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Centre number						Candidate number				
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OXFORD CAMBRIDGE AND RSA EXAMINATIONS
AS GCE
F791
GEOLOGY
Global Tectonics

TUESDAY 10 JANUARY 2012: Afternoon
DURATION: 1 hour

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:


Ruler (cm/mm)
Protractor

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes on the first page and inserts. 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 page at the end of this booklet. The question number(s) must be clearly shown.

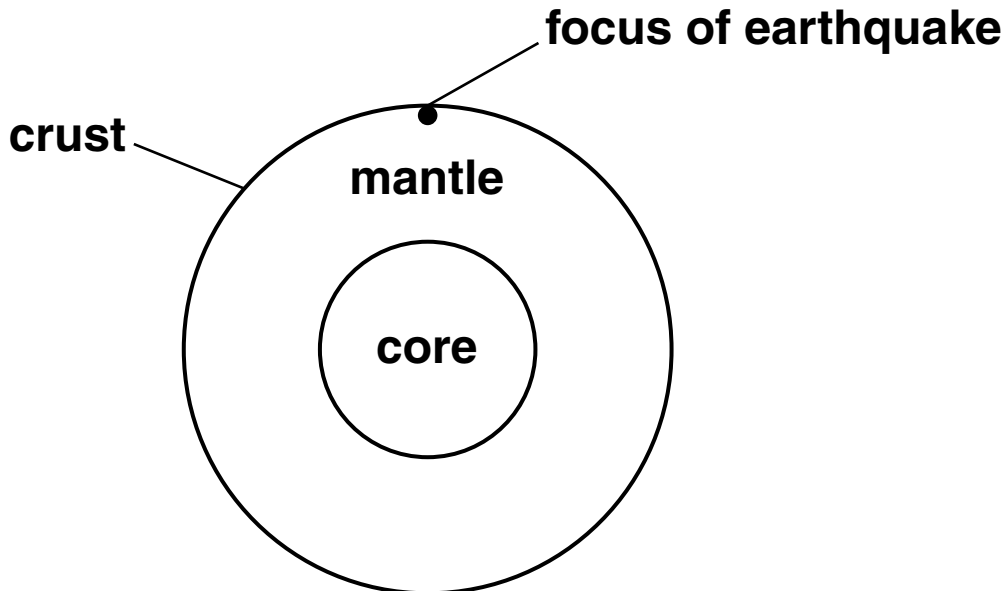
INFORMATION FOR CANDIDATES

- 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.

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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 on previous page. [1]

(ii) Describe TWO characteristics of L-waves.

[2]

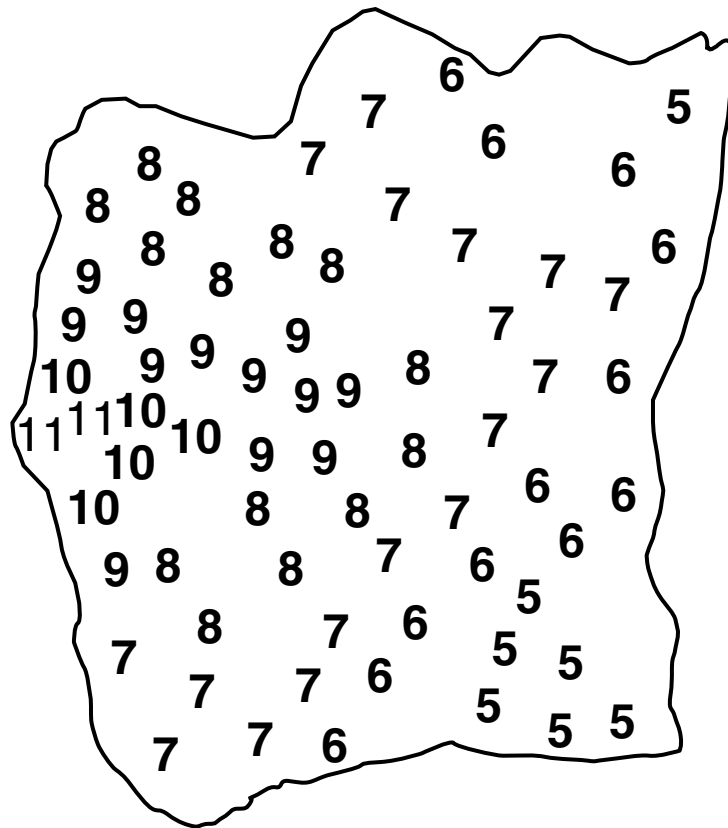
(iii) Explain why L-waves may cause so much damage to the built environment.

[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.

[2]

[Total: 15]

- 2 (a) In the space on the loose sheet draw a cross section to show a convergent plate margin involving continental and oceanic plates. You may write a clear description as an alternative to drawing the diagrams.**

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 on the loose sheet. [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.

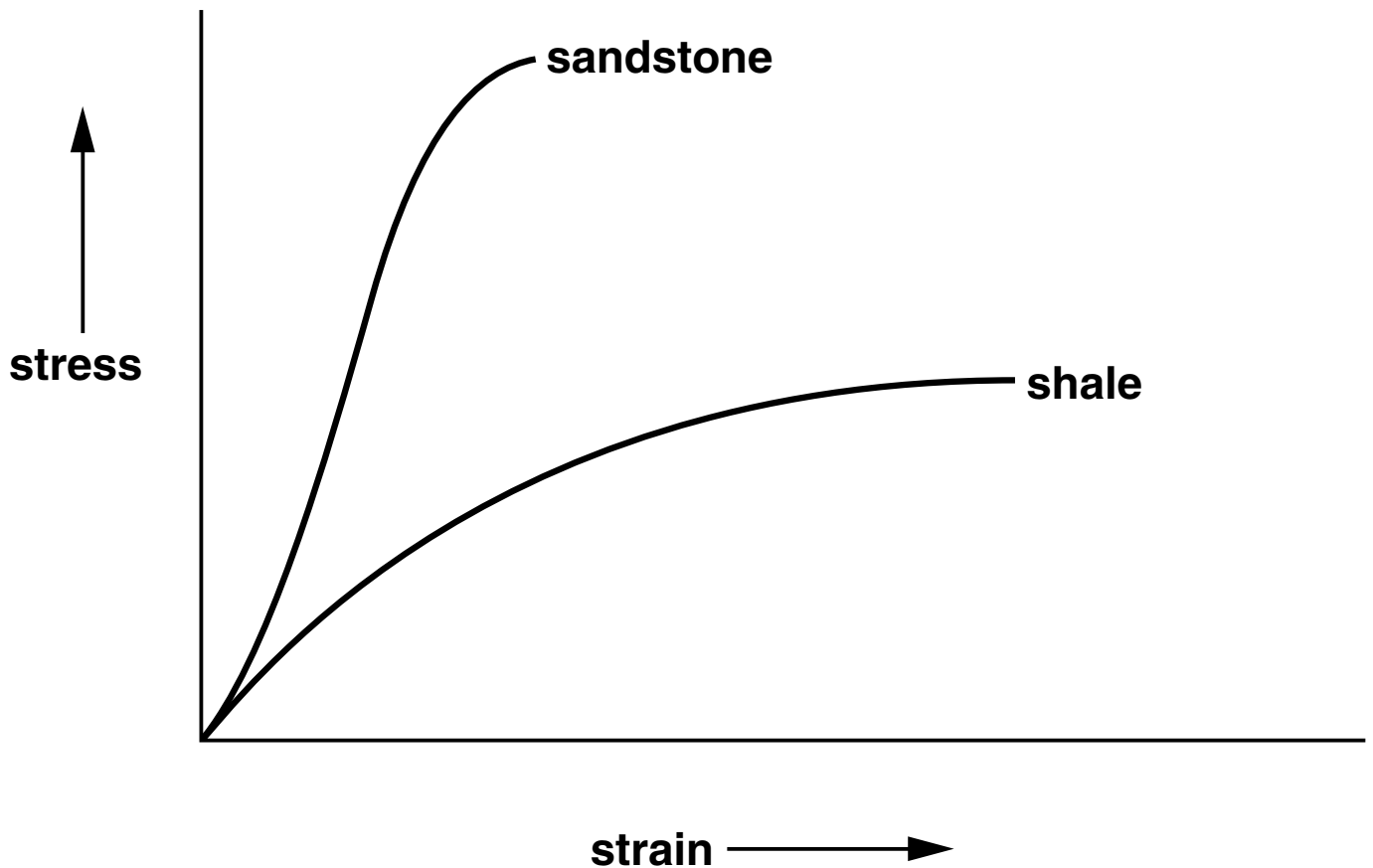
(i) Define the term STRESS.

[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 _____

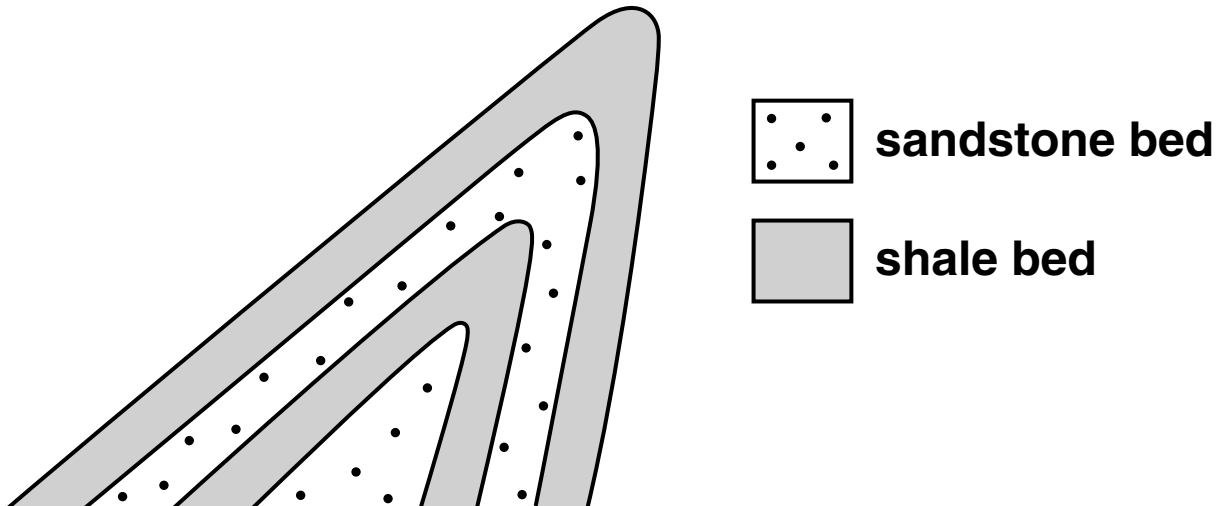
shale _____

_____ [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.

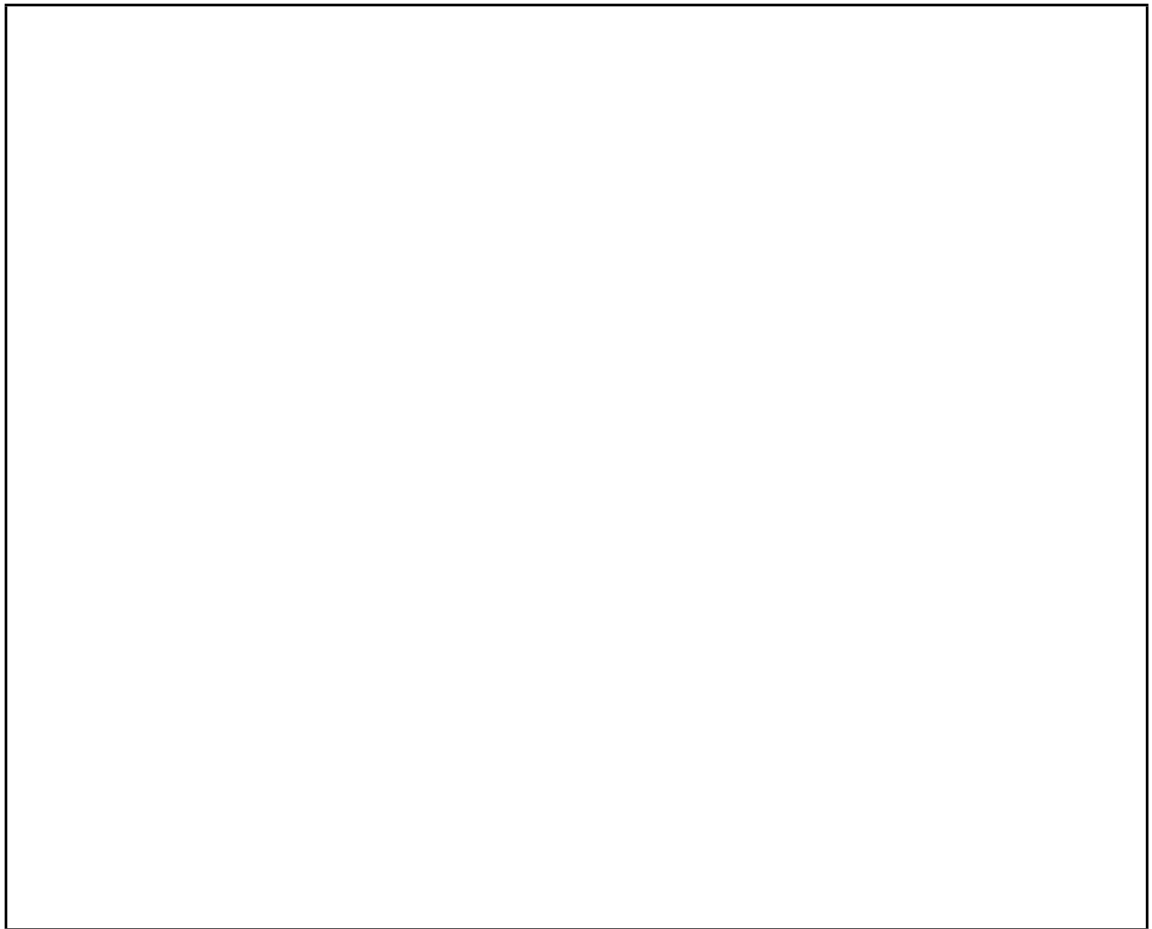
[1]

(iii) Draw joints on the diagram above in the most likely part of the fold. [1]

(iv) Explain how the joints form.

[1]

- (c) Draw labelled diagram(s) to show how cleavage forms when shale is folded. You may write a clear description as an alternative to drawing the diagram. [3]**



- (d) Some limestones contain ooliths. They can be used to measure strain. The thin section diagrams (on separate A3 sheet) show two different oolitic limestones.**

Describe and explain the difference in shape between the ooliths in A and B.

[2]

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

- **fault plane**
- **throw.**

You may write a clear description as an alternative to drawing the diagram [3]



[Total: 18]

5 Describe how magnetism forms in rocks. Explain how palaeomagnetism can be used as evidence for continental drift and sea floor spreading.

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