

**ADVANCED GCE
 GEOLOGY**

Geological Skills

FRIDAY 13 JUNE 2008

2836/01

Morning

Time: 1 hour 15 minutes

Candidates answer on the question paper.

Additional materials (enclosed): Insert

Additional materials (required): Protractor
 Ruler (cm/mm)



Candidate Forename

Candidate Surname

Centre Number

Candidate Number

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided.

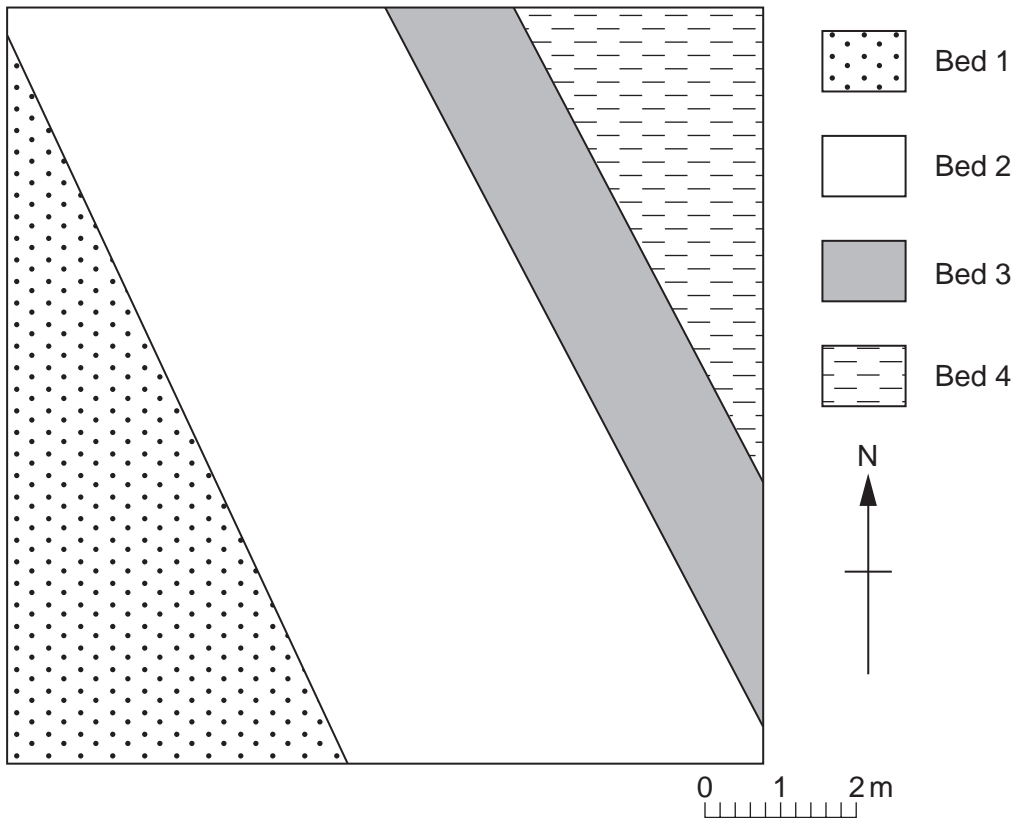
INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- You will be awarded marks for the quality of written communication where this is indicated in the question.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	16	
2	14	
3	13	
4	9	
5	8	
TOTAL	60	

This document consists of **10** printed pages, **2** blank pages and an insert.

2 The map below shows a series of beds dipping NE at 23°. The area shown is 10×10 m².



(a) On the map above

- draw a discordant igneous intrusion that is 2600mm wide and trends west - east
- draw and label chilled margins that are 200mm wide
- draw a dip arrow and label the youngest bed.

[3]

(b) (i) Describe how you would identify a chilled margin.

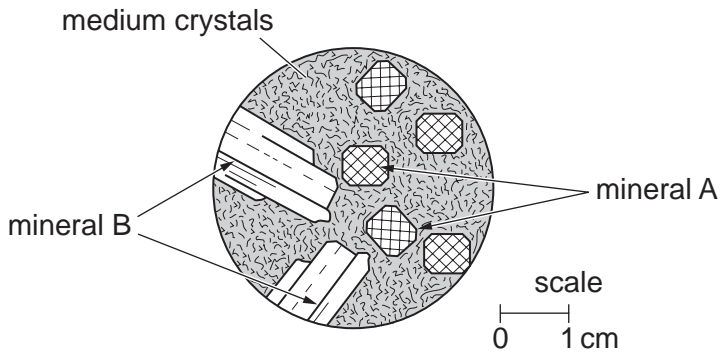
.....
[1]

(ii) The central part of the intrusion has jointing which forms hexagonal shapes. Describe how these joints formed.

.....

[2]

(c) The intrusion is composed of an igneous rock with a medium crystal grain size, shown in the thin section diagram below.



mineral A characteristics	mineral B characteristics
black crystals	white crystals
2 sets of cleavage at 90°	multiple twinning
hardness 6	hardness 6

(i) Identify the two minerals **A** and **B**.

A **B** [2]

(ii) Identify the texture shown in the thin section diagram above.

..... [1]

(iii) Explain how this texture formed.

.....

 [2]

(d) **Fig. 1** on the insert shows another igneous texture.

(i) Name the texture.

..... [1]

(ii) Explain how this texture formed.

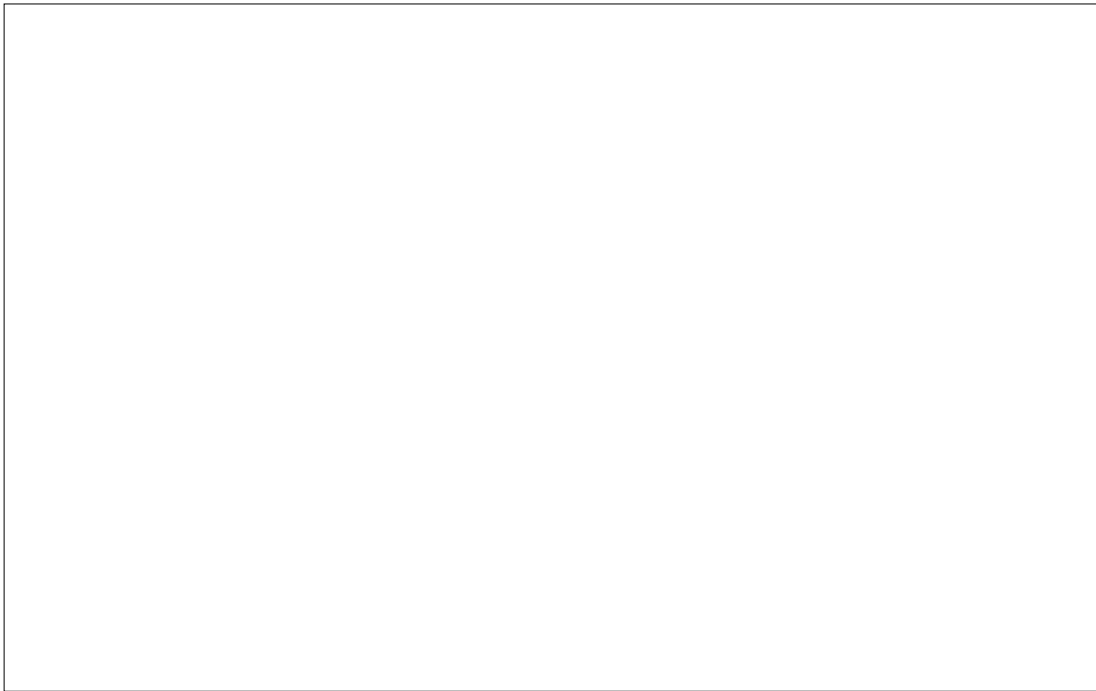
.....

 [2]

[Total: 14]

4 The photograph **Fig. 2** on the insert shows several geological features on part of a cliff face.

(a) Draw a **fully labelled** sketch with appropriate dip measurements to show the geological features on the photograph.



[4]

(b) The photograph **Fig 3** on the insert shows a small area of rock found along **Fault Z** on the map in Question 1. Identify the rock and explain how it is formed.

rock

explanation

.....

.....

.....[3]

(c) Suggest how the white mineral shown on **Fig. 3** could be identified.

.....

.....

.....

.....[2]

[Total: 9]

5 Fragments of fossils **C**, **D** and **E** were collected from a single locality.

(a) (i) Identify the three fossils described below.

fossil	description	fossil name
C	<ul style="list-style-type: none"> • shells with two valves of different sizes • long, straight hinge line between the two valves • thin ribs 	
D	<ul style="list-style-type: none"> • hexagonal corallites • major and minor septa • dissepiments 	
E	<ul style="list-style-type: none"> • round ossicles, some single and some joined together • calcite plates from calyx 	

[3]

(ii) Identify the rock type in which these fossils were found.

.....[1]

(iii) Describe the likely environment in which this assemblage of fossils lived.

.....

[2]

(b) A fossil goniatite was found in a rock of the same age. Describe, with the aid of a sketch, a goniatite.

.....

[2]

[Total: 8]

10
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11
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