

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

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General Certificate of Education
 January 2004
 Advanced Level Examination



**GEOGRAPHY (SPECIFICATION A)
 Unit 7**

GGA7

Friday 30 January 2004 Afternoon Session

In addition to this paper you will require:
 pre-release material (previously despatched);
 a calculator.

Time allowed: 2 hours

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want marked.
- Figure and page numbers prefixed **P** are to be found in the pre-release book.

Information

- The maximum mark for this paper is 100.
- Mark allocations are shown in brackets.
- You will be assessed on your ability to use an appropriate form and style of writing, to organise relevant information clearly and coherently, and to use specialist vocabulary, where appropriate.
- The degree of legibility of your handwriting and the level of accuracy of your spelling, punctuation and grammar will also be taken into account.

Advice

Where appropriate, credit will be given for the use of diagrams to illustrate answers and where reference is made to your personal investigative work. You are advised to allocate your time carefully.

For Examiner's Use			
Number	Mark	Number	Mark
1			
2			
3			
4			
5			
Total (Column 1)	→		
Total (Column 2)	→		
TOTAL			
Examiner's Initials			

Answer **all** questions in the spaces provided.

1 Aims

- (a) With reference to your own experience of planning a fieldwork enquiry, and the objectives on page **P2**, outline the usefulness of **Figure P1** as a starting point for this enquiry.

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(4 marks)

- (b) The study area was selected due to its nearness to the investigator. What criteria, other than distance, would you consider when selecting a study area?

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(2 marks)



- (c) Suspended load was not measured, but it would have been relevant to the enquiry. Outline how you would determine the amount of load carried in suspension at any of the study sites.

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(6 marks)



3 Skills, Techniques and Interpretation

- (a) (i) Using **Photograph 1** on **Figure P3**, draw and label a sketch of **Photograph 1** in the space for **Figure 1** to show the channel landforms and other channel and valley characteristics.

Figure 1

(8 marks)

QUESTION 3 CONTINUES ON THE NEXT PAGE

Turn over ►

(ii) To what extent do the photographs (**Figure P3**) confirm that the channel landforms and characteristics change downstream as suggested by **Figure P1**?

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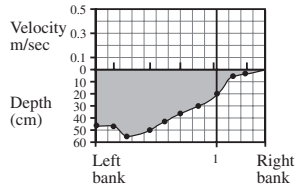
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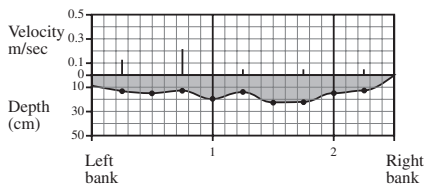
(6 marks)

- (b) (i) **Figure P4a** shows the width, depth and velocity of the cross profiles. This information is plotted on **Figure 2** completely for the first two sites and the first segment of the third, whilst it is only partially plotted for the second segment of the third site.
Complete **Figure 2** by adding the information for the remaining two distances of 4.13 and 5.31 metres from the left bank.

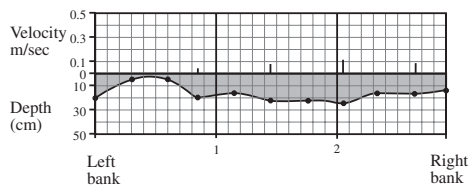
Site 1, Segment 1



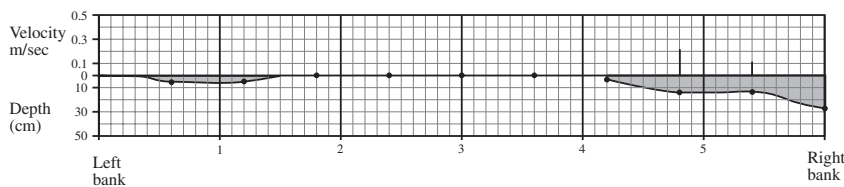
Site 1, Segment 2



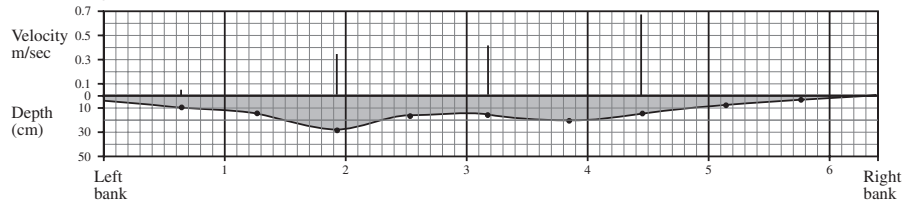
Site 2, Segment 1



Site 2, Segment 2



Site 3, Segment 1



Site 3, Segment 2

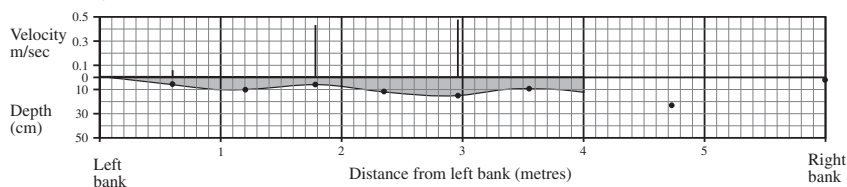


Figure 2

(4 marks)

- (c) (i) **Figure P4b** shows the results of the bedload shape survey. These results are partly displayed on **Figure 3**. Complete **Figure 3** by adding the following information for site 3;
- angular – 7
 - subangular – 7
 - subrounded – 6
 - rounded – 10

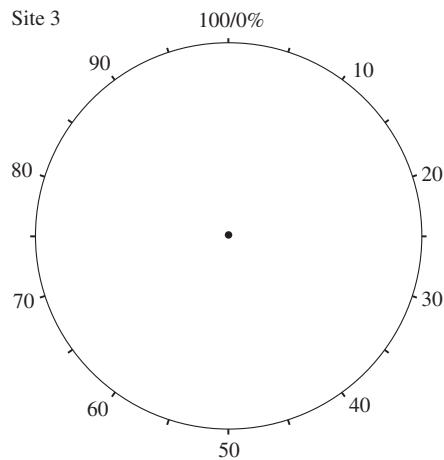
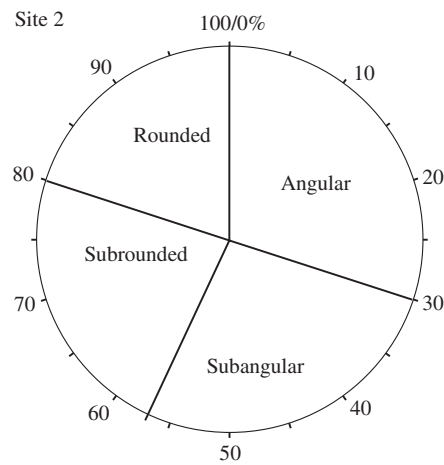
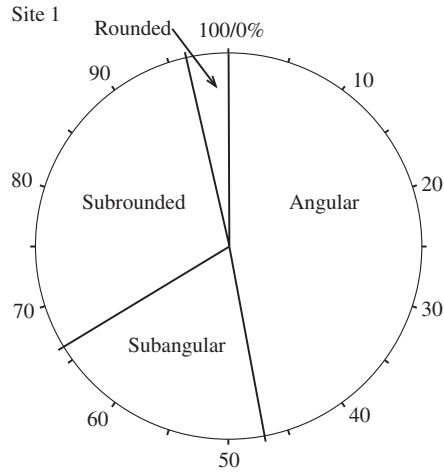


Figure 3

(3 marks)

- (ii) **Figure P4c** shows the mean bedload size and the discharge for the six × 10 metre segments. The results are shown for sites 1 and 2 on **Figure 4**. Complete **Figure 4** by adding the information for site 3, segments 1 and 2.

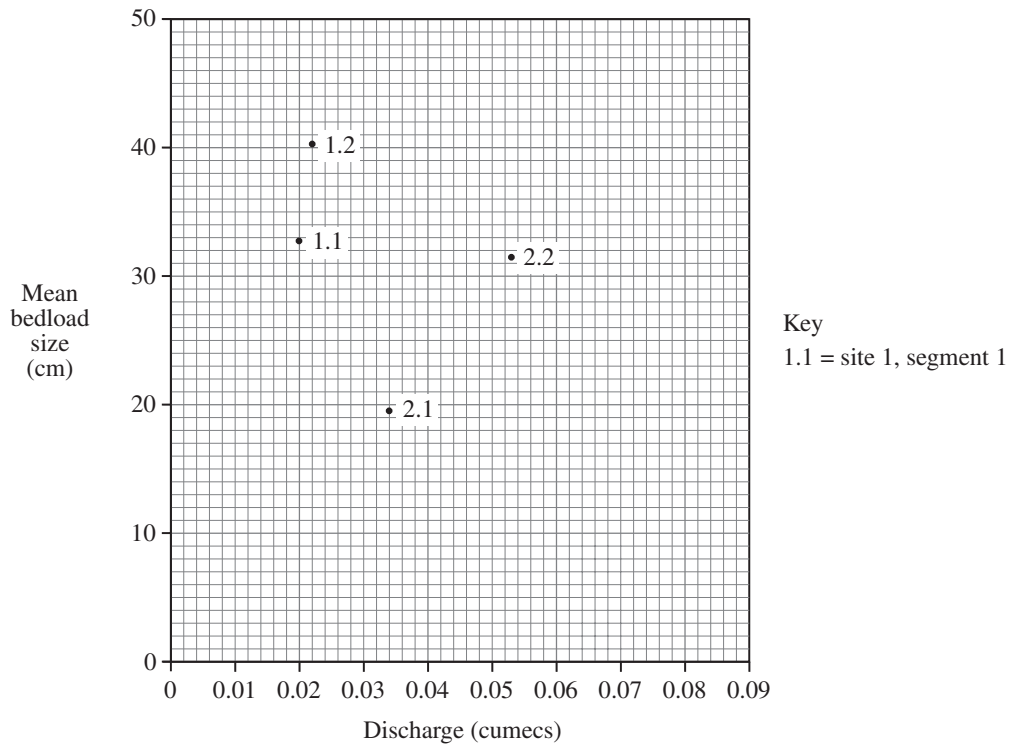


Figure 4

(4 marks)

- (iii) Outline the changes in bedload shape and size downstream and comment on the relationship with discharge.

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(6 marks)

QUESTION 3 CONTINUES ON THE NEXT PAGE

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- (iv) Bedload size and how it changes can be further investigated by applying Mann Whitney U test to determine the contrast in size between the site nearest the source and the site furthest downstream.

The three hypotheses below could all be tested:

- A. There is a difference in the size of the bedload between the two sites.
- B. The site nearest the source will have the largest bedload.
- C. The site furthest downstream will have the largest bedload.

With reference to **Figure P1**, state which of the hypotheses A, B or C you would expect to be valid.

Select A, B or C

State whether the hypothesis selected is a null or expected/alternative hypothesis.

Select null or expected/alternative

State whether the hypothesis selected is one or two tailed.

Select one or two tailed.

(3 marks)

- (v) Complete **Figure 5** to calculate the value of U for the bedload size for the two sites identified.

Length of long axis at site nearest source (cm) (x)	x ranked (r_x)	Length of long axis at site furthest downstream (cm) (y)	y ranked (r_y)
84	30	22	19
47	27	11	13
11	13	5	1
8	7	11	13
28	24	15	16
8	7	14	15
21	18	8	7
36	25	6	2.5
60	28	25	21.5
26	23	9	10
8	7	6	2.5
81	29	25	21.5
24	20	10	11
42		7	4
8		17	17
$\Sigma r_x =$		$\Sigma r_y = 174$	

$nx = ny = 15$

$$U_x = n_x n_y + \frac{n_x(n_x + 1)}{2} - \sum r_x$$

$$U_x = 225 + \frac{\quad}{2} -$$

$$U_x =$$

Figure 5

(4 marks)

- (vi) Using only the table of critical values below, interpret the value of U you have calculated with reference to your hypothesis.

	Significance level		
Sample size	0.05 one tailed 0.1 two tailed	0.01 one tailed 0.02 two tailed	0.025 one tailed 0.05 two tailed
$n_x/n_y = 15$	72	70	56

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(3 marks)

QUESTION 3 CONTINUES ON THE NEXT PAGE

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(d) With reference to **Figures P1, P3 and P4c**, explain the changes in landforms and other channel characteristics downstream (Objectives 1 and 2).

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(8 marks)

4 Conclusion

Write a summary of your findings for this enquiry with specific reference to the aims and objectives given on **page P2**. Using your own experience of conducting an enquiry, you should, in addition, consider the reliability of these findings and suggest how this enquiry could be improved and extended.

Summary

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QUESTION 4 CONTINUES ON THE NEXT PAGE

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Reliability

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Improvements and Extensions

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(10 marks)

$\frac{10}{10}$

5 Enquiry Related Issues

- (a) **Photographs 7 and 8 on Figure P3** show a variety of landforms and characteristics which have not been fully investigated.
For each of **photographs 7 and 8**, suggest a hypothesis, question, problem or issue which could be investigated and justify these as an extension to the enquiry.

Hypothesis, question, problem or issue – **photograph 7**

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Hypothesis, question, problem or issue – **photograph 8**

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Justification

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(5 marks)

QUESTION 5 CONTINUES ON THE NEXT PAGE

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