



ADVANCED SUBSIDIARY GCE
GEOLOGY
 Global Tectonics

F791

Candidates answer on the question paper

OCR Supplied Materials:
None

Other Materials Required:

- Electronic calculator
- Ruler (cm/mm)

Wednesday 20 May 2009
Afternoon
 Duration: 1 hour



Candidate Forename		Candidate Surname	
--------------------	--	-------------------	--

Centre Number						Candidate Number				
---------------	--	--	--	--	--	------------------	--	--	--	--

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use 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, however additional paper may be used if necessary.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- Where you see this icon you will be awarded marks for the quality of written communication in your answer.
- You may use an electronic calculator.
- You are advised to show all the steps in any calculations.
- This document consists of **12** pages. Any blank pages are indicated.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	15	
2	13	
3	18	
4	6	
5	8	
TOTAL	60	

Answer **all** the questions.

1 The map below shows North and South America and the surrounding oceans.



(a) (i) On the map shade and label

- a trench
- a fold mountain chain

[2]

(ii) On the map shade and label **one** area of high heat flow. Label this area as **A**.

[1]

(iii) Explain why this area of high heat flow exists.

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

(iv) On the map shade and label **one** area of low heat flow. Label this area as **B**.

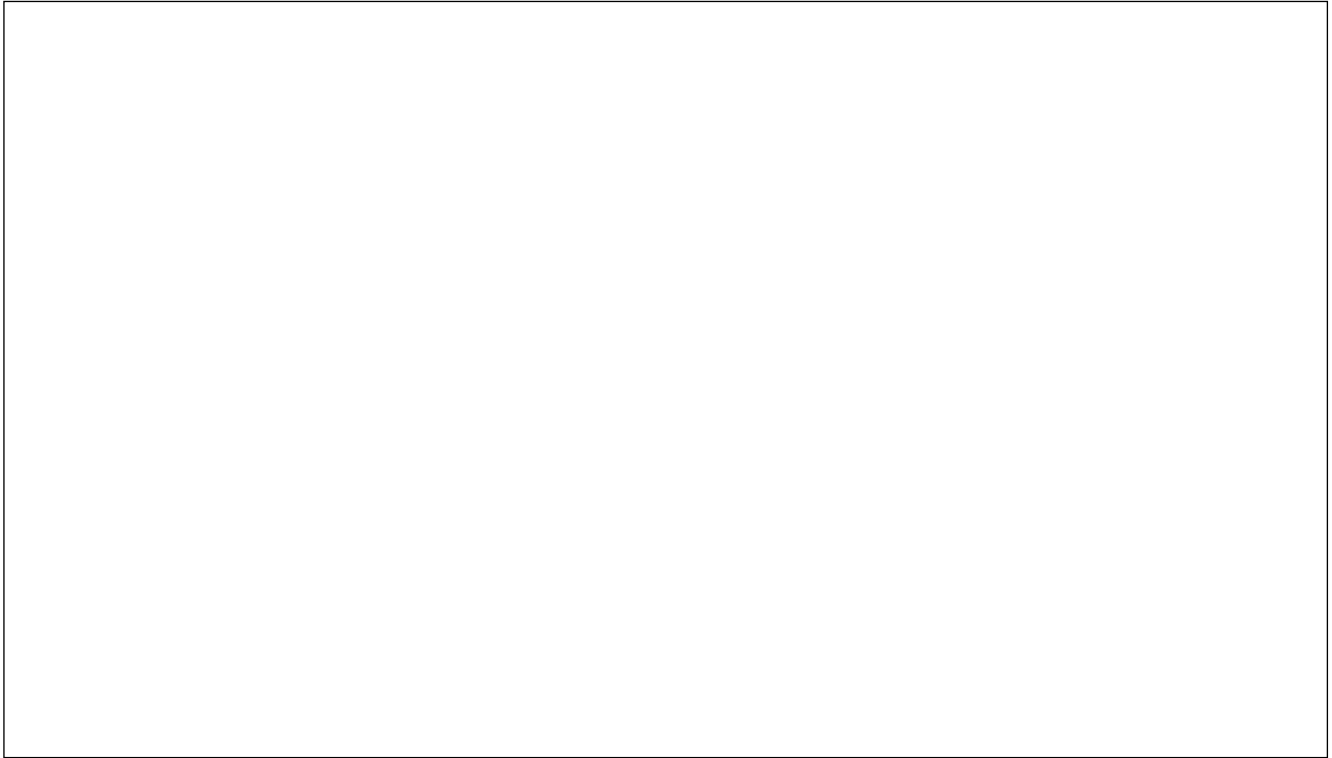
[1]

(v) Explain why this area of low heat flow exists.

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

(b) (i) In the space below draw a cross-section of a convergent plate margin involving oceanic plates. Add the following labels:

- earthquakes
- volcanoes
- partially melting crust
- convection currents
- island arc



[5]

(ii) Explain why earthquakes occur at convergent plate margins.

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

(c) Earthquakes are capable of causing huge amounts of damage to the built environment.

Name and describe a method used by engineers to reduce the impact of earthquakes on a built structure.

method.....
description
..... [2]

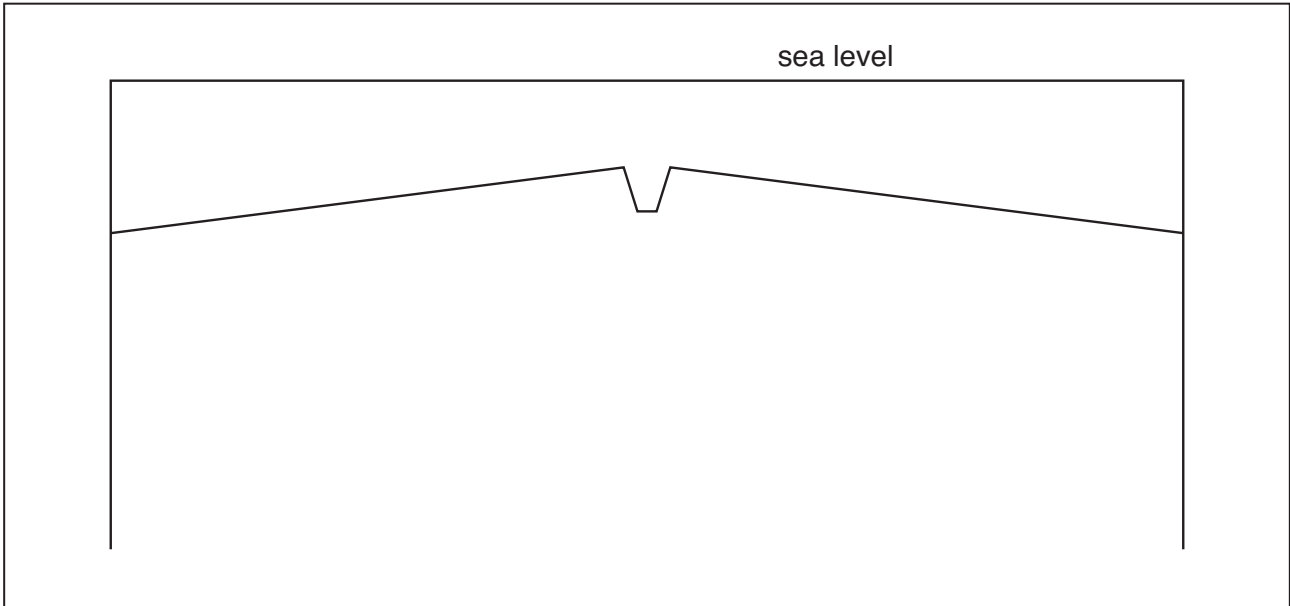
[Total: 15]

Turn over

2 (a) (i) The diagram below is a cross-section through a divergent plate margin.

Add the following labelled features to the diagram:

- convection currents
- volcanic activity
- rising magma
- axial rift



[4]

(ii) Describe and explain the possible causes of plate movements at mid-ocean ridges (MORs).

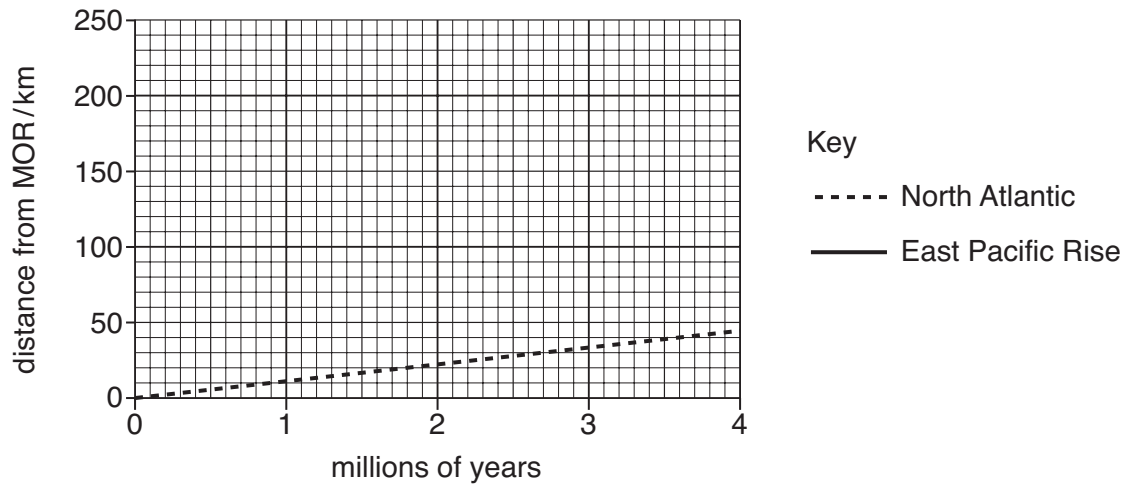
.....

.....

.....

..... [2]

(b) The graph below can be used to calculate the rate of spreading at the North Atlantic Ridge.



(i) Draw the graph to show spreading at the East Pacific Rise. Use data in the table below. [3]

distance from MOR/km	0	50	100	150	200
millions of years	0	0.8	1.7	2.5	3.4

(ii) Calculate the rate of spreading of the East Pacific Rise. Show your working.

.....cm/year [2]

(iii) How does the graph show you that the East Pacific Rise is spreading at a faster rate?

.....
 [1]

(c) What is the composition of the igneous rocks that comprise the oceanic crust?



In your answer, you should use appropriate technical terms, spelled correctly.

..... [1]

[Total: 13]

3 (a) Define the terms *stress* and *strain* in relation to rocks:

stress
 [1]

strain
 [1]

(b) When rocks are deformed they behave in a *competent* or *incompetent* manner. Define each term and give an example of a rock that deforms in each way.

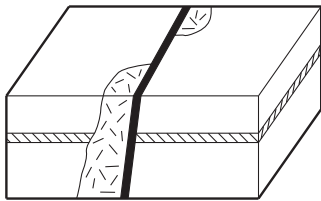
(i) *competent*

 example [2]

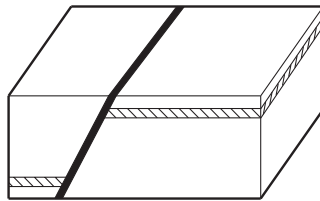
(ii) *incompetent*

 example [2]

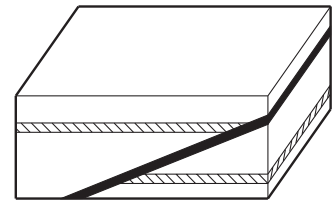
(c) The diagrams below show three types of fault.



C



D



E

(i) Name the fault types **C**, **D** and **E**.

C.....
D.....
E..... [3]

(ii) Label the footwall on fault **D** above. [1]

(iii) Complete the table below using **C**, **D** and **E** to show the type of stress for each fault type.

stress type	fault (C , D or E)
compression	
shear	
tension	

[2]

(d) Slickensides and fault breccias are two features that can be found along fault planes.

(i) In the space below draw a labelled diagram to show slickensides.
Explain how they form.

.....

 [3]

(ii) In the space below draw a labelled diagram to show a fault breccia.
Explain how it forms.

.....

 [3]

[Total: 18]
Turn over

4 (a) (i) The Sun is made of two main elements. State the names of these **two** elements.



In your answer, you should use appropriate technical terms, spelled correctly.

element 1

element 2 [2]

(ii) The Solar System has terrestrial planets (Earth-like), gas giants and smaller bodies. Name **two** terrestrial planets other than the Earth.

terrestrial planet 1

terrestrial planet 2 [2]

(iii) What properties make these planets Earth-like?

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

[Total: 6]

11
BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE

PLEASE DO NOT WRITE ON THIS PAGE



Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations, is given to all schools that receive assessment material and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1PB.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.