THIS IS A NEW SPECIFICATION

OCR
RECOGNISING ACHIEVEMENT

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)

Thursday 8 January 2009
Afternoon

Duration: 1 hour

CUP/T76002

F791

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 a mark 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	**14**	
2	**13**	
3	**13**	
4	**12**	
5	**8**	
TOTAL	**60**	

Answer **all** the questions.

1 **(a)** There are a number of discontinuities that have been identified within the Earth.

(i) Name each discontinuity in the table below.

name of the discontinuity	boundary
	crust/mantle
	mantle/outer core

[2]

(ii) Describe the outer core / inner core discontinuity.

.....

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

(iii) Explain how discontinuities can be detected.

.....

.....

.....

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

(b) **(i)** Describe **two** characteristics of the lithosphere.

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.....

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

(ii) Describe **two** characteristics of the asthenosphere.

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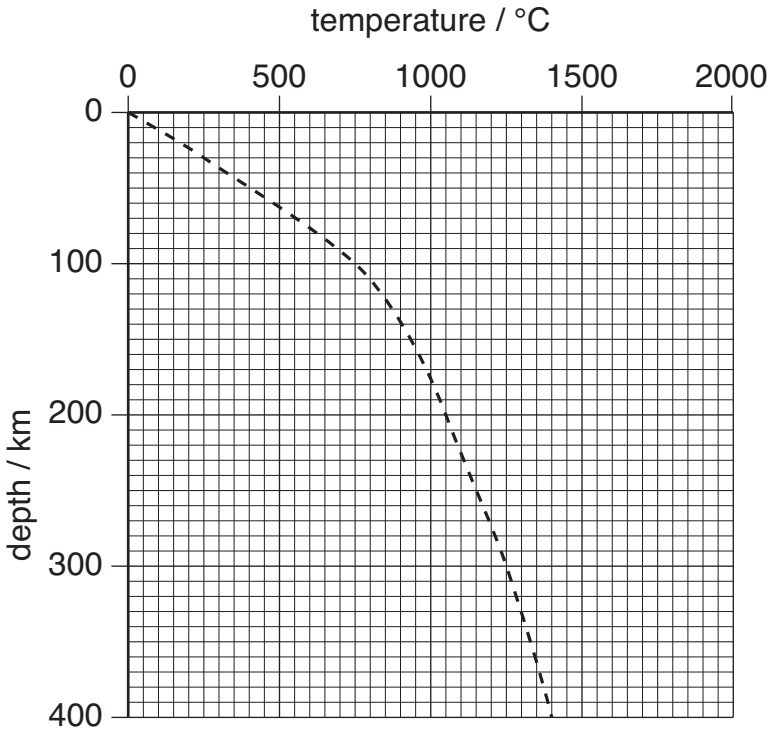
..... **[2]**

(c) This question is about how temperature changes with depth (geothermal gradient) for two regions, **A** and **B** in the Earth.

(i) The geothermal gradient has been plotted for region **A** (dashed line). Use the data in the table to construct the geothermal gradient for region **B**. **[2]**



region **B**	
depth / km	temperature / °C
0	0
100	900
200	1200
300	1450
400	1700

(ii) Calculate the geothermal gradient between 0 and 100 km for region **A**.

.....°C/km **[1]**

(iii) Calculate the geothermal gradient between 100 and 400 km for region **A**.
Give your answer to one decimal place.

.....°C/km **[1]**

(iv) Describe the difference between these two geothermal gradients.

.....

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

[Total: 14]

2 **(a)** In 1915, Alfred Wegener published his book *The Origin of Continents and Oceans*. This put forward the first strong case for the movement of continents.

Using the subheadings below, outline evidence for continental drift.

(i) major geological structures

.....

.....

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

(ii) specific rock types

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.....

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

(iii) fossils

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.....

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

(b) (i) A supercontinent named Pangaea split into two smaller supercontinents during the Permian period. One of the supercontinents is called Laurasia, name the second.

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

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

(ii) Name **two** of the present day continents that were formed from this second supercontinent.

.....

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

(iii) These present day continents can be fitted together but not along coastlines.

Explain why.

.....

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

(c) Sea floor spreading is thought to be a mechanism for plate movement. Using the subheadings below, outline evidence for sea floor spreading.

(i) age of ocean crust

.....

.....

.....

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

(ii) magnetic reversals

.....

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

[Total: 13]

3 **(a)** The table below gives data on some of the most destructive historical earthquakes.

date of earthquake	location	deaths	magnitude (Richter Scale)
1556	Shenshi, China	830 000	8 approx
2004	Sumatra	283 106	9.1
1976	Tangshan, China	255 000	7.5
2005	Pakistan	86 000	7.6
1995	Kobe, Japan	5 470	6.9
1989	Loma Prieta, California	63	7.1
1994	Northridge, California	57	6.7

(i) Why is the magnitude reading for the Shenshi earthquake only an approximation?

.....

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

(ii) What does magnitude measure?

.....

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

(iii) Suggest **two** reasons why so many people died in the Shenshi earthquake.

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

(b) Most of the deaths in the Sumatra earthquake were from the subsequent tsunami.

(i) What is a tsunami?

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

(ii) How does an earthquake create a tsunami?

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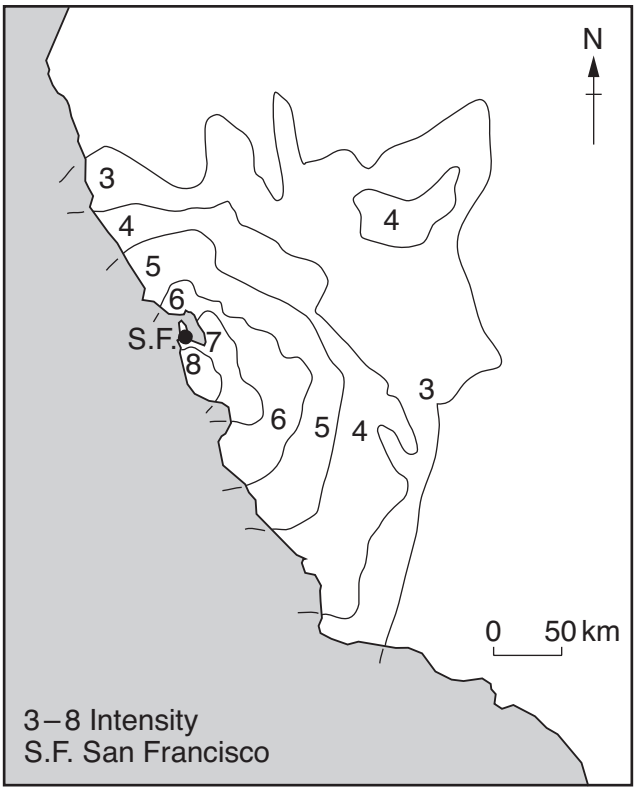
..... **[1]**

(c) The map below shows isoseismal lines constructed using the Mercalli scale for the Loma Prieta earthquake in California.



(i) What does the Mercalli scale measure?

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

(ii) What is the maximum number on the Mercalli scale?

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

(iii) Using the map above explain why the pattern of isoseismal lines are not concentric circles.

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

(iv) Mark and label the epicentre of the Loma Prieta earthquake on the map above. **[1]**

(d) Define the following terms:

focus .....

.....

epicentre .....

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

[Total: 13]

4 **(a)** There are three main types of plate margin: divergent, convergent and conservative.

(i) For each plate margin below give an example.

divergent plate margin .....

convergent oceanic-continental .....

convergent continental-continental ..... **[3]**

(ii) Draw a labelled cross section of a divergent plate margin.

[4]

(b) The Earth is part of the Solar System which is itself part of the Universe.

(i) The Universe is thought to have formed approximately 13700 Ma. When did the Solar System form?

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

(ii) Explain how the Solar System formed.

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

(iii) Name **two** of the gas giants found in the Solar System.

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

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

[Total: 12]

5 With the aid of diagrams describe **four** geological structures that are formed by compressional forces.

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..... **[8]**

[Total: 8]

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

PLEASE DO NOT WRITE ON THIS PAGE