

**ADVANCED SUBSIDIARY GCE
GEOLOGY**

Global Tectonics and Geological Structures

WEDNESDAY 21 MAY 2008

2831

Afternoon
Time: 1 hour

Candidates answer on the question paper
Additional materials (enclosed): None

Additional materials (required):
Electronic calculator
Ruler (cm/mm)



Candidate
Forename

Candidate
Surname

Centre
Number

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Candidate
Number

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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

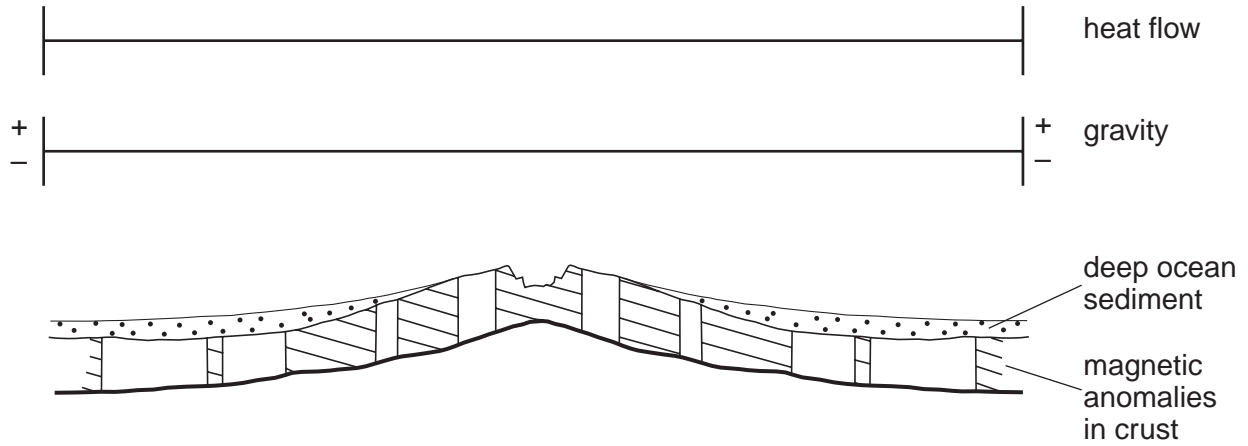
- The number of marks for each question is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- You will be awarded marks for the quality of written communication where this is indicated in the question.
- You may use an electronic calculator.
- You are advised to show all the steps in any calculations.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	20	
2	16	
3	14	
4	10	
TOTAL	60	

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

Answer **all** the questions.

- 1 The diagram below shows a simplified section through a Mid Ocean Ridge showing deep ocean sediments and magnetic anomalies within oceanic crust rocks.



- (a) (i) Draw a line to show the heat flow value on the axes above. [1]

(ii) Explain your answer.

.....
 [1]

- (iii) Draw a line to show the gravity anomaly on the axes above. [1]

(iv) Explain your answer.

.....
 [1]

- (v) Draw arrows to show the direction of plate movement. [2]

- (b) Describe how the following observations can help to explain sea floor spreading:

(i) sediment thickness

.....

 [2]

(ii) magnetic anomalies

.....
.....
.....
..... [2]

(iii) age of the oceanic crust.

.....
.....
.....
..... [2]

(c) The rocks 50km away from the Mid Ocean Ridge are 1.5 million years old. Calculate the average rate of movement in cm/year over the last 1.5 million years. Show your working.

Answer..... cm/year [2]

(d) There are two types of fault associated with Mid Ocean Ridges.

(i) Name fault type 1 [1]

(ii) Draw a labelled diagram to show this fault.

[2]

(iii) Name fault type 2 [1]

(iv) Draw a labelled diagram to show this fault.

[2]

[Total: 20]

[Turn over

2 (a) (i) In the space below draw a cross section of a destructive plate margin involving oceanic and continental crust. On the diagram, label:

- the Benioff Zone
- oceanic trench
- fold mountains
- active volcanoes
- the Moho.

[5]

(ii) Add arrows to show the relative movement of the plates. [1]

(b) Name **two** deformation processes that cause thickening of the crust during mountain building.

1 [1]

2 [1]

(c) (i) Oceanic and continental crust have very different characteristics. Complete the table below to show these characteristics.

characteristic	oceanic crust	continental crust
average density (g/cm ³)		
average depth (km)		
average composition		
age range		

[4]

(ii) Describe how geologists obtain information about the density and composition of the crust.

density

.....

composition

..... [2]

(iii) Describe how geologists have measured the depth of the crust.

.....

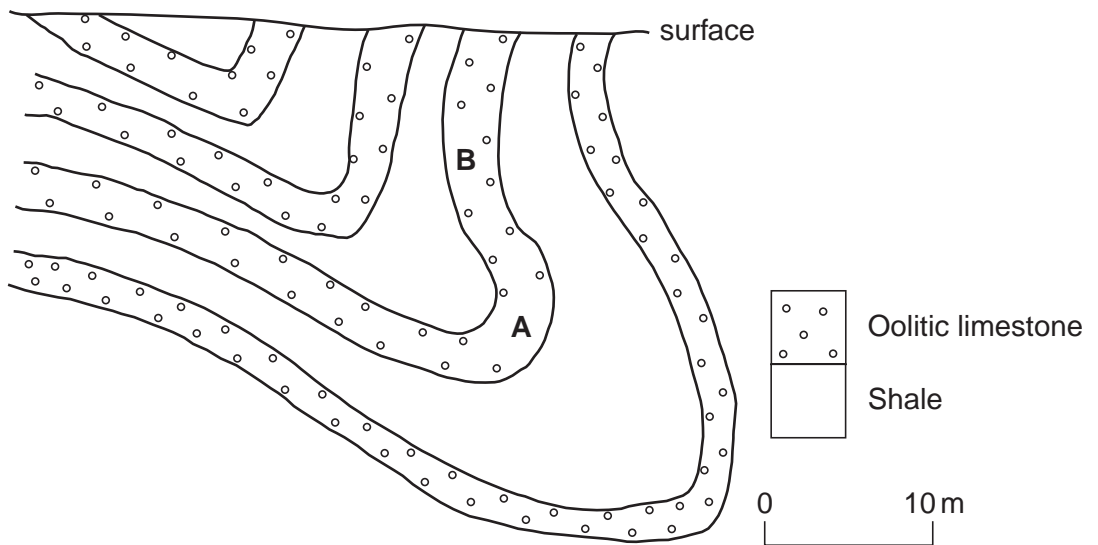
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..... [2]

[Total: 16]

3 The diagram below is a field sketch of a cross section of a fold seen in a cliff.



(a) Describe the type of fold using technical terms.

.....
 [2]

(b) (i) Define the following terms:

stress
 [1]

strain
 [1]

(ii) Draw an arrow on the diagram above to show the direction of greatest stress. [1]

(iii) Ooliths can be used to indicate the type and amount of deformation in a rock. In the boxes below, draw the shape of an oolith at points **A** and **B** in the diagram above.

point A	point B

[2]

(c) (i) Define the term *competent*.

.....
..... [1]

(ii) Name the competent rock type shown on the diagram on page 6.

..... [1]

(d) What is the difference between a fault and a joint?

.....
.....
.....
..... [2]

(e) Draw labelled diagrams to show a dome and a basin.

dome	basin

[3]

[Total: 14]

Optional extension sheet. If you use this lined page to complete an answer to any question, the question number **must** be clearly shown.

A series of horizontal dotted lines spanning the width of the page, providing space for writing an answer.

END OF QUESTION PAPER

10
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11
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