

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

GEOGRAPHY

0460/04

Paper 4 Alternative to Coursework

May/June 2005

1 hour 45 minutes

Additional Materials: Answer Booklet/Paper
Ruler
Calculator

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

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.

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

The insert contains all the Figures referred to in the Questions.

This document consists of **4** printed pages and **1** insert.



- 1 A group of students investigated downstream changes in a small river as distance from the source increased. Three sites, A, B and C, were visited, at different distances from the source of the river and at decreasing height above sea level. The results of the investigation are shown in Table 1.

Table 1

	Site A	Site B	Site C
Distance from the source (km)	8	13	28
Height above sea-level (m)	550	350	108
Average pebble size (cm)	18	9	7.5
Velocity (m/sec)	0.37	0.59	0.42

- (a) (i) Using a map, the students found the height above sea-level at each site. Use the data from Table 1 to draw an accurate long profile line graph on Fig. 1 (Insert) to show the changing height above sea-level of the river from the source to Site C. [4]
- (ii) The students discussed long profiles and river features such as waterfalls, flood plains, rapids and ox bow lakes. List **two** river features which the students might expect to see at Site A and two features at Site C. [2]
- (b) The teacher instructed students to draw a field sketch at Site A. One completed sketch is shown in Fig. 2 (Insert).
- (i) State **two** essential pieces of information, other than the location, which should be included when completing a sketch. [2]
- (ii) Suggest **one** advantage and **one** disadvantage of using field sketches. [2]
- (c) One feature shown by the sketch (Fig. 2) is large and small rocks on the river bed. Explain how these may change the friction, speed and flow of this small river. [4]
- (d) Each student randomly selected ten pebbles at each site. The pebbles were chosen at random by a student walking around the river stepping in different directions. After each step, the pebble closest to the end of the foot was picked up and measured.
- (i) Using the results in Table 1, complete the bar graph on Fig. 1 (Insert) to show the average pebble size for Site B and Site C. The result for Site A is already plotted on Fig. 1. [2]
- (ii) The results show that pebble size becomes smaller from Site A to Site C. Suggest a reason for this. [2]
- (iii) Why might this random method of collecting pebble sizes be considered an unreliable method? [1]
- (iv) Suggest how the students may obtain a more representative sample of results if the investigation was repeated. [2]

- (e) Study Table 1 again. The velocity at each site was also recorded and the results shown in Table 1.
- (i) Describe the changing pattern of velocity from Site A to Site C. [1]
- (ii) Water was extracted by a bottling factory upstream from Site C. Suggest how and why this:
- changed the velocity readings,
 - increased the depositional features at Site C. [3]
- (f) Stating data evidence from Table 1 and Fig. 1, write a conclusion to the investigation about the changes in this small river as distance from the source increased. [5]

Total 30 marks

- 2 Students investigated traffic flow in and around the centre of a town. A simplified map of the area studied is shown on Fig. 3. The students proposed to investigate two hypotheses.

- The amount of traffic is highest in the centre of the town and decreases away from the centre.
- Traffic flow will change during the day.

Six sites (P, Q, R, S, U and V) were chosen at different distances from the town centre. These sites are shown on Fig. 3. Site P was identified as the centre of the town.

- (a) Suggest how and why the amount of traffic is often a problem in the centre of towns. [3]
- (b) The traffic was counted three times during a weekday. A student at each site counted vehicles for five minutes at 08.30, 13.00 and 16.30. The results of the traffic survey are shown in Table 2 below.
- (i) A tally system was used for recording the vehicles passing each student. Suggest two reasons why this is a suitable recording method. [2]
- (ii) Using the data from Table 2, draw proportional squares to show the **total** number of vehicles at Sites S and U onto Fig. 3. [4]
- (iii) Describe the changes in **total** traffic as distance from the centre of the town increases. [2]

Table 2

Site	Distance in metres from Centre (P)	08.30 Away from P	08.30 Towards P	13.00 Away from P	13.00 Towards P	16.30 Away from P	16.30 Towards P	Total
P	0	140		56		93		289
Q	200	31	81	14	16	44	14	200
R	250	7	26	2	8	11	10	64
S	420	19	46	8	14	35	22	144
U	580	9	30	6	7	19	10	81
V	470	33	60	25	29	69	40	256

- (c) (i) Study Fig. 4 showing flow diagrams for traffic flow at Sites U and V. Compare the traffic flow during the day at Site U with that at Site V. You should state data to support your comments. [4]
- (ii) If a similar flow diagram was drawn for Site Q for 16.30, state in mm the width of the flow diagram for both towards and away from the centre of the town. [1]
- (iii) Calculate the percentage of traffic recorded at Site R at 08.30 travelling towards the town centre as a proportion of the total passing Site R. [1]
- (d) Students decided to investigate land use to see if a link existed between land use and traffic flow.
- (i) Outline the reasons why traffic **flow** may be linked to land use in a town. [3]
- (ii) Describe in detail what the students should do to collect data about the land use of this town. [4]
- (e) Write a conclusion to this investigation into traffic flow. It should include
- comments on both hypotheses 1 and 2,
 - data evidence to support your conclusions,
 - critical evaluation of the data collection methods used in the investigation. [6]

Total 30 marks