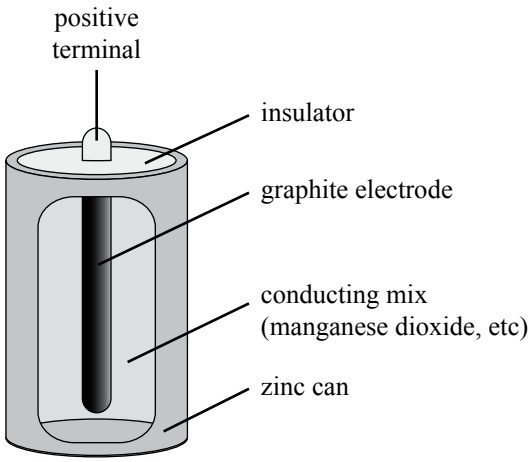
_____

(b) (i) Graphite is one allotrope of carbon.

Name TWO others.

(1) _____ (2) _____

(ii) Discuss why graphite can be used as an electrode in dry cells.
It may be useful to include a diagram showing the structure of graphite.



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QUESTION TWO: A CHEMICAL REACTION

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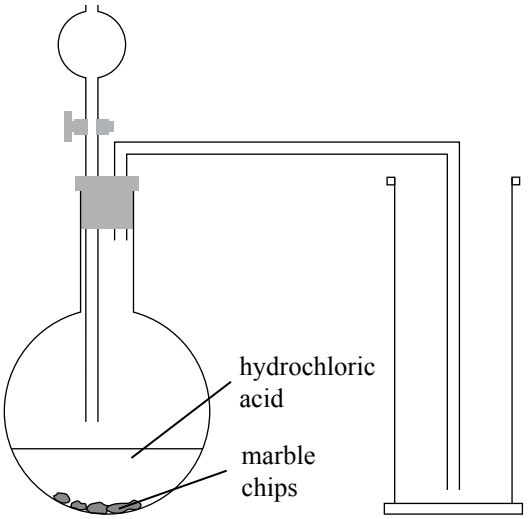
An experiment was carried out with marble chips (calcium carbonate) and hydrochloric acid.

(a) Name the gas produced during this experiment.

_____

The diagram below shows how the gas produced could be collected.



(b) Explain why this is a useful way to collect this gas.
Refer to a relevant property of this gas in your answer.

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(c) Write a balanced equation for the reaction between calcium carbonate and hydrochloric acid.

QUESTION THREE: CARBON DIOXIDE

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When carbon dioxide is dissolved in water, it forms an acidic solution.

Discuss the reaction that occurs between carbon dioxide and water. Include an appropriate balanced equation with your answer.

QUESTION FOUR: ORGANIC STRUCTURES

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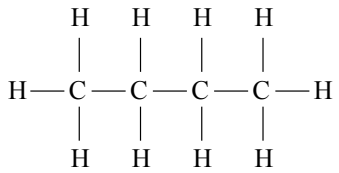
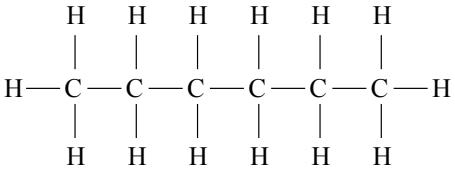
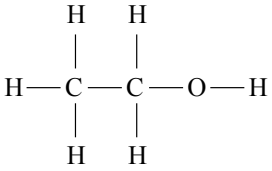
(a) Complete the table below, by writing the structural formula or the name of the compound as required.

Structural formula	Name
	
	
	
	propene
	pentane
	ethanoic acid

(b) (i) Name TWO uses for ethanoic acid.

(1) _____

(2) _____

(ii) State what type of reaction occurs when ethanoic acid is made from ethanol.

_____

QUESTION FIVE: FUELS

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(a) State TWO reasons why organic compounds such as butane are used as fuels.

(1) _____

(2) _____

(b) Write a balanced equation for the complete combustion of butane.

(c) Explain the difference between complete and incomplete combustion of fuels.

_____

_____

_____

_____

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

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Question number	