

Surname	Centre Number	Candidate Number
Other Names		2



GCE A level

1215/04

GEOLOGY - GL5

THEMATIC UNIT 4

GEOLOGY OF THE LITHOSPHERE

P.M. THURSDAY, 14 June 2012

ONE of TWO units to be completed in 2 hours

			Examiner only
Section A	1.	15	
Section B	2.	25	
	3.		
	4.		
Total		40	

1215
040001

ADDITIONAL MATERIALS

In addition to this and one other examination paper, you may require a calculator.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **question 1** in Section A (15 marks) and **one** question from Section B (25 marks).

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly presentation in your answers.

SECTION A

1. **Figure 1** is a cross-section of a destructive plate boundary. Two isotherms are shown together with five locations **A** to **E**, and two areas **X** and **Y** where magma is being produced.

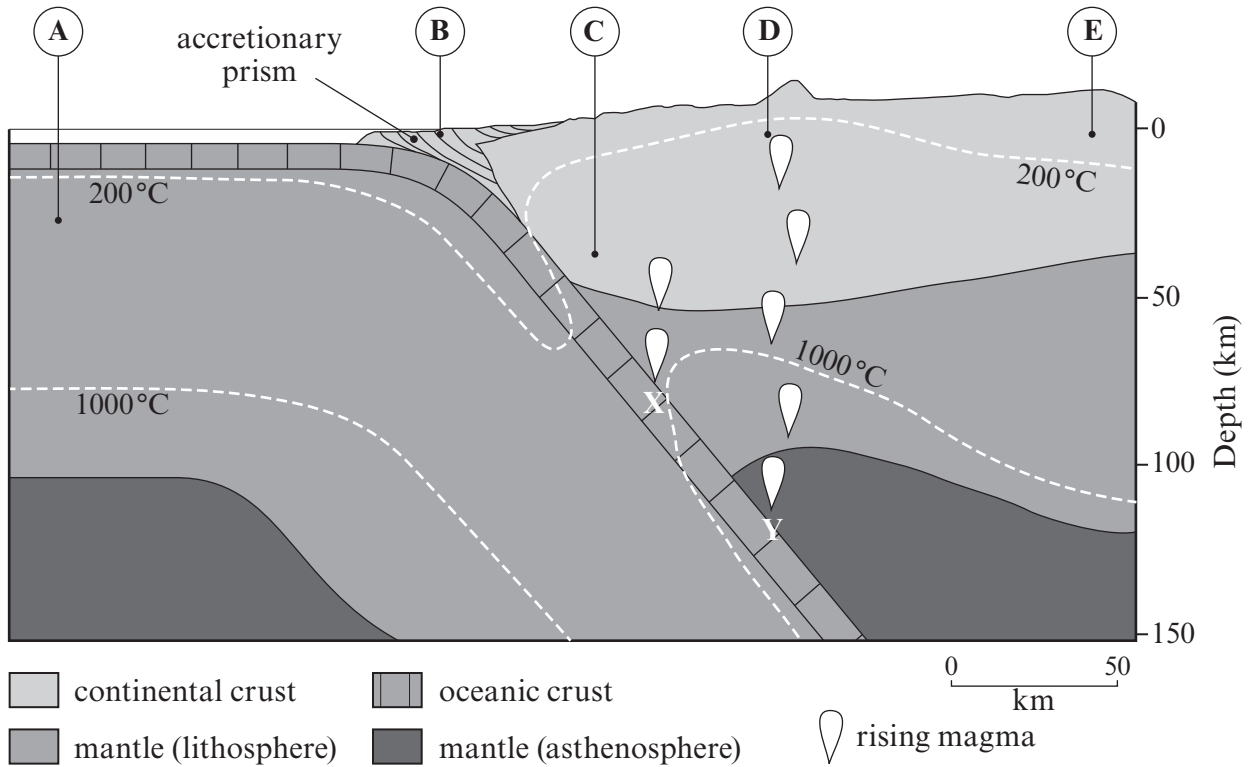


Figure 1

(a) Using **Figure 1**:

- (i) Label the top of the **oceanic** lithosphere with an arrow labelled **P** (**P** →) and the bottom of the **oceanic** lithosphere with an arrow labelled **Q** (**Q** →). [2]
- (ii) Ophiolites are often found at location **B**. Explain how they may have formed there. [2]

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(b) Refer to **Figure 1**:

(i) Draw the 600 °C isotherm on **Figure 1**. [1]

(ii) Explain the shape of the isotherms. [2]

Explanation

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(c) Heat and pressure variations result in different types of metamorphism.

Complete **Table 1** to show the location (**A** to **E** in **Figure 1**) at which each type of metamorphism is most likely to be occurring. Give the reason(s) for your choice of location. [6]

Metamorphism	Location	Reason(s)
Contact	•	•
Dynamic	•	•
Regional	•	•

Table 1

(d) On **Figure 1** magmas are shown to be forming at **X** and **Y**. Suggest what factor might enable magma to form at the lower temperature at **X** compared with that at **Y**. [2]

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Total 15 marks

SECTION B

Answer one question only.

Write your answer in the remaining pages of this booklet.

2. (a) Describe how seismology has made it possible to identify the lithosphere.
(b) Evaluate the effectiveness of seismology in identifying the importance of the asthenosphere. [25]
3. Describe how forces acting on continental lithosphere may cause brittle or ductile deformation. Evaluate the importance of the depth in the lithosphere on the types of deformation produced. [25]
4. Evaluate the contribution made by J. Tuzo Wilson to an understanding of plate tectonics. [25]

