OCR
RECOGNISING ACHIEVEMENT

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced Subsidiary GCE

GEOLOGY 2831

Global Tectonics and Geological Structures

Thursday **25 MAY 2006** Afternoon 1 hour

Candidates answer on the question paper.
Additional materials:
Electronic calculator
Ruler (cm/mm)
Pair of compasses

Candidate Name	Centre Number	Candidate Number

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	16	
2	18	
3	16	
4	10	
TOTAL	60	

This question paper consists of 8 printed pages.

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For Examiner's Use

Answer all the questions.

1 The sketch-map below shows an area after erosion has produced a flat surface.

A diagram has been removed due to third party copyright restrictions

Details: A diagram of an area after erosion has produced a flat surface

(a) (i) On the sketch-map,

- mark the axial plane trace of the fold [2]
- indicate, with an arrow, the direction of plunge of the fold. [1]

(ii) Fully describe the fold using technical terms.

.....

.....

.....

..... [2]

(b) (i) Describe fault B using technical terms.

.....

.....

.....

..... [2]

(ii) Measure the amount of movement along fault B (in metres).

..... metres [1]

(iii) Name the fault structure between faults A and C.

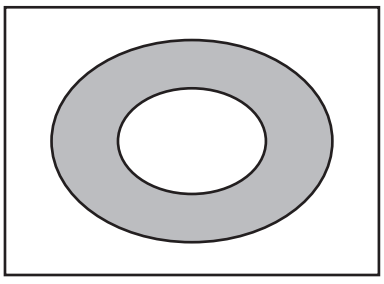
..... [1]

(c) Draw a cross section diagram of a normal fault, adding the following labels

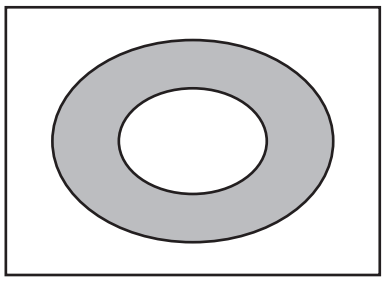
- throw
- fault dip
- footwall
- arrows showing the direction of stress. [4]

(d) (i) Add dip arrows to the sketch maps below, to show the difference between a dome and a basin. [2]

dome



basin

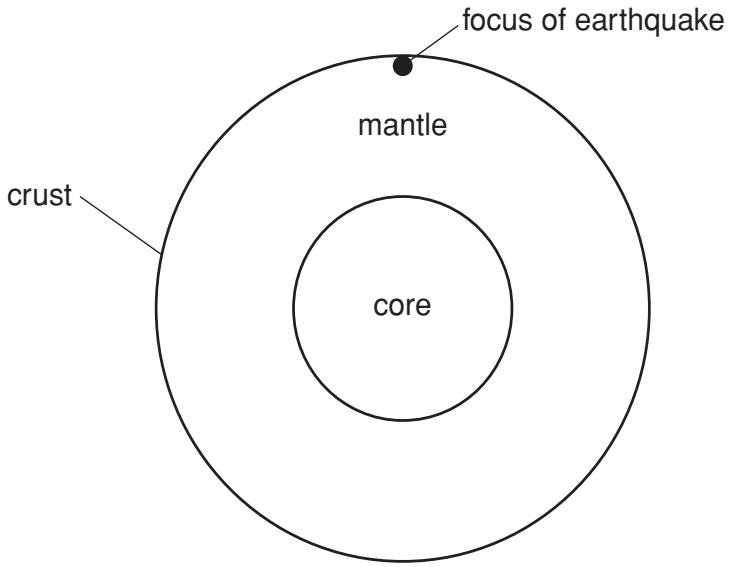


(ii) Label the oldest rocks on each diagram. [1]

[Total: 16]

[Turn over

2 This simplified diagram shows some of the layers of the Earth.



(a) (i) Mark and label on the diagram above, using the symbols indicated,

- the path of **one** S wave ---------- [1]
- the path of **one** P wave that travels through the core ———— [1]
- the path of **one** L wave ~~~~~ [1]

(ii) Mark and label on the diagram the extent of

- the S-wave shadow zone ◄----------► [1]
- the P-wave shadow zone ◄———► [1]

(b) (i) State **two** properties of rocks that control the velocity of S waves.

1 .....

2 .....[2]

(ii) Describe the state of the asthenosphere.

……

……..[1]

(c) (i) Name the rock type that forms the upper mantle.

.....[1]

(ii) Describe **one** piece of evidence for the **composition** of the mantle.

.....

.....[1]

(iii) Describe two pieces of evidence for the composition of the core.

.....

.....

.....

.....[2]

(iv) Describe one point of evidence for the state of the outer core.

.....

.....[1]

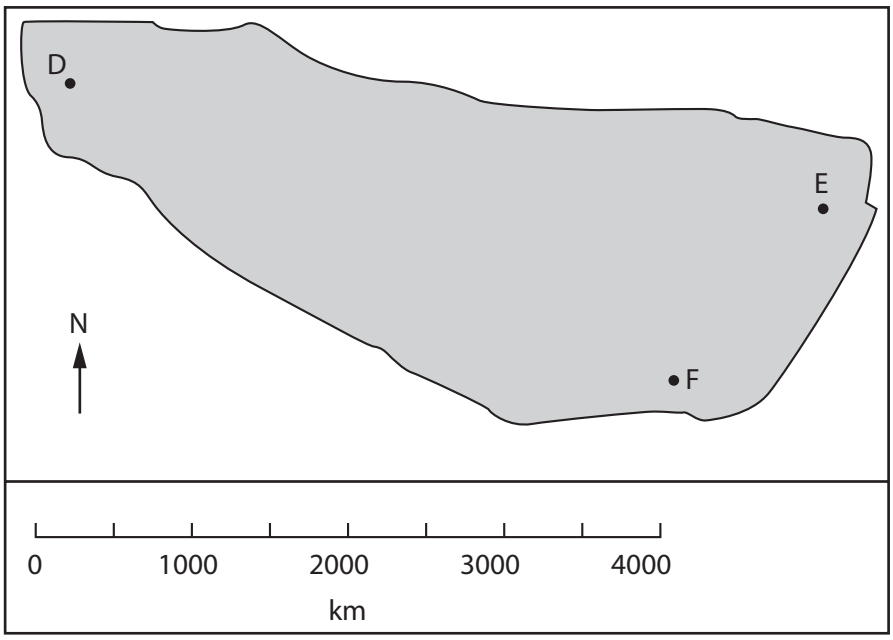
(d) After an earthquake, P waves were recorded at seismic stations D, E and F on the map below.

(i) Calculate the distances from the epicentre to seismic stations E and F. Assume that the average velocity of P waves is 500km per minute. Complete the table below.

seismic station	distance from epicentre (km)	P wave arrival time (min)
D	3500	7
E		3
F		2

[2]

(ii) Using the data in the table, plot and label the epicentre of the earthquake on the map below.



[3]

[Total: 18]

3 The map below shows North and South America and parts of the Pacific and Atlantic Oceans.

(a) On the map below

(i) shade and label an area of
- ocean basin (abyssal plain)
- a continental shield (craton)
- high heat flow. [3]

(ii) Draw a line showing the position of a deep sea trench. [1]

A map has been removed due to third party copyright restrictions

Details: A map of North and South America and parts of the Pacific and Atlantic Oceans

(b)

	tectonic feature
G	seamount
H	rift valley
J	continental slope
K	transform fault

	description
1	structure that offsets a section of mid ocean ridge
2	section of the ocean floor that links the continental shelf with the abyssal plain
3	an area of shallow sea, less than 200m in depth
4	a linear area of the crust bounded by two normal faults
5	submarine mountain

For each feature G to K, write the number of the correct description.

G .....

H .....

J .....

K ..... [4]

(c) (i) Complete the table below showing the characteristics of oceanic and continental crust.

	age of the oldest rocks	average composition	average thickness (km)	density g/cm^3
oceanic				
continental				

[4]

(ii) Describe **two** sources of evidence for the composition and structure of the oceanic crust.

.....

.....

.....

.....[2]

(d) (i) Name a lithospheric plate which consists entirely of oceanic crust.

.....[1]

(ii) Name a lithospheric plate which consists of oceanic and continental crust.

.....[1]

[Total: 16]

[Turn over

For Examiner's Use

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

Describe the characteristic geological features found at destructive plate margins.

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Quality of Written Communication [2]

[Total: 10]

END OF QUESTION PAPER