Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5 (a)	
5 (b)	
5 (c)	
TOTAL	

General Certificate of Education
Advanced Level Examination
June 2012

Geography GEO4A

Unit 4A Geography Fieldwork Investigation

Tuesday 19 June 2012 9.00 am to 10.30 am

You will need no other materials.
You may use a calculator.

Time allowed
- 1 hour 30 minutes

Instructions
- Use black ink or black ball-point pen. Use pencil only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You will be marked on your ability to:
  – use good English
  – organise information clearly
  – use specialist vocabulary where appropriate.

Advice
- You are advised to spend about 60 minutes on **Section A** and about 30 minutes on **Section B**.

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Section A

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

All your answers must relate to the geography fieldwork investigation that you undertook in preparation for this examination.

State the aim(s) of your fieldwork investigation.

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1 Explain the geographical reasons for carrying out your investigation in the area chosen.

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2 Describe and justify the steps taken to minimise the risks involved in collecting data for your investigation.

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3 Assess the usefulness of **one** method of data presentation that you used in your investigation.

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4 Discuss how your investigation helped your understanding of geographical theory.

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Turn over for the next question

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Section B

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

5 A student collected data on vegetation species in an area of sand dunes in south-east England. The hypothesis to be tested (H_1) was 'Species diversity will be higher in a managed area than in an unmanaged area of dune'. The null hypothesis (H_0) was that there would be no difference in species diversity between the two areas.

Ten samples were taken in each area and it was decided to apply the Mann Whitney U Test to the data, as shown in **Figure 1**.

Figure 1

Unmanaged area (n_1 = 10)		**Managed area (n_2 = 10)**	
Number of species	**Rank (R_1)**	**Number of species**	**Rank (R_2)**
2	8.5	2	8.5
3	14	3	14
0	1.5	6	20
1	4	4	17.5
2	8.5	5	19
1	4	3	14
2	8.5	3	14
2	8.5	2	8.5
1	4	4	17.5
0	1.5	3	14
	$\sum R_1 = 63$		$\sum R_2 = 147$

n_1 and n_2 are the number of samples in the unmanaged and managed areas respectively.

The Mann Whitney U calculations were:

$U_1 = (n_1\, n_2) + ½\, n_1\, (n_1 + 1) - \sum R_1 = (10 \times 10) + 5(11) - 63$, so $U_1 = 92$

$U_2 = (n_1\, n_2) + ½\, n_2\, (n_2 + 1) - \sum R_2 = (10 \times 10) + 5(11) - 147$, so $U_2 = 8$

The value for U in the table of critical values is 27 at the 0.05 significance level.

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5 (a) Interpret the result of the Mann Whitney U Test in **Figure 1**.

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Question 5 continues on the next page

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5 (b) Suggest why the Mann Whitney U Test is suitable to interpret this set of data.

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5 (c) Explain how the use of statistical techniques may help in the analysis of data and increase geographical understanding.

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END OF QUESTIONS

There are no questions printed on this page

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ANSWER IN THE SPACES PROVIDED