

**ADVANCED SUBSIDIARY GCE
 GEOLOGY**

2832

The Rock Cycle – Processes and Products

THURSDAY 10 JANUARY 2008

Afternoon
 Time: 1 hour

Candidates answer on the question paper.

Additional materials: Ruler (cm/mm)



Candidate Forename

Candidate Surname

Centre Number

Candidate Number

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or 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.
- Do **not** write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

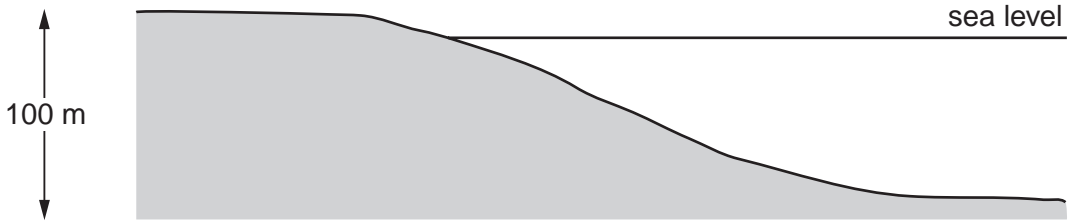
- The number of marks for each question is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- You will be awarded marks for the quality of written communication where this is indicated in the question.
- You may use an electronic calculator.
- You are advised to show all the steps in any calculation.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	17	
2	17	
3	16	
4	10	
TOTAL	60	

This document consists of **10** printed pages and **2** blank pages.

Answer **all** the questions.

1 The diagram shows a cross section through a delta.



(a) (i) Define the term *delta*.

.....

 [2]

(ii) Label the diagram to show where topset, bottomset and foreset beds are deposited. [2]

(b) Rocks that form in deltaic environments are listed below.

coal shale seat earth fine sandstone

(i) Complete the table by writing the name of **each** rock under its correct environment.

environment	bottomset	foreset	topset
rocks			

[3]

(ii) What name describes a series of beds repeated vertically in deltaic deposition?

..... [1]

(iii) Explain how this repeated sequence forms.

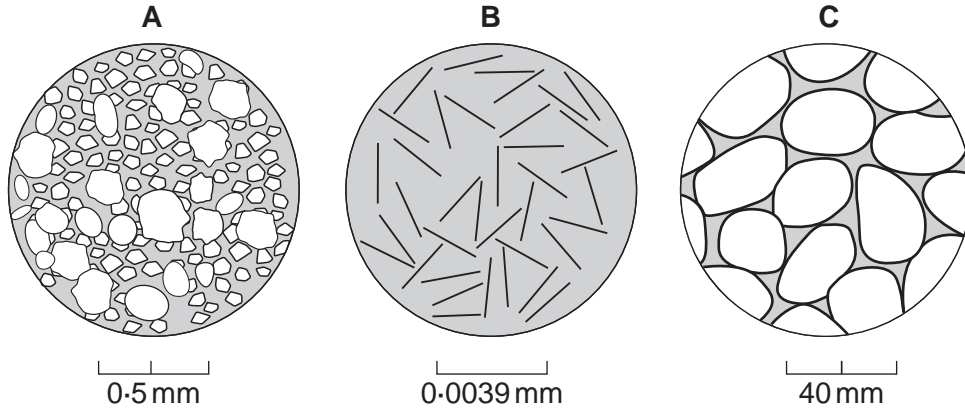
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 [2]

(iv) Name the climatic zone where coal is likely to form.

.....[1]

(c) The thin section diagrams below show three clastic rocks deposited in marine conditions.



(i) Identify the rocks.

A

B

C

[3]

(ii) Describe the environment of deposition of each rock.

A
.....
.....

B
.....
.....

C
.....
.....

[3]

[Total: 17]

2 The table below contains descriptions of igneous rocks.

D include xenoliths of overlying rock	E have a reddened top	F may have pillow shapes
G are discordant	H have vesicles or amygdales at the top	J have one chilled margin
K are composed of coarse crystals	L have medium sized crystals in the middle	M include xenoliths of underlying rock

(a) Select the letters that describe lava flows and sills. You may use each letter once or not at all.

lava flows **only**

sills **only**

[6]

(b) (i) Describe a *batholith*.

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.....

.....[2]

(ii) Explain how porphyritic texture is formed.

.....

.....

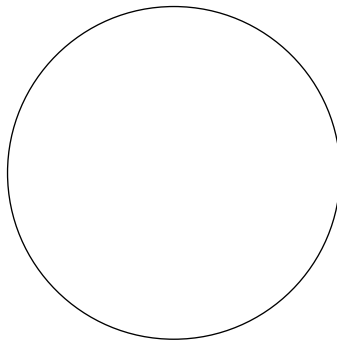
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.....[2]

(iii) In the circle below, draw a labelled diagram to show porphyritic texture.



[2]

(iv) Explain how a metamorphic aureole forms.

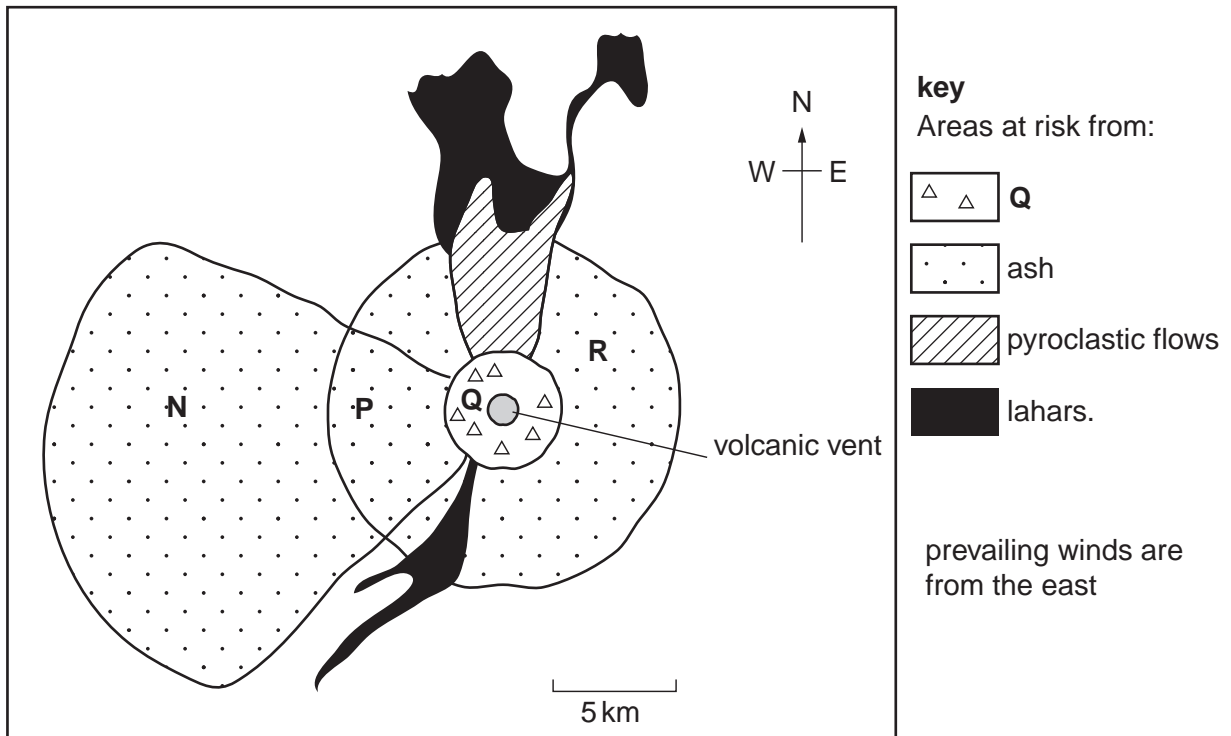
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.....[2]

(v) Describe the factors that control the width of a metamorphic aureole.

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.....[3]

[Total: 17]

3 Below is a risk map for the area around a Central American volcano.



(a) (i) Choose **one** letter from the map that indicates areas of moderate risk from ash falls and **one** letter that indicates areas of high risk from ash falls.

moderate risk **high risk**[2]

(ii) Explain why you chose your area of high risk from ash falls.

.....

[2]

(iii) Suggest a volcanic product that could be found in area Q. Explain your answer.

product[1]

explanation

[1]

(iv) Describe the methods a geologist would use to analyse the risk from pyroclastic flows and lahars.

.....

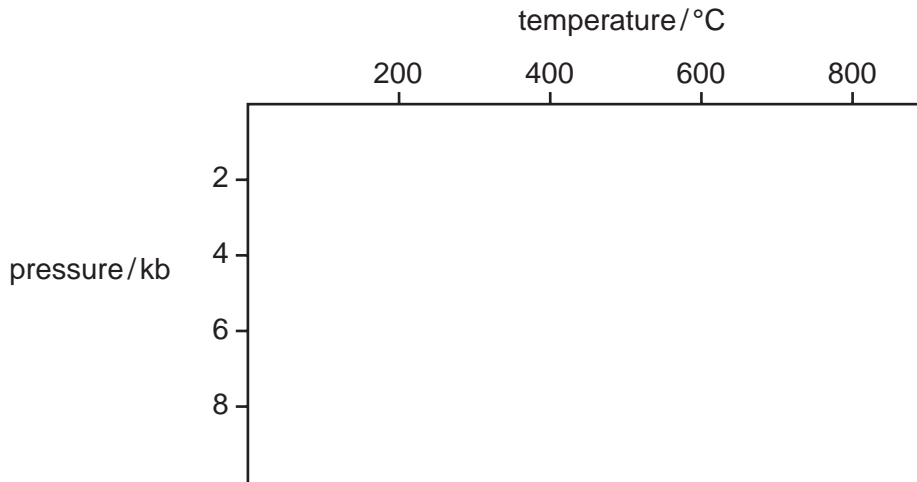
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.....[2]

(b) On the diagram below, shade and label the following areas:

- burial metamorphism
- thermal metamorphism
- regional metamorphism.



[3]

(c) Metamorphic rocks form as a result of changes due to heat and/or pressure.

Complete the table below.

type of metamorphism	parent rock	metamorphic rock	mineral composition of metamorphic rock
thermal	sandstone		quartz
thermal		marble	
	slate		garnet and mica

[5]

[Total: 16]

4 In this question, two marks are available for quality of written communication.

Using diagrams, describe the deposition in hot desert environments of the following:

- wadi conglomerates
- dune sandstones
- evaporites in playa lakes.

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.....[8]

Quality of Written Communication [2]

[Total: 10]

END OF QUESTION PAPER

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