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90190

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Level 1 Science, 2004

90190 Describe aspects of geology

Credits: Three
2.00 pm Wednesday 17 November 2004

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 provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–8 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.

Achievement Criteria	*For Assessor's use only*	
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 30 minutes answering the questions in this booklet.

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QUESTION ONE

(a) Rocks are classified as igneous, metamorphic or sedimentary, based on characteristic features caused by the formation of the rock. Classify each of the rocks described below as igneous, metamorphic or sedimentary. Each class may be used more than once.

Rock description	Rock class
(i) A black glassy rock.	(i)
(ii) A flaky rock showing compacted layers of particles cemented together.	(ii)
(iii) A pale bubbly rock that is rich in silica.	(iii)
(iv) A dark rock with layers of distinct mineral crystals.	(iv)

(b) Basalt and granite are both igneous rocks but they are formed differently and have different sized crystals.

(i) Describe how the crystal size differs between the igneous rocks, basalt and granite.

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(ii) Explain how the formation of granite and basalt results in the different crystal sizes that you have described in (i) above.

QUESTION TWO

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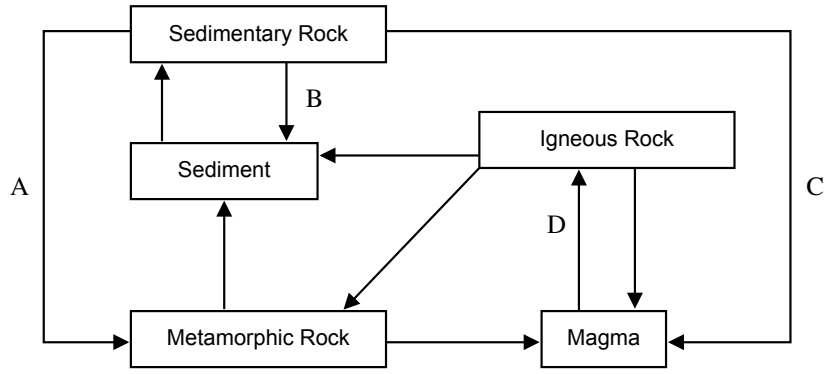
The following is an incomplete diagram of **The Rock Cycle.**



(a) State the **geological processes** that occur at arrows A, B, C and D. Choose from this list: *erosion, melting, metamorphism, solidifying.* Each process may be used only once.

A _____ B _____

C _____ D _____

(b) Explain how an igneous rock such as **granite** is changed into a sedimentary rock such as a **conglomerate**.

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(c) What rock **class** does **marble** belong to?

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(d) Discuss **all** of the geological processes that lead to the formation of **marble.**

QUESTION THREE

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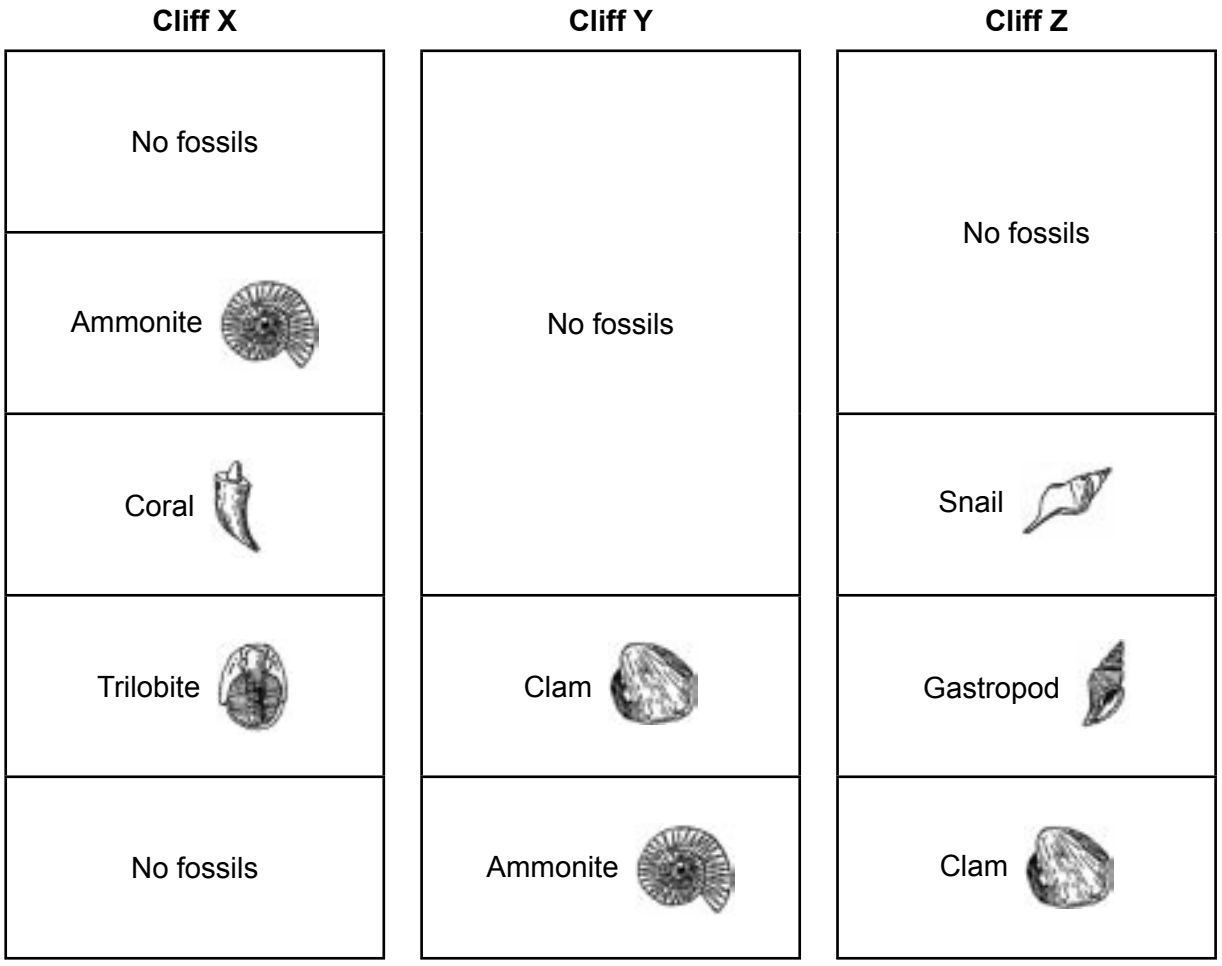
The following diagram shows the fossils found in the rock layers in three cliff faces, X, Y and Z. These cliff faces are found in three different localities and separated by many kilometres.



(a) List the fossils in the correct age sequence from oldest to youngest.

Oldest 1 _____ 2 _____ 3 _____

4 _____ 5 _____ 6 _____
Youngest

(b) Give a **geological reason** why no fossils are found in the layer above the clams in Cliff Y.

_____

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QUESTION FOUR

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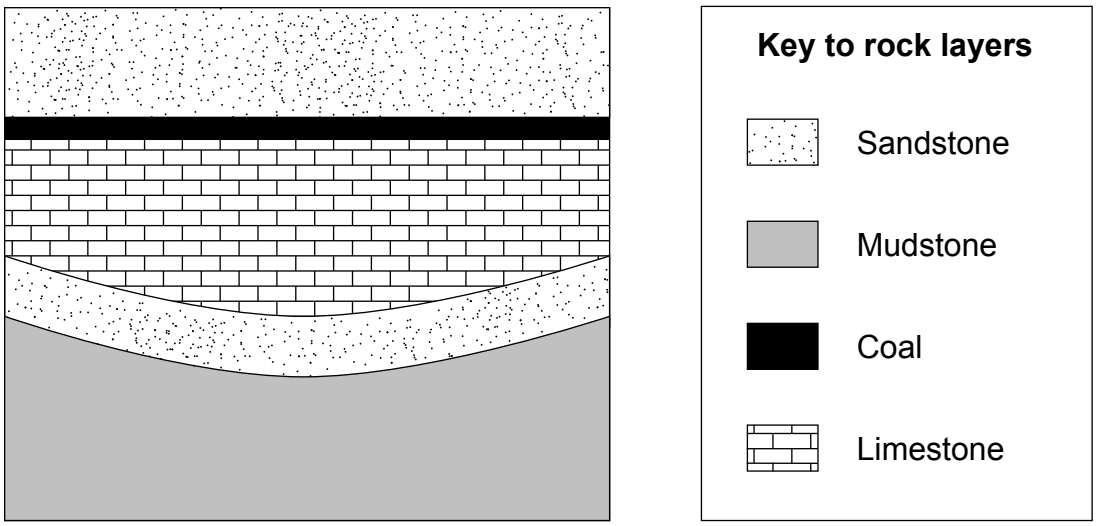
The diagram below shows a stratigraphic column. The layers are the correct way up.



(a) **Name** the oldest rock layer.

_____

(b) Give a **reason** for identifying this rock layer as the oldest.

_____

_____

_____

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_____

_____

(c) Write a geological history that discusses the **processes** and **order of events** that could have formed the pattern of rock strata as shown in the diagram on page 6.

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The following key words may help you.

Sediment Deposition Plate tectonics Sea level Fossils Climate Rock formation

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

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Question number