

ADVANCED SUBSIDIARY GCE
GEOLOGY

2831

Global Tectonics and Geological Structures

THURSDAY 10 JANUARY 2008

Afternoon
 Time: 1 hour

Candidates answer on the question paper.
Additional materials: Electronic calculator
 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.
- Do **not** write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

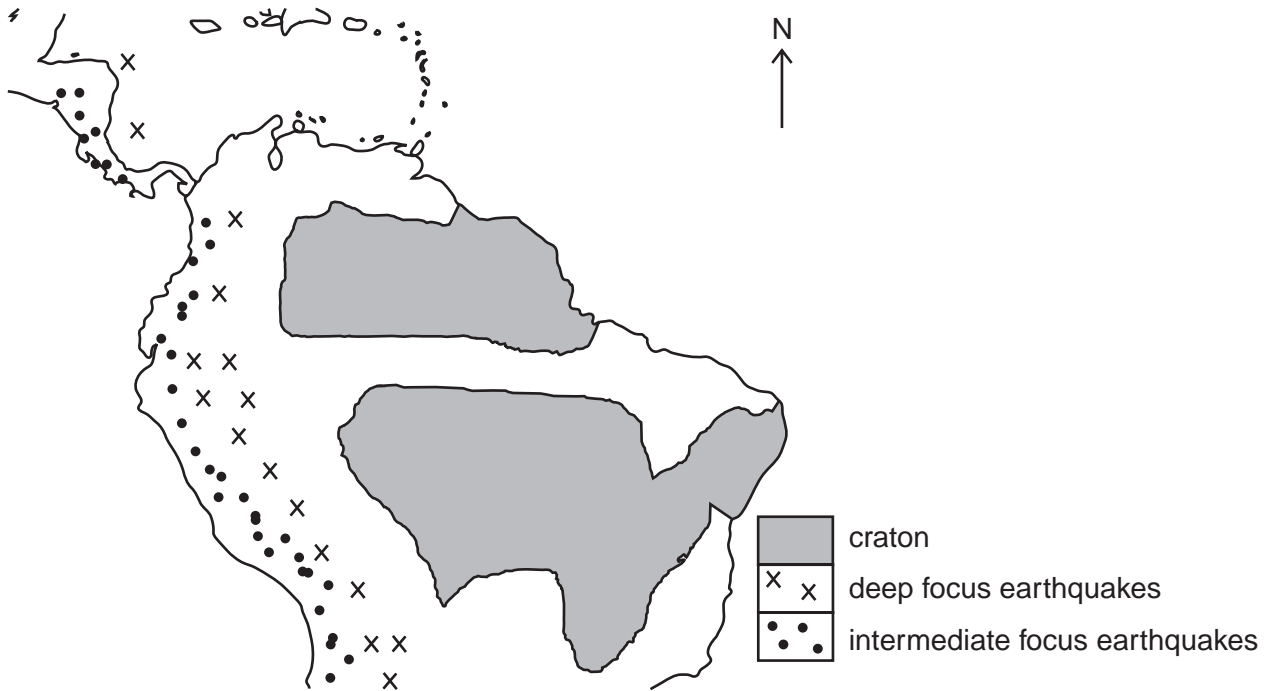
- The number of marks for each question is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 60.
- You will be awarded marks for the quality of written communication where this is indicated in the question.
- You may use an electronic calculator.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

FOR EXAMINER'S USE		
Qu.	Max	Mark
1	16	
2	16	
3	18	
4	10	
TOTAL	60	

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

Answer **all** the questions.

1 The map below shows part of Central and South America.



(a) (i) On the map above, shade and label regions showing:

- an ocean trench
- shallow focus earthquakes
- a mountain range
- volcanoes
- an island arc.

[5]

(ii) Draw arrows on the map to show the relative movement of the plates.

[1]

(b) Describe the geological characteristics of the following tectonic features in S America:

(i) an ocean trench

.....

.....

.....

..... [2]

(ii) a mountain range

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..... [2]

(iii) a craton.

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..... [2]

(c) It is thought that convection currents drive plate tectonics.

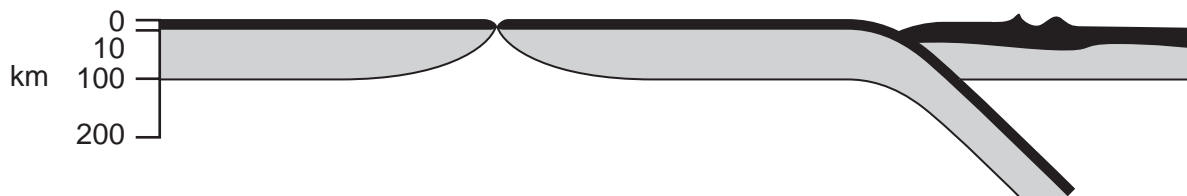
(i) Describe the source of heat that drives the convection currents.

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

(ii) The diagram below shows a cross section through part of the Earth. On the diagram label:

- lithosphere
- asthenosphere
- a constructive plate margin
- a destructive plate margin.

[2]



(iii) Draw and label the appropriate convection currents.

[1]

[Total: 16]

2 (a) (i) Draw a cross-section of a reverse fault with the following features labelled:

- fault plane
- throw
- fault dip
- footwall.

[4]

(ii) Add arrows to show the stress directions.

[1]

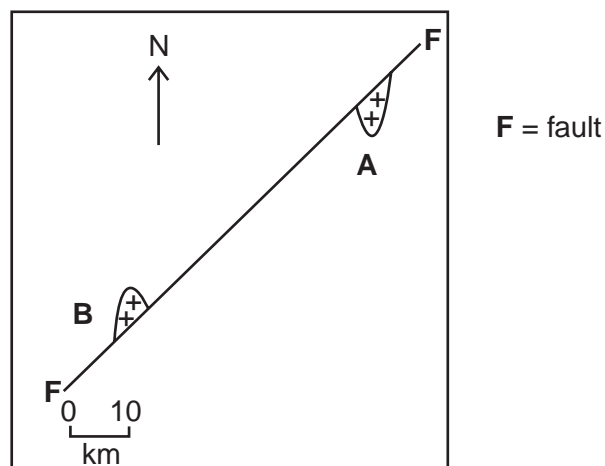
(b) (i) Draw a cross-section of an asymmetrical synform.

[2]

(ii) Label your diagram to show where the oldest and youngest rocks are if this structure is also a syncline.

[1]

(c) The map below shows a major fault. Igneous intrusions **A** and **B** are the same age and composition.



(i) Identify the type of fault shown.

..... [1]

(ii) Draw arrows to show the relative movement of the fault.

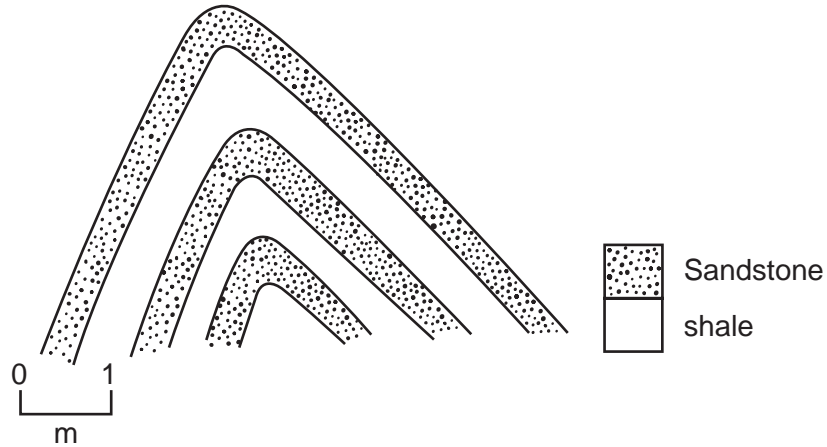
[1]

(iii) Name a structure likely to be found along the fault plane.

..... [1]

(d) (i) Draw and label slaty cleavage on the diagram below.

[1]



(ii) Explain how slaty cleavage forms.

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..... [2]

(iii) Draw and label joints on the diagram above.

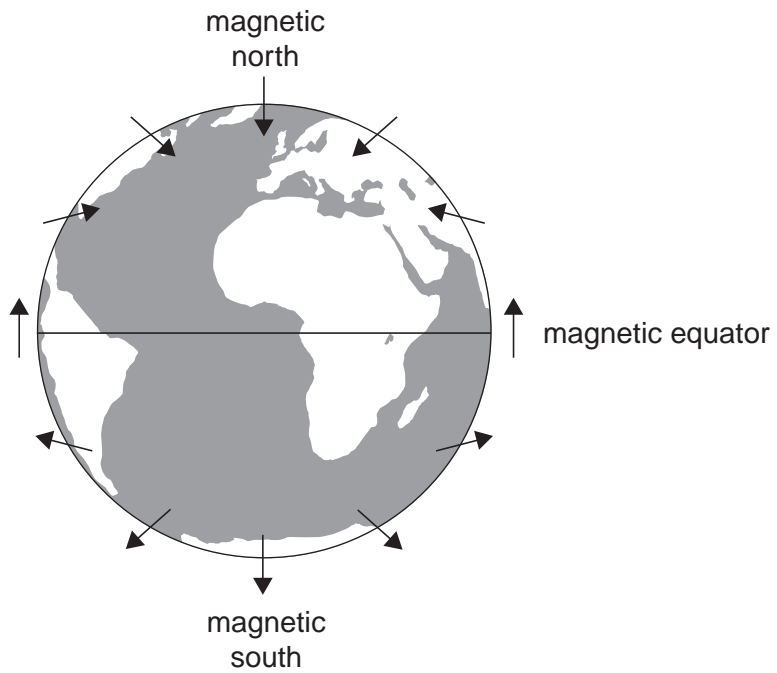
[1]

(iv) Explain how these joints form.

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

[Total: 16]

3 The diagram below shows the inclination of the Earth's magnetic field.



(a) (i) With the aid of the diagram, explain how magnetic inclination can be used as evidence for continental drift.

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.....

..... [3]

(ii) The Earth has a magnetic field which changes over time. What does this suggest about the state and composition of the outer core?

state [1]

composition [1]

(b) (i) Explain how the pattern of magnetic anomalies at mid-ocean ridges forms.

.....

.....

.....

..... [2]

(ii) State a rock type formed at mid-ocean ridges.

..... [1]

(c) Two common types of meteorite are found on Earth. State the composition of the two types of meteorite and indicate which layer of the Earth they are believed to match.

composition of first meteorite [1]

layer of Earth [1]

composition of second meteorite [1]

layer of Earth [1]

(d) (i) Outline **two** sources of direct evidence that can be used to work out the composition of continental crust.

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

(ii) Ophiolites can be used to provide evidence for the composition and structure of oceanic crust. What is an ophiolite?

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

(iii) Describe the structure of the oceanic crust.

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

(iv) State the average thickness of oceanic crust.

..... [1]

[Total: 18]

- 4 In this question, two marks are available for the quality of written communication. You may use diagrams to illustrate your answer.

Describe **three** methods of earthquake prediction.

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Quality of Written Communication [2]

[Total: 10]

10
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