



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

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**GEOGRAPHY**

**0460/43**

Paper 4 Alternative to Coursework

**October/November 2010**

**1 hour 30 minutes**

Candidates answer on the Question Paper.

Additional Materials: Ruler

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

**DO NOT WRITE ON ANY BARCODES.**

Answer **all** questions.

The Insert contains Photographs A and B, and Figs 3 and 5 for Question 1.

The Insert is **not** required by the Examiner.

Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.

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

For Examiner's Use	
<b>Q1</b>	
<b>Q2</b>	
<b>Total</b>	

This document consists of **15** printed pages, **1** blank page, and **1** Insert.



- 1 A group of students went on a field visit to some coastal sand dunes. Having studied how dunes were formed in class, the students wanted to find out more about their shape and how they might be affected by people. Coastal sand dunes are popular places for people to visit but this may affect the natural environment. An area of coastal sand dunes is shown in Photograph A (Insert).

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The students agreed on two hypotheses.

**Hypothesis 1:** *The profile of the sand dunes would match a textbook example they had used in class.*

**Hypothesis 2:** *Human activity will vary across the profile and will affect the vegetation cover of the sand dunes.*

- (a) Fig. 1 is a sketch of the area shown in Photograph A.



**Fig. 1**

On the sketch, label with an arrow:

- an area of bare sand
- an area of marram grass

[2]

- (b) (i) In order to investigate both hypotheses, the students decided to work along a transect from the sea inland. To make their transect line as accurate as possible, the students put a rope on the ground starting at the sea and working inland.

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On Fig. 2 below choose the angle at which they should have put the rope. Circle your answer below.

A B C D [1]

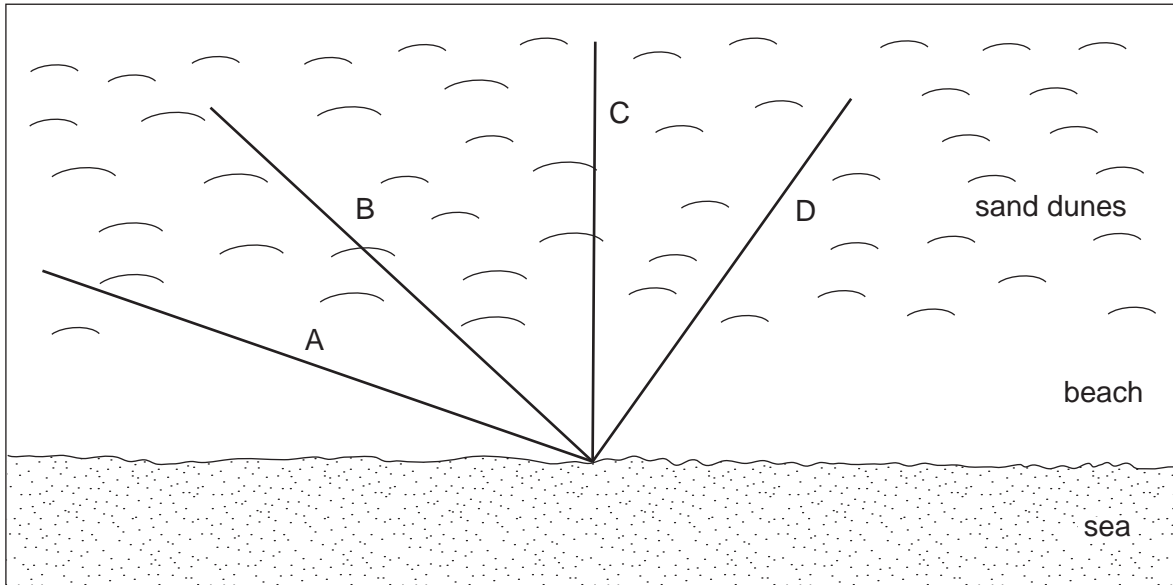


Fig. 2

- (ii) The students used a systematic sampling method of selecting measuring points along the transect. Describe how they would use this sampling method.

.....

.....

.....

..... [2]

- (iii) At each chosen sampling point, the students measured the angle of slope along the transect. To measure the angle of slope, they used the equipment shown in Fig. 3 (Insert). Explain how they used the following pieces of equipment:

Tape measure .....

.....  
 .....  
 .....

Ranging poles .....

.....  
 .....  
 .....

Clinometer .....

.....  
 .....  
 ..... [6]

- (c) From their measurements the students drew a profile of their transect. This is shown in Fig. 4 opposite.

- (i) Compare the students' profile with the textbook example shown in Fig. 5 (Insert) which has some dune features labelled on it. Choose from these features and label them in the boxes on Fig. 4. One label has been completed for you. [2]

- (ii) What conclusion would the students make about **Hypothesis 1**: *The profile of the sand dunes would match a textbook example they had used in class?* Support your conclusion by referring to similarities and differences between the students' profile in Fig. 4 and the textbook example in Fig. 5.

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 .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 ..... [4]

5

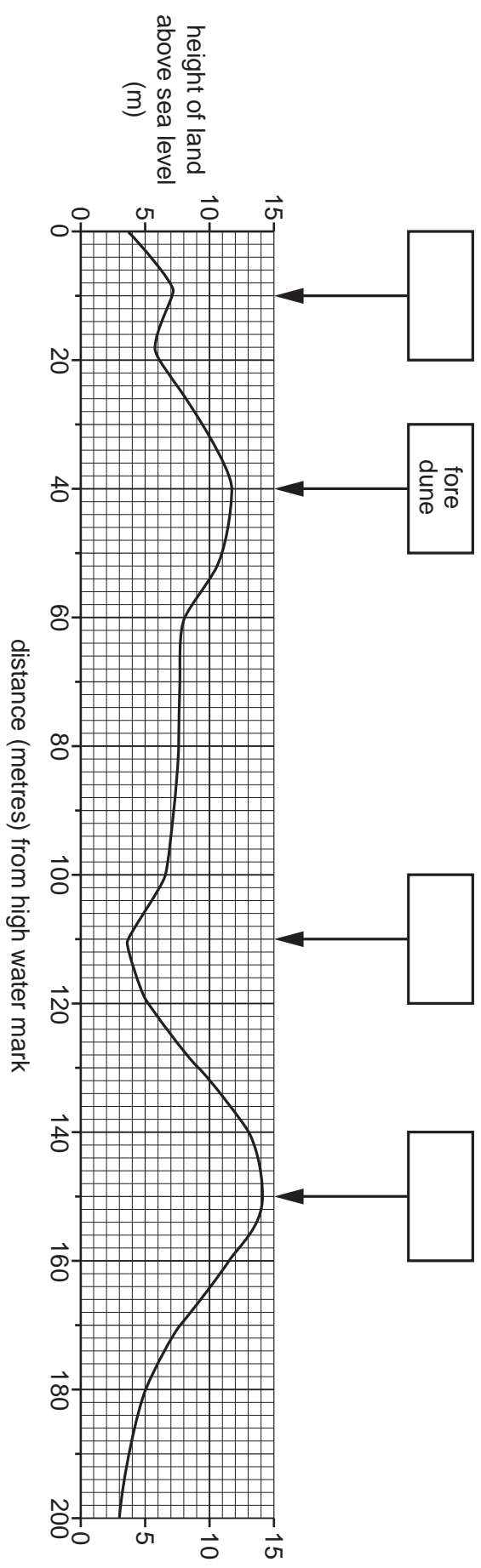


Fig. 4









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2 A class of students wanted to investigate the Central Business District (CBD) of a local town. In particular, they wanted to decide where the boundary of the CBD occurred. They had learned in class that this is known as 'delimiting' the CBD. They had discussed with their teacher a number of fieldwork techniques that could be used to delimit the CBD.

The students agreed to test two hypotheses.

**Hypothesis 1:** *Different techniques may produce different results when delimiting the CBD.*

**Hypothesis 2:** *Measuring building height is the most accurate way to delimit the CBD.*

(a) To help them to test their hypotheses, the students decided to obtain primary and secondary data. How are these two types of data different?

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

(b) The students agreed to use four different techniques to test **Hypothesis 1**.

These were:

- Mapping land use
- Pedestrian counts
- Noting traffic restrictions
- A survey of building heights

(i) Their first task was to map land use onto a base map of the town. Describe how they would carry out this mapping task during fieldwork and in school.

Fieldwork: .....  
.....  
.....  
.....  
.....

In school: .....  
.....  
.....  
.....  
..... [4]

- (ii) Their second task was to do a pedestrian count at a number of sampling points in their study area. Two students undertook this task and throughout the day they counted the number of pedestrians passing them at different locations in five minute periods.

In the space below, draw a recording sheet which the students could have used for this task.

[3]

- (iii) When the students returned to school having completed their pedestrian counts, their teacher pointed out a weakness in their fieldwork, which was that they had done their counts at different times of the day. Why would this make their results unreliable?

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

- (iv) The students decided to repeat the pedestrian counts as a class the next day. Describe an appropriate method to ensure they obtained reliable results.

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

(c) The results of the pedestrian count are shown in Fig. 7 below. Some isolines have been drawn on the map to show pedestrian flow.

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Fig. 7

(i) On Fig. 7, complete the isoline that shows 20 pedestrians. [1]

(ii) On Fig. 7, shade in the area where there were more than 80 pedestrians recorded. [1]

(iii) Whilst in town, the students also marked on the map any traffic restrictions which they saw. One example of a traffic restriction is a no vehicle pedestrian zone. Give **three** other examples of traffic restrictions they could have recorded.

1 .....

.....

2 .....

.....

3 .....

.....[3]

(iv) To obtain their final set of data, the students obtained a map which showed the height of buildings in the town. Suggest why the students did not map this data themselves.

.....

.....

.....

.....[2]

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(d) Having completed their data collection the students returned to school to map their results. After a discussion, they decided to use the following techniques to delimit the area of the CBD:

- Land use map: land use types which would be expected in the CBD
- Pedestrian count: more than 40 pedestrians recorded in 5 minutes
- Height of buildings: 3 or more storeys high
- Traffic restrictions

(i) Suggest **three** land use types that are common in the CBD which the students could have used to delimit its area.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(ii) For each of the above techniques, the students delimited the area of the CBD. Their decisions are shown in Fig. 8 opposite.

What conclusion can you make about **Hypothesis 1: Different techniques may produce different results when delimiting the CBD?** Use evidence from Fig. 8 to support your conclusion.

.....

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.....

.....

..... [2]

(iii) The students decided to combine the results of all four techniques in order to delimit the CBD.

On Fig. 8, shade in the area which is included in the CBD area of all the following techniques: building height, land use and pedestrian flow. [1]

(iv) Use Fig. 8 to make a conclusion about **Hypothesis 2: Measuring building height is the most accurate way to delimit the CBD.** Explain your conclusion.

.....

.....

.....

.....

..... [2]



**Key**  
Edge of CBD according to different techniques  
— — building height    ▨ no vehicles  
- - - land use  
- . - . pedestrian flow

0                      100                      200  
metres

**Fig. 8**

(e) To extend their investigation some students wanted to predict how the CBD might change in the future. Suggest **three** changes which they might have predicted.

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1 .....

.....

2 .....

.....

3 .....

.....[3]

[Total: 30 marks]

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