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|---------------------------|--|--------------------------|--|
| <b>Candidate Forename</b> |  | <b>Candidate Surname</b> |  |
|---------------------------|--|--------------------------|--|

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|----------------------|--|--|--|--|--|-------------------------|--|--|--|--|
| <b>Centre Number</b> |  |  |  |  |  | <b>Candidate Number</b> |  |  |  |  |
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
ADVANCED SUBSIDIARY GCE**

**F791**

**GEOLOGY**

**Global Tectonics**

**WEDNESDAY 13 JANUARY 2010: 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)**

**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- 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.
- 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 are advised to show all the steps in any calculations.

**BLANK PAGE**

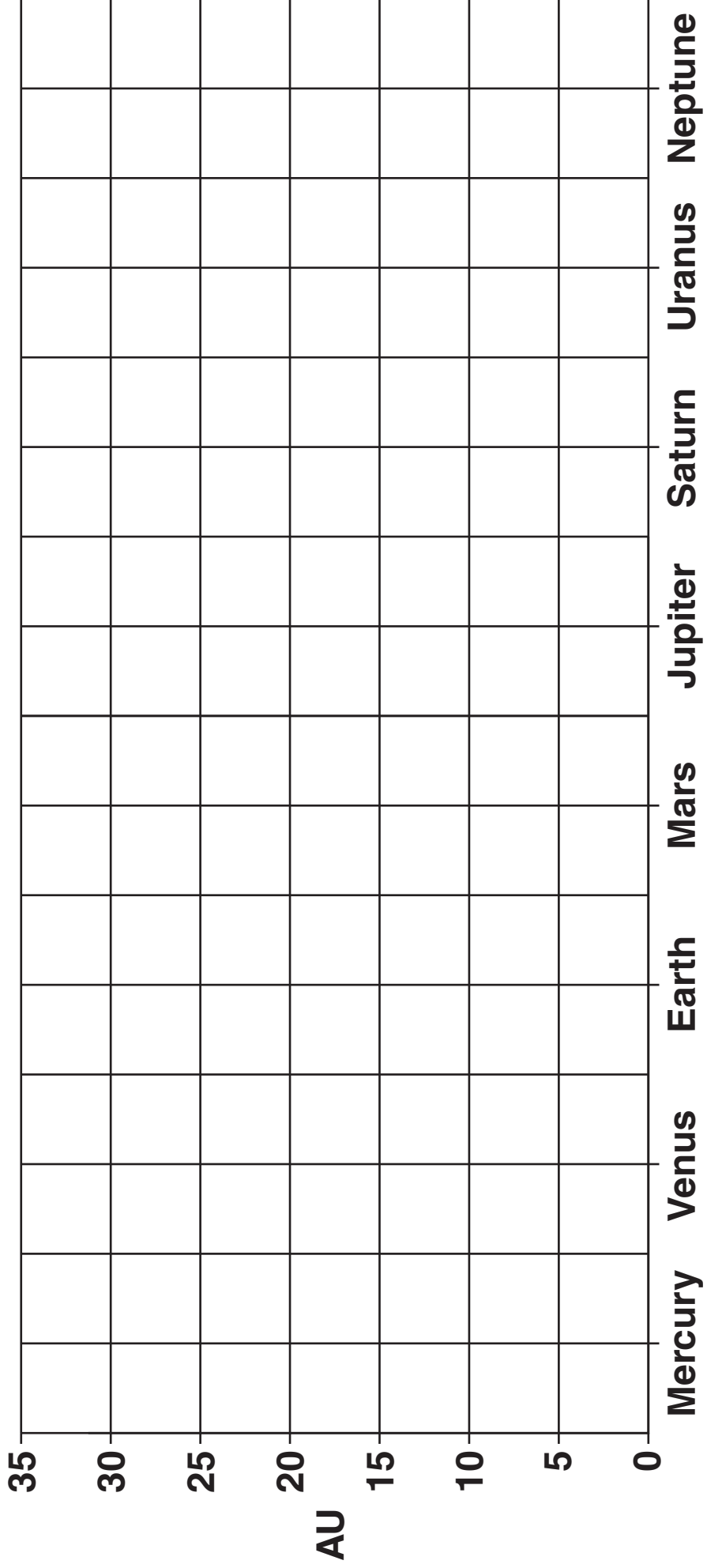
**Answer ALL the questions.**

- 1 (a) The data table below shows the distance from the Sun for each planet in the solar system.**

| <b>PLANET</b>  | <b>MERCURY</b> | <b>VENUS</b> | <b>EARTH</b> | <b>MARS</b> |
|--|----------------|--------------|--------------|-------------|
| <b>distance from the Sun (AU)<br/>(Astronomical Units)</b> | <b>0.4</b>     | <b>0.7</b>   | <b>1.0</b>   | <b>1.5</b>  |

| <b>PLANET</b>  | <b>JUPITER</b> | <b>SATURN</b> | <b>URANUS</b> | <b>NEPTUNE</b> |
|--|----------------|---------------|---------------|----------------|
| <b>distance from the Sun (AU)<br/>(Astronomical Units)</b> | <b>5.2</b>     | <b>9.5</b>    | <b>19.2</b>   | <b>30.1</b>    |

- (i) Plot the data in the table on the next page to show the distance of each planet from the Sun.**



51

[2]

**(ii) The asteroid belt occurs between the orbits of two planets. Name both planets.**

\_\_\_\_\_ [1]

**(b) Some meteorites are thought to originate from the asteroid belt.**

**(i) Name TWO types of meteorite.**

meteorite 1 \_\_\_\_\_

meteorite 2 \_\_\_\_\_ [2]

**(ii) For each type of meteorite, describe the information it provides for the composition of a specific layer of the Earth.**

meteorite 1 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

meteorite 2 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [4]

**(c) Describe TWO types of evidence for meteorite impacts on Earth.**

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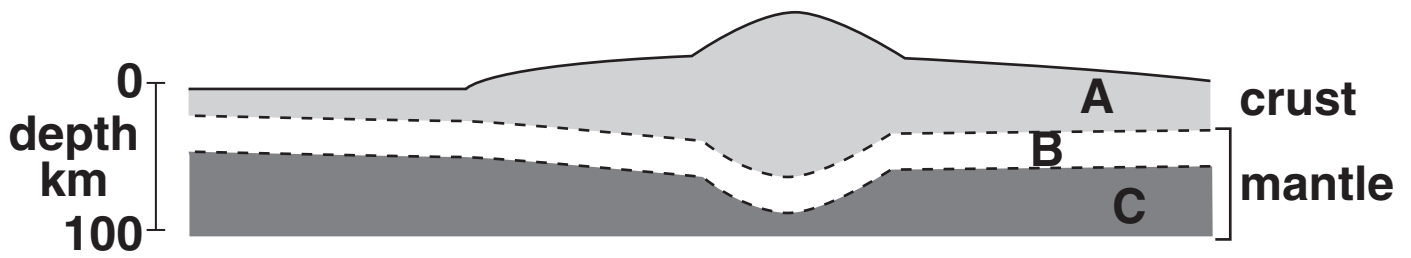
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**[2]**

**[Total: 11]**

- 2 (a) The diagram below shows a simplified cross-section through the crust and part of the mantle.



- (i) Name the part of the Earth that consists of layers A and B.

 *In your answer, you should use an appropriate term, spelled correctly.*

\_\_\_\_\_ [1]

- (ii) Describe the physical state of this layer.

\_\_\_\_\_ [1]

- (iii) Describe the physical state of layer C.

\_\_\_\_\_ [1]

- (iv) Name the part of the Earth that consists of layer C.

\_\_\_\_\_ [1]



**(b) (i) Label the Moho on the diagram on the previous page.**

**[1]**

**(ii) Describe how the Moho is identified using seismic waves. You may draw a diagram to help your answer.**



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**[2]**

**(c) Complete the table below showing the characteristics of crust from oceanic and continental areas.**

|   | <b>OCEANIC<br/>AREAS</b> | <b>CONTINENTAL<br/>AREAS</b> |
|---|--------------------------|------------------------------|
| <b>average composition</b>                |                          |                              |
| <b>average density (g/cm<sup>3</sup>)</b> |                          |                              |
| <b>age range (Ma)</b>                     |                          |                              |
| <b>average thickness (km)</b>             |                          |                              |

**[4]**

**(d) Choose the correct feature from the list below to match the definition in the table.**

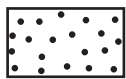
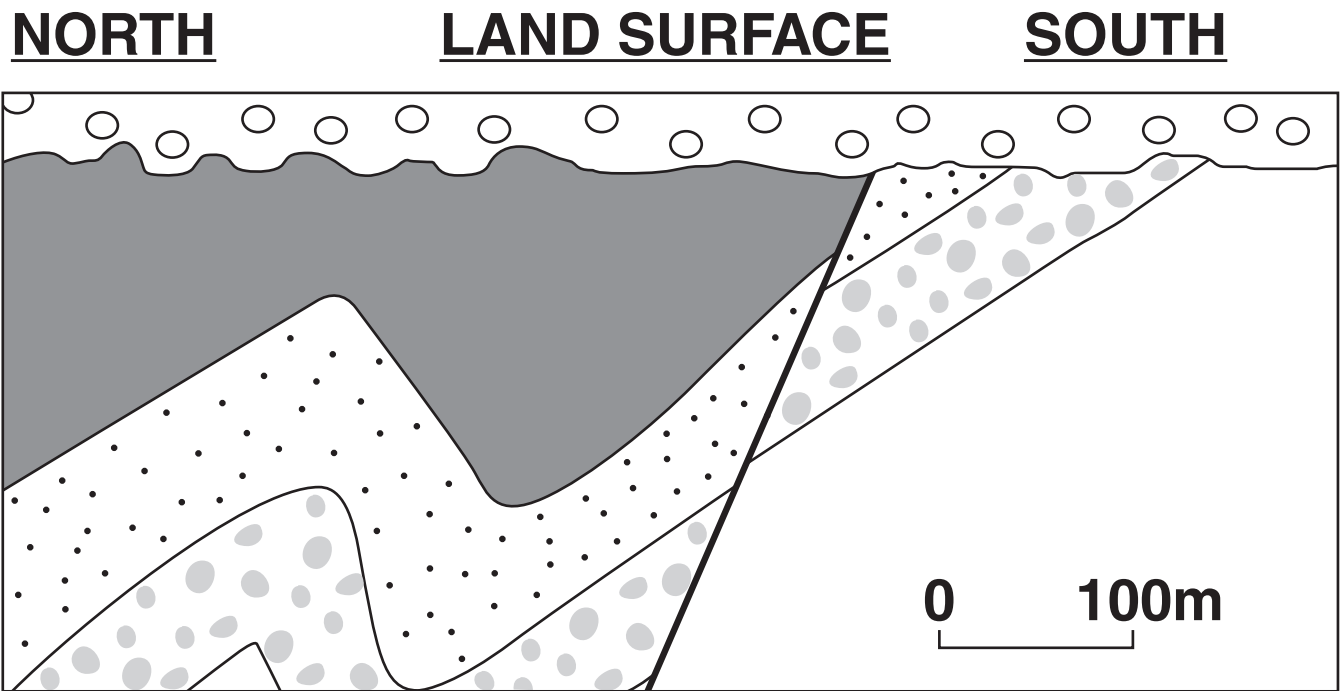
**abyssal plain  
deep sea trench  
continental shelf  
continental slope  
mid-ocean ridge  
seamount**

| <b>DEFINITION</b>   | <b>FEATURE</b> |
|---|----------------|
| <b>deep ocean basin with a depth of between 3 and 5 km</b>  |                |
| <b>line of volcanic mountains rising 2 to 3 km above the ocean basin – has an axial rift valley</b> |                |
| <b>very deep, linear valley in the ocean parallel to fold mountains and island arcs</b>             |                |

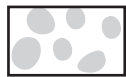
**[3]**

**[Total: 14]**

3 Below is a sketch cross-section of a cliff outcrop.



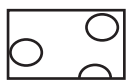
**sandstone**



**conglomerate**



**mudstone**



**coarse  
sandstone**



**clay**

**(a) (i) Fully describe the northern fold.**

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[2]

**(ii) Draw and label the axial planes on both folds on the diagram opposite.** [1]

**(b) (i) Name the type of fault shown on the cross-section.**

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[1]

**(ii) What kind of stress caused the fault?**

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[1]

**(iii) With the aid of a diagram, name and describe a feature that can often be found along fault planes. If you can not draw the diagram you may provide a clear description which should include details of labels that you would include on a diagram.**



***In your answer, you should use an appropriate term, spelled correctly.***

**name of feature** \_\_\_\_\_

**description** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ **[3]**

**The sketch cross-section of a cliff outcrop is provided again for parts (c)(i) and (c)(ii).**

**(c) (i) Label the unconformity on the cross-section of the cliff outcrop. [1]**

**(ii) Describe fully the order of events shown in the cross-section (start with the oldest).**

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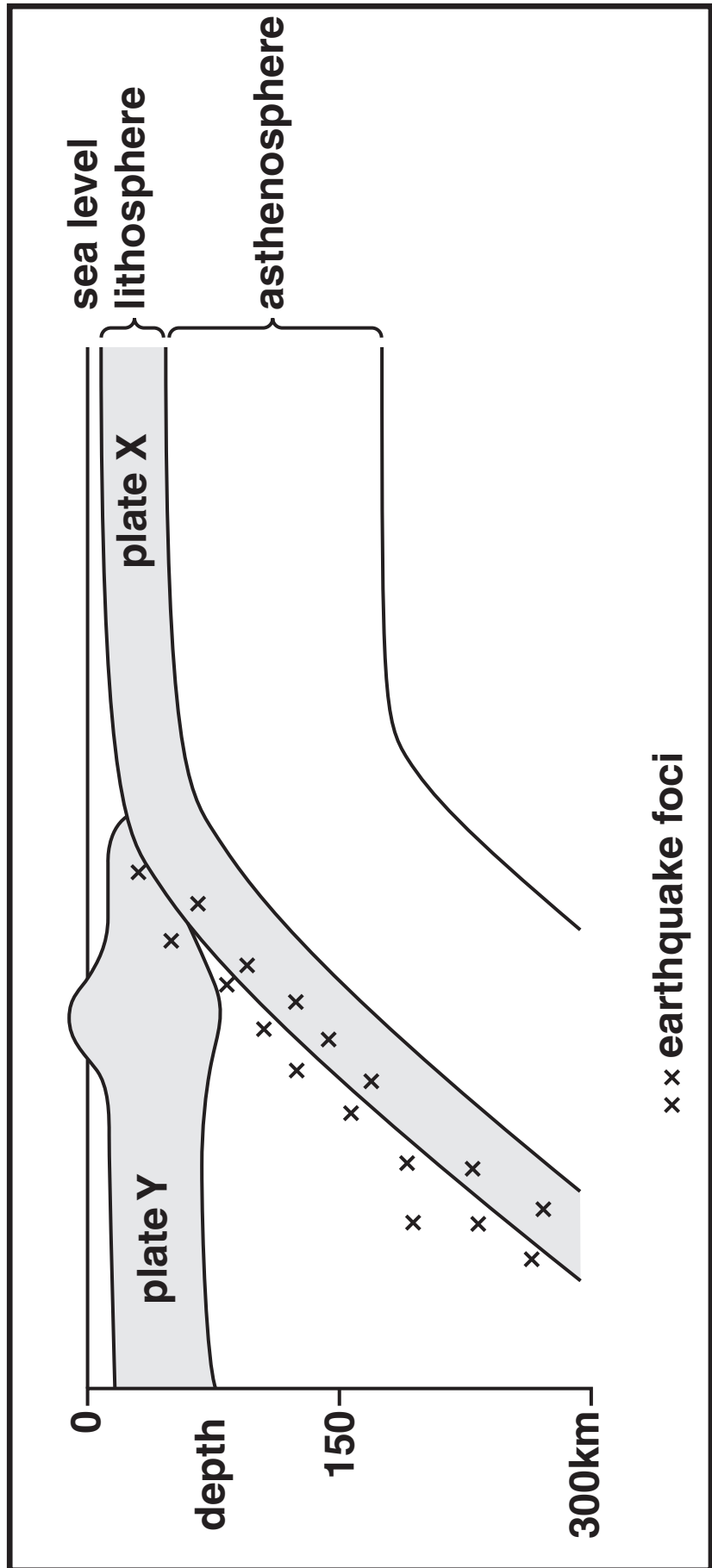
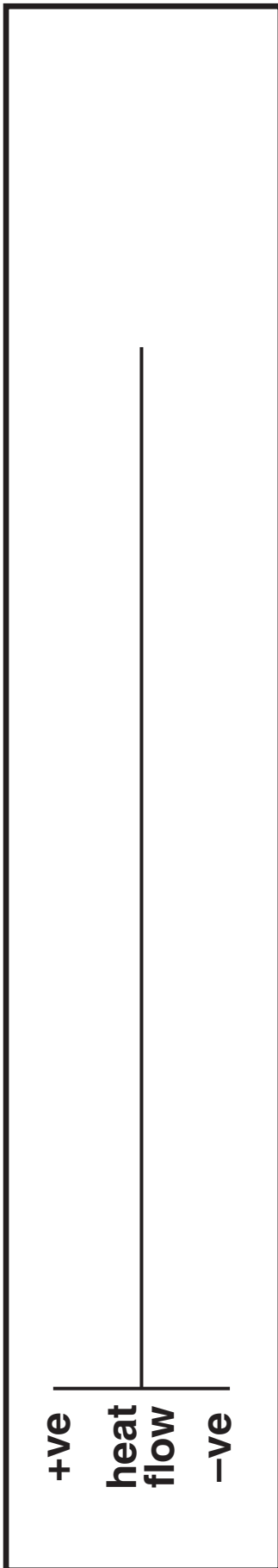
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**[4]**

**[Total: 13]**

4 The diagram below is a cross-section through a plate margin.





**(a) (i) On the diagram shade and label:**

- the Benioff zone
- an island arc. [2]

**(ii) Draw arrows to show the direction of movement of plates X and Y. [1]**

**(iii) On the diagram draw and label the path of rising magma which forms active volcanoes.[1]**

**(iv) Name the type of plate margin shown in the diagram.**

\_\_\_\_\_ [1]

**(b) (i) Draw the variation in heat flow across the plate margin on the axis above the plate diagram. [1]**

**(ii) Explain the pattern of heat flow.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

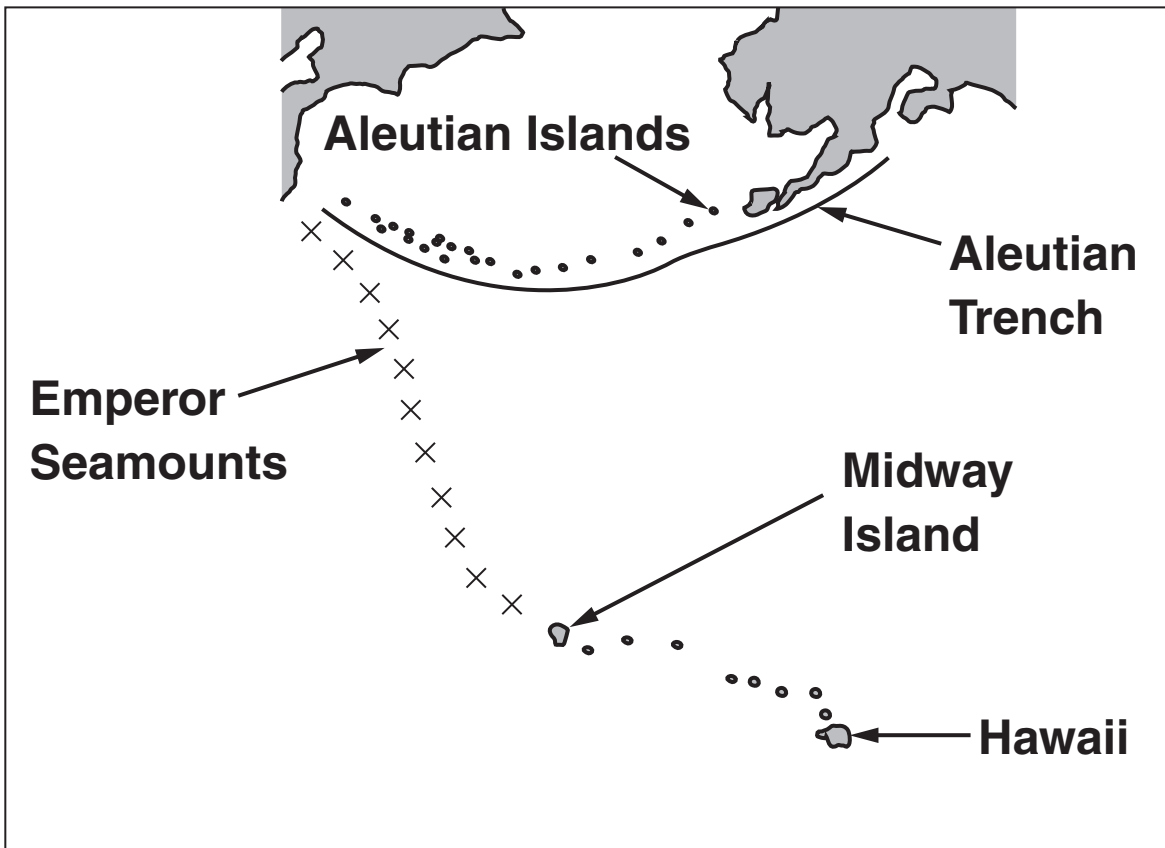
(c) (i) Give the name of an oceanic plate.

\_\_\_\_\_ [1]

(ii) Give the name of a continental plate.

\_\_\_\_\_ [1]

(d) The map below shows the Hawaiian and Aleutian island chains.



(i) Hawaii is an example of a *hot spot*. Explain what this term means.

\_\_\_\_\_  
\_\_\_\_\_ [1]

**(ii) Explain how the pattern of islands and seamounts was produced by plate movement over the hot spot.**

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**[3]**

**[Total: 14]**

**5 Describe three pieces of evidence for the movement of continents over time using the fit of Africa and South America. You may use diagrams to illustrate your answer.**

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[8]

[Total: 8]

**END OF QUESTION PAPER**







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