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90190

NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Science, 2007

90190 Describe aspects of geology

Credits: Three
9.30 am Wednesday 28 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.

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.

For Assessor's use only	**Achievement Criteria**			
Achievement		**Achievement with Merit**		**Achievement with Excellence**	
Describe aspects of geology.		Explain aspects of geology.		Discuss aspects of geology.	
Overall Level of Performance					

You are advised to spend 25 minutes answering the questions in this booklet.

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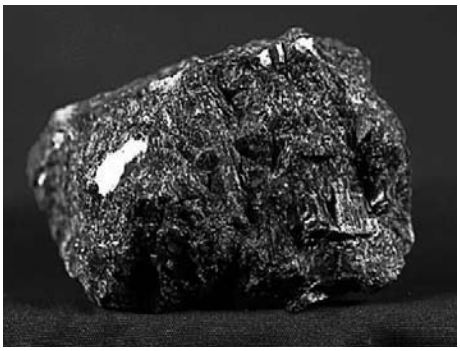
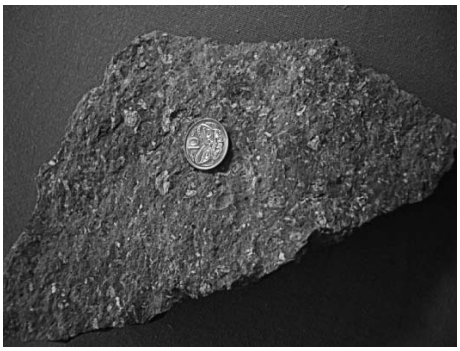
QUESTION ONE: IGNEOUS ROCKS

(a) Describe the geological meaning of the term **igneous**.

(b) The photographs below show two similarly-sized igneous rocks – gabbro and andesite.



Gabbro



Andesite

Discuss how differences in the **formation** of gabbro and andesite lead to their different appearance.

(c) Igneous rocks are often classified on the amount of silica they contain. What is silica?

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(d) Explain why basalt is dark in colour.

QUESTION TWO: SEDIMENTARY ROCKS

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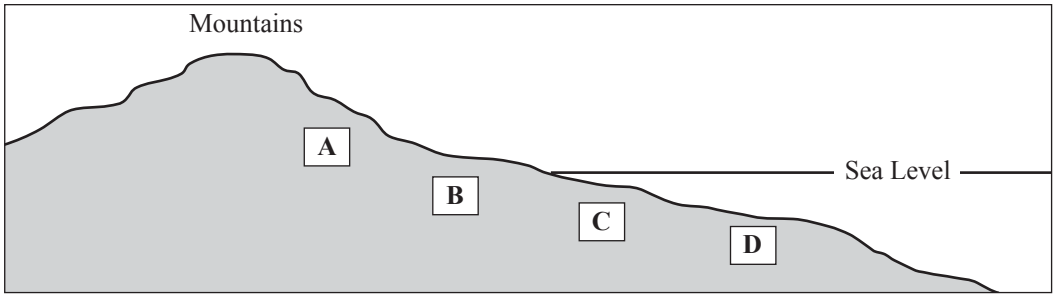
The table and diagram below indicate typical environments in which some common **sedimentary rocks** can be formed.

Rock Type	Environment Location
Sandstone	**C**
Mudstone	**D**
Conglomerate	**A** and **B**

A = Mountain **B** = River plain **C** = Shallow sea floor **D** = Deep sea floor



(a) Describe what **sediment** is.

(b) Explain what the processes of 'erosion and transport' do in the formation of a sedimentary rock.

(c) Discuss **why** mudstone often forms on the deeper sea floor rather than on river plains. You should consider factors such as energy and particle size.

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(d) **Coal** is made from ancient plant material.

Discuss the geological processes involved in the formation of coal.

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QUESTION THREE: METAMORPHIC ROCKS

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(a) Metamorphism is the process of forming metamorphic rocks.

(i) Name two physical factors required for metamorphism to occur.

(ii) Explain how a sedimentary rock can be changed into a metamorphic rock.

(b) Marble is classified as a metamorphic rock. Explain, with reference to the parent rock, why this statement is true.

QUESTION FOUR: STRATIGRAPHIC COLUMNS

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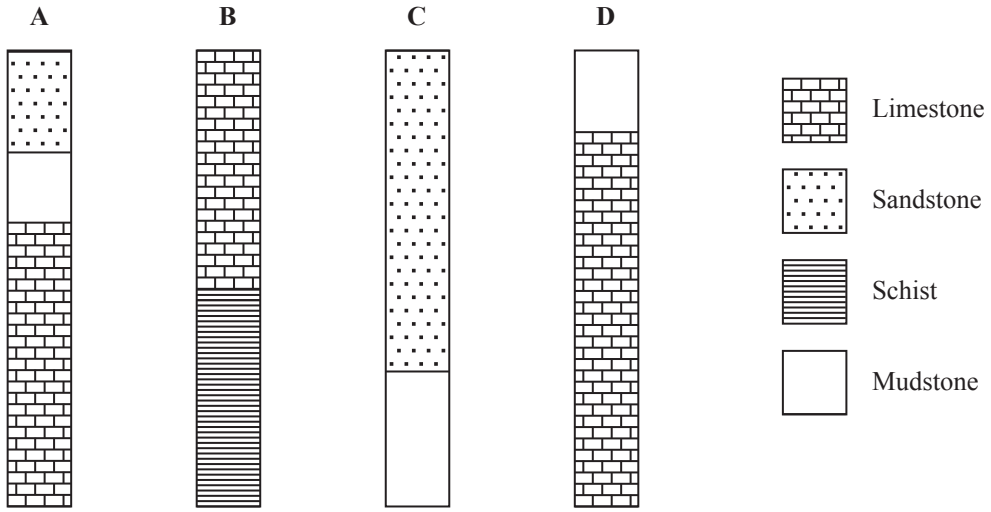
(a) The following diagram shows a set of rock layers found in drill holes (A – D) from different locations.



In the spaces provided below, **name the rock layers in order of age**, from oldest to youngest.

1 _____ 2 _____ 3 _____ 4 _____

Oldest ⟶ Youngest

(b) Discuss **the possible geological events** that could account for the order of the rock layers you have given for question (a). Geological events might include burial, metamorphism, uplift and deposition.

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(c) Explain how fossils can be used for the relative dating of rocks.

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

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Question number	