

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
Advanced Subsidiary GCE

GEOLOGY

2831

Global Tectonics and Geological Structures

Tuesday **24 MAY 2005** Afternoon 1 hour

Candidates answer on the question paper.

Additional materials:

Protractor

Ruler (cm/mm)

Candidate Name	Centre Number	Candidate Number												
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TIME 1 hour

INSTRUCTIONS TO CANDIDATES

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers in the spaces provided on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.

INFORMATION FOR CANDIDATES

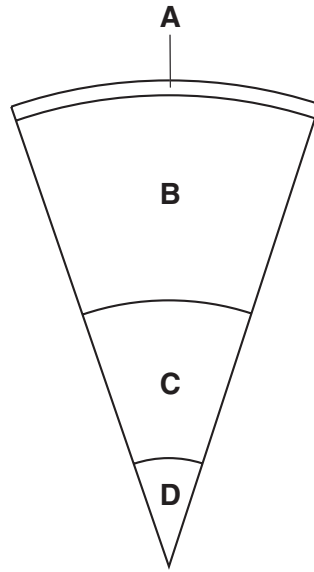
- The number of marks is given in brackets [] at the end of each question or part question.
- You will be awarded marks for the quality of written communication where this is indicated in the question.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	17	
2	19	
3	14	
4	10	
TOTAL	60	

This question paper consists of 8 printed pages.

Answer **all** the questions.

1 The diagram (not to scale) below shows the main layers and discontinuities of the Earth.



(a) (i) Identify the four layers shown on the diagram.

A **C**

B **D** [3]

(ii) Label the Gutenberg discontinuity on the diagram. [1]

(b) Draw a labelled diagram to show the relative depths and positions of the

- upper mantle
- oceanic crust
- continental crust
- Moho.

[4]

(c) (i) Describe the outer core.

.....

.....

.....

[2]

(ii) Describe the asthenosphere.

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

(d) (i) Suggest a maximum depth for deep mines which have been used to bring rocks to the surface for direct observations.

..... [1]

(ii) Explain how direct observations of rocks brought to the surface in volcanic vents are used as evidence for the internal structure and composition of the Earth.

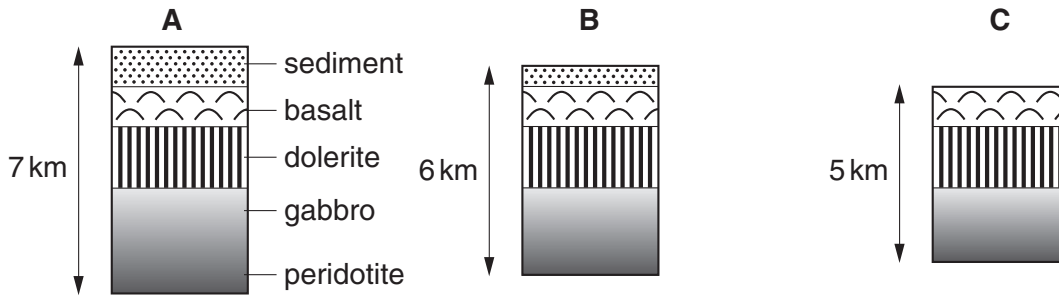
.....
.....
.....
..... [2]

(e) Explain how observations from meteorites are used as evidence for the composition of the Earth.

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

[Total: 17]

2 The diagrams show vertical sections through the rocks of the ocean floor using data gained from deep sea drilling and seismic evidence.



(a) (i) The basalt formed under water. What name is given to this form of basalt?

..... [1]

(ii) The dolerite is found in discordant, near-vertical intrusions. What name is given to these features?

..... [1]

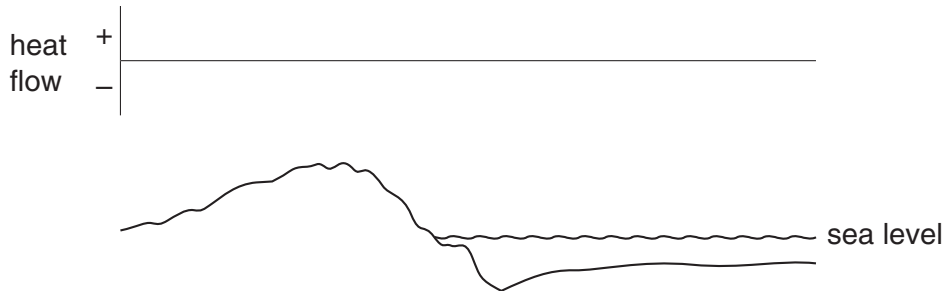
(iii) Using the distribution of sediment, explain where the vertical sections **A**, **B** and **C** could be found in the ocean floor.

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

(b) The rocks in section **C** show normal magnetism while those in section **A** show reversed magnetism. Describe how magnetic reversals occur and are preserved in the rocks.

.....
.....
.....
.....
.....
..... [3]

(c) The diagram shows the sea floor at a plate margin.



Label the following on the diagram above.

- trench
- fold mountains
- continental shelf
- the directions of plate movement [4]

(d) (i) Draw a sketch graph on the axes above the diagram, to show heat flow at the plate margin. [2]

(ii) Explain the variations in heat flow at this plate margin.

.....

.....

.....

..... [2]

(e) (i) Explain what a *hotspot* is.

.....

.....

.....

..... [2]

(ii) Explain how hotspots can be used to determine the rate and direction of plate movement.

rate

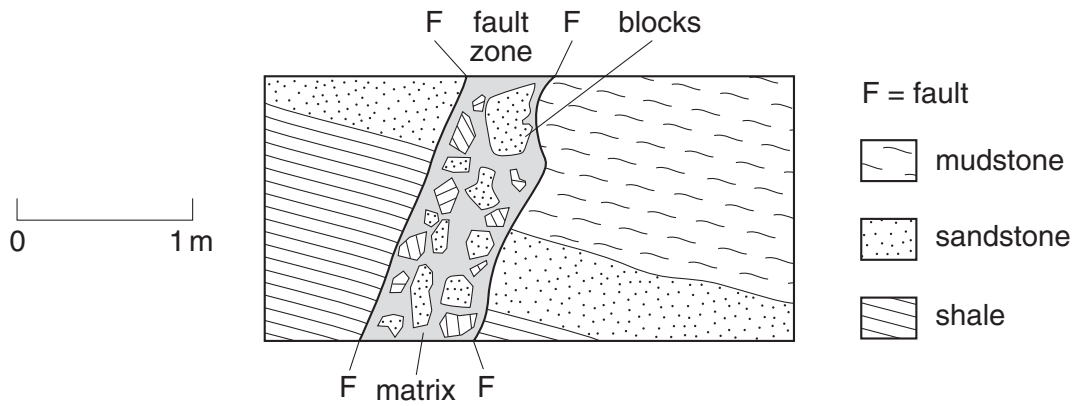
.....

direction

..... [2]

[Total: 19]

3 The cross section diagram below shows a fault displacing beds.



(a) (i) Name the type of fault shown.

..... [1]

(ii) Label on the diagram the footwall.

[1]

(iii) Measure the angle of dip of the fault.

..... [1]

(b) (i) Name the material shown within the fault zone. Explain how the angular blocks form.

.....

 [2]

(ii) State the technical term for the polished surfaces and striations that are found along the fault planes. Describe how they form.

.....

 [2]

(c) (i) Draw and fully label a cross sectional diagram to show a horst.

[2]

(ii) Draw and fully label a cross sectional diagram of an overfold with cleavage planes.

[2]

(d) (i) Name the type of joint that forms at the crest of an anticline.

[1]

(ii) Describe how columnar joints form in lava flows.

[2]

[Total: 14]

