

Tuesday 10 January 2012 – Afternoon

AS GCE GEOLOGY

F791 Global Tectonics

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

- Ruler (cm/mm)
- Protractor

Duration: 1 hour




Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

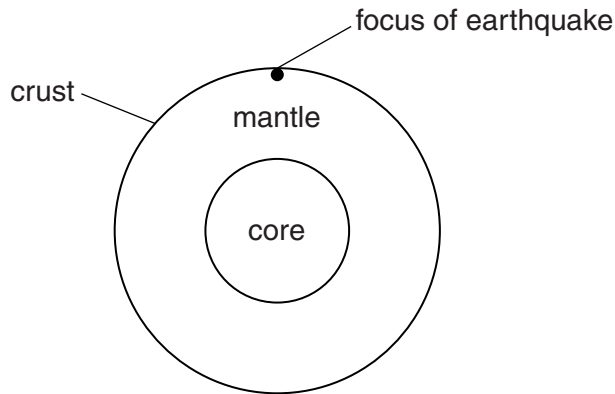
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. If additional space is required, you should use the lined pages at the end of this booklet. The question number(s) must be clearly shown.
- Do **not** write in the bar codes.

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 are advised to show all the steps in any calculations.
- This document consists of **16** pages. Any blank pages are indicated.

Answer **all** the questions.

1 The diagram below shows a simplified cross section through the Earth.



(a) Seismic wave shadow zones have been used to provide evidence for the Earth's internal structure.

(i) Clearly mark and label, with angles, on the diagram the extent of:

- the P-wave shadow zone
- the S-wave shadow zone.

[2]

(ii) What is the **state** of the outer core?

..... [1]

(iii) Describe **one** piece of evidence for the state of the outer core.

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

(iv) Explain how S-waves provide evidence for the depth of the outer core/mantle boundary.

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

(b) (i) Mark and label the path of an L-wave on the diagram above.

[1]

(ii) Describe **two** characteristics of L-waves.

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

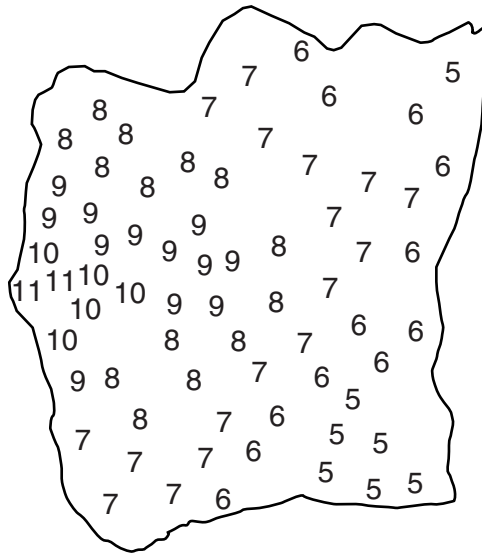
(iii) Explain why L-waves may cause so much damage to the built environment.

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

(c) The map below shows earthquake intensity values from an earthquake event.

(i) Define the term *earthquake intensity*.

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



(ii) Draw isoseismal lines for intensities of 8, 9, 10 and 11 on the map above. [2]

(iii) Mark and label the epicentre of the earthquake on the map above. [1]

(d) Explain how the densities of the whole Earth and rocks on the surface can be used to infer the density of the core.

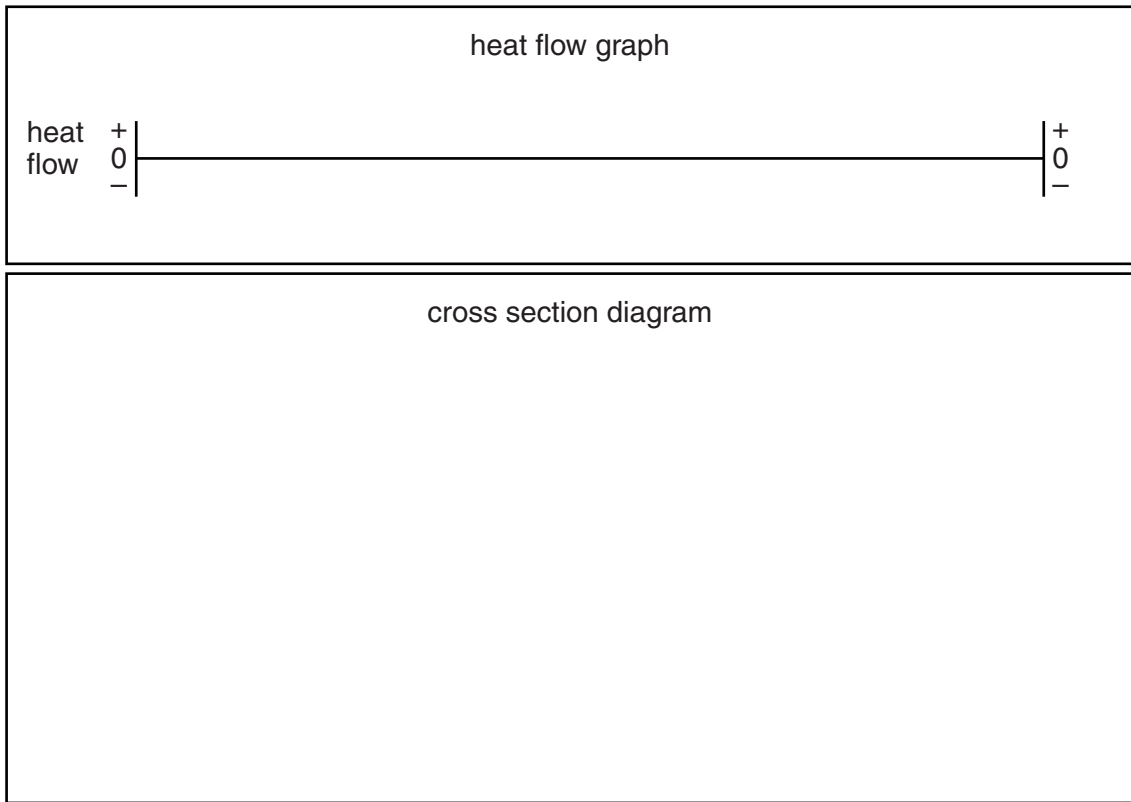
.....
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.....
..... [2]

[Total: 15]

2 (a) In the space below draw a cross section to show a convergent plate margin involving continental and oceanic plates.

Label on the diagram:

- deep ocean trench
- earthquake foci
- fold mountains
- batholiths
- directions of plate movement.



[5]

(b) (i) Heat flow varies across the plate margin. Draw a line to show heat flow on the graph above. [1]

(ii) Explain the pattern of heat flow.

.....

.....

.....

..... [2]

(c) Describe the type of volcanic activity that occurs at this type of convergent plate margin.

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

(d) Explain the pattern of earthquake foci that you have drawn.

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

[Total: 10]

3 (a) List the planets of the solar system in order starting with the planet closest to the Sun.



In your answer, you should use the correct names, spelled correctly.

closest to the Sun

.....

.....

.....

.....

.....

.....

.....

furthest from the Sun [2]

(b) (i) The asteroid belt occurs between two planets. Name the two planets.
..... [1]

(ii) Describe the origin of the asteroid belt.
.....
..... [1]

(c) (i) Describe **two** characteristic features of terrestrial planets.
.....
.....
..... [2]

(ii) Describe **two** characteristic features of gas giant planets.
.....
.....
..... [2]

(d) State the age of the Earth..... [1]

[Total: 9]

4 (a) Stress and strain are two terms used when describing the deformation of rocks.

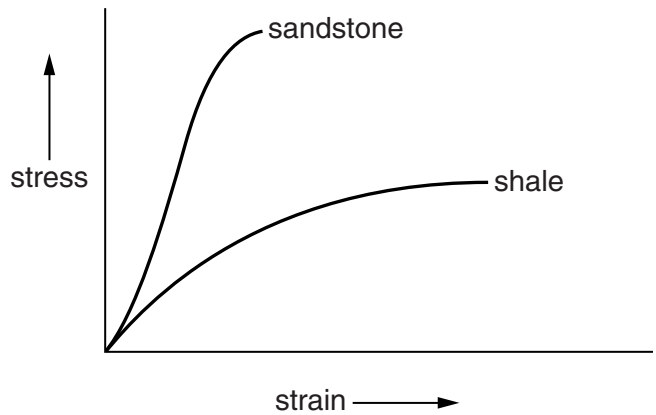
(i) Define the term *stress*.

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

(ii) Define the term *strain*.

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

(iii) The graph below shows the effects of stress and strain on shale and sandstone rocks at the same depth and temperature.



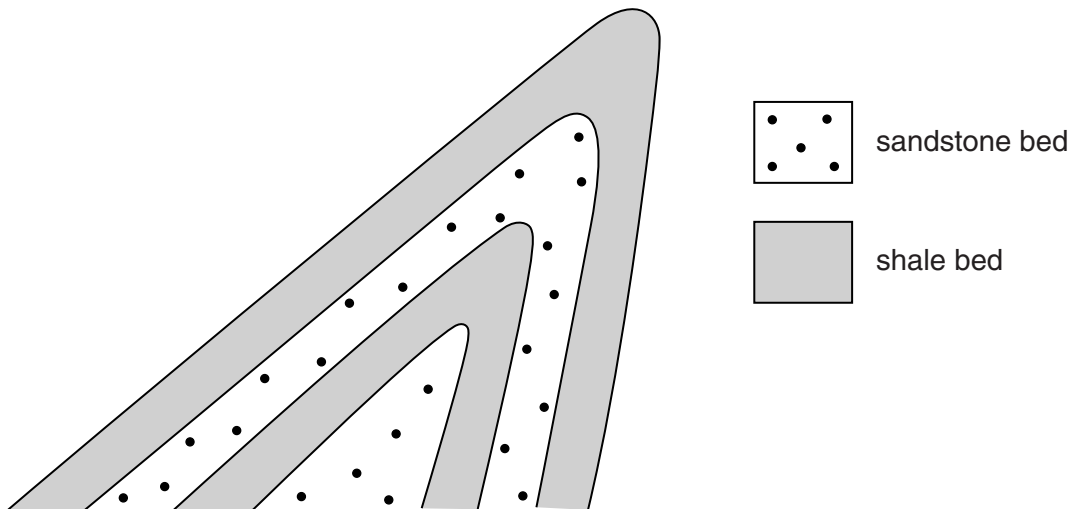
Use ideas about deformation of rocks to explain the shape of the graphs.

sandstone
.....
shale
..... [2]

(iv) Describe **one** effect of an increase in temperature on the behaviour of these rocks.

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

(b) The diagram below shows folded strata in a cliff section.



(i) Fully describe the fold above.



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

.....

.....

.....

..... [2]

(ii) Name the type of force that caused the fold.

..... [1]

(iii) Draw joints on the diagram above in the most likely part of the fold.

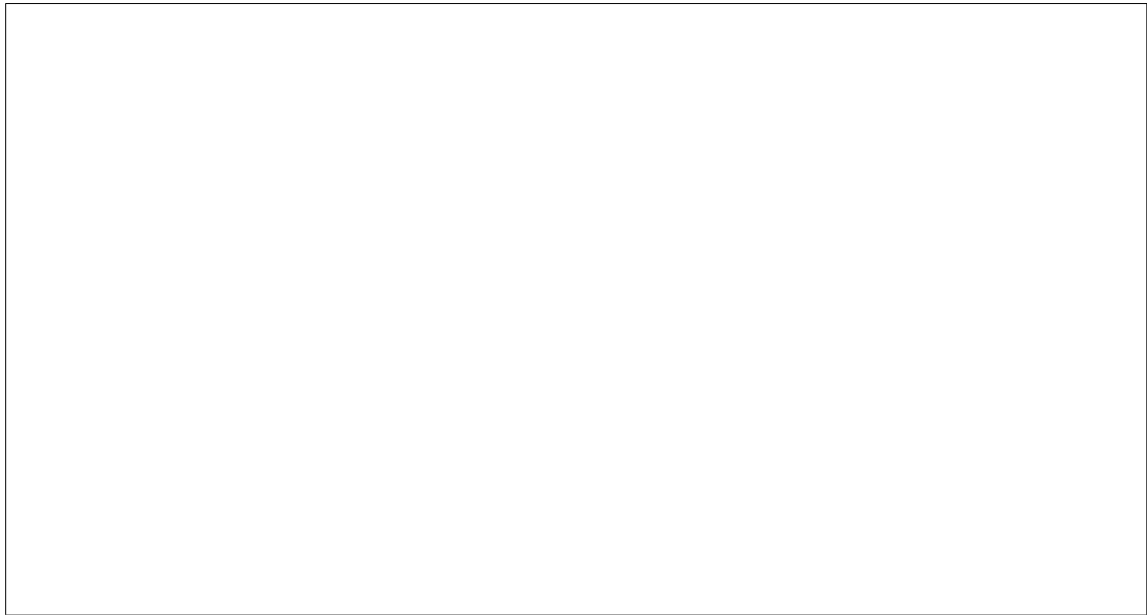
[1]

(iv) Explain how the joints form.

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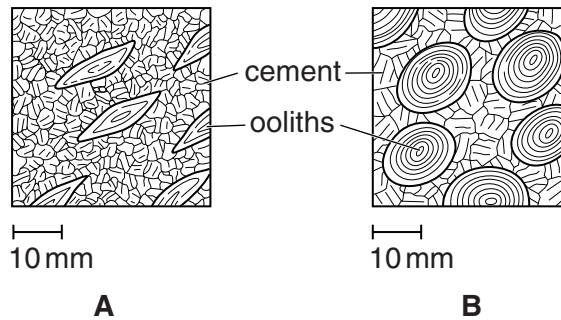
..... [1]

(c) Draw labelled diagram(s) to show how cleavage forms when shale is folded.



[3]

(d) Some limestones contain oolites. They can be used to measure strain. The thin section diagrams show two different oolitic limestones.



Describe and explain the difference in shape between the oolites in **A** and **B**.

.....

.....

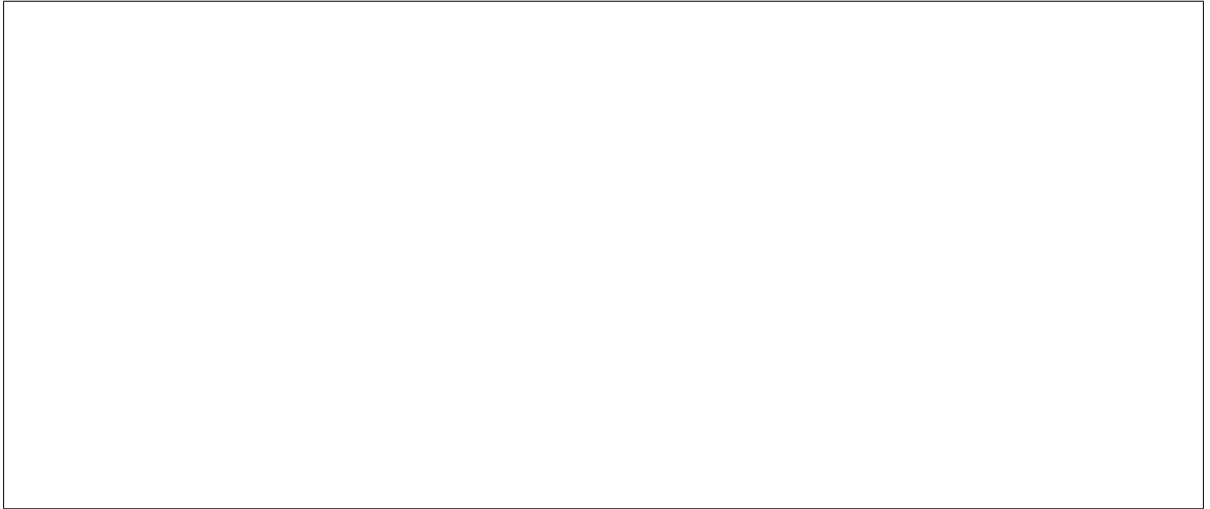
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..... [2]

10

(e) Draw a diagram to show a fault produced by tension. Label on your diagram:

- fault plane
- throw.



[3]

[Total: 18]

ADDITIONAL PAGE

If additional space is required, you should use the lined pages below. The question number(s) must be clearly shown.

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14
ADDITIONAL PAGE

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