Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						6	4	6	4	/	0	1	Signature	

Paper Reference(s)

6464/01

Edexcel GCE

Geography A

Advanced

Unit 4: Physical Systems, Processes and Patterns

Wednesday 24 January 2007 – Afternoon

Time: 1 hour 30 minutes

Examiner's use only

Team Leader's use only

Question Number	Leave Blank
Section A	
1	
2	
Section B	
3	
4	
Section C	
5	
6	
Total	

Materials required for examination
Nil

Items included with question papers
Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.
Check that you have the correct question paper.
There are THREE sections, A, B and C. Answer **TWO** questions. Each question must come from a **different** section.
Indicate which question you are answering by marking the box (☒). If you change your mind, put a line through the box (~~☒~~) and then indicate your new question with a cross (☒).
Write your answers in the spaces provided in this question paper.
You must ensure that your answers to parts of questions are clearly numbered.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 6 questions in this question paper. All questions carry 25 marks.
The total mark for this paper is 50.
There are 28 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

You are reminded that you should support your answers, where necessary, with located examples, up-to-date data and fieldwork evidence.
You will be assessed on your ability to organise and present information, ideas, descriptions and arguments clearly and logically, taking into account your use of grammar, punctuation and spelling.

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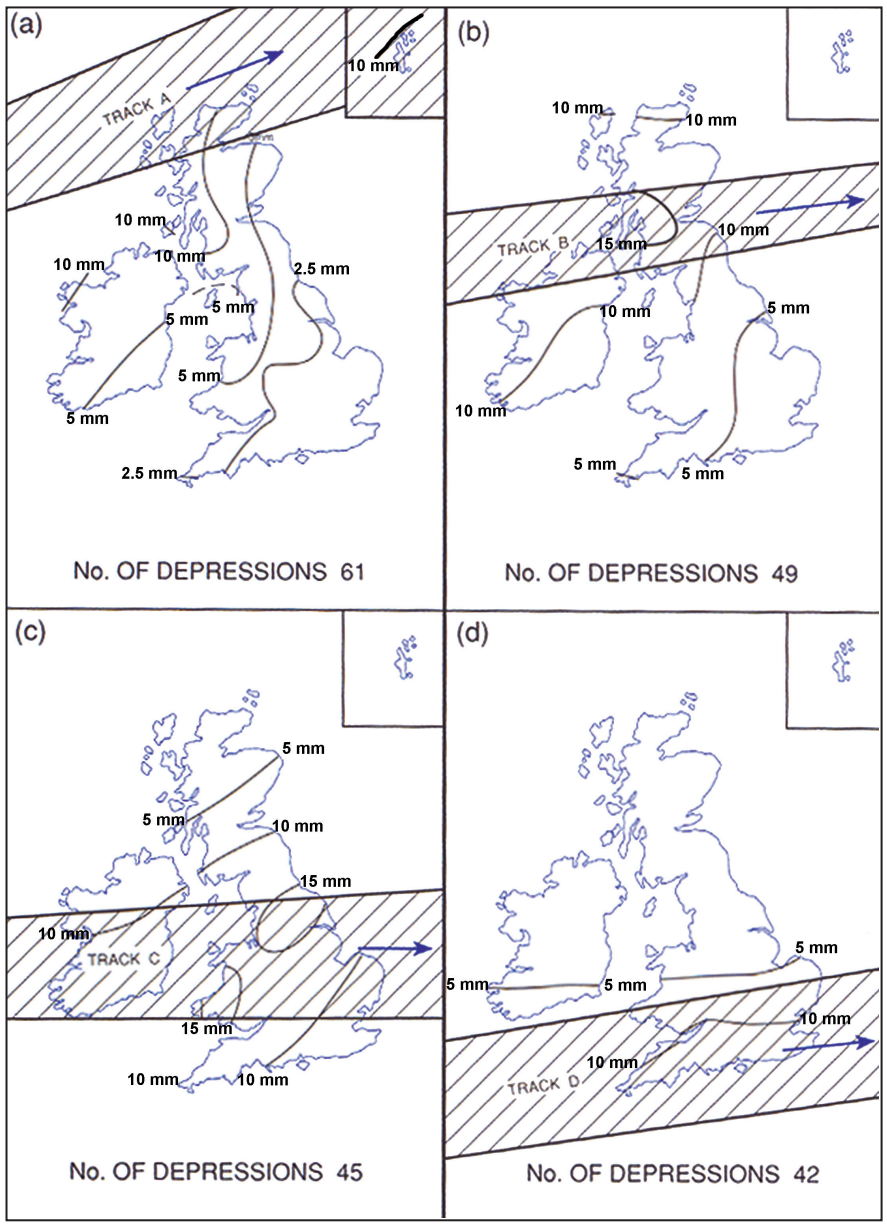
SECTION A: ATMOSPHERIC SYSTEMS

Do not answer more than ONE question from this section.

1. Figure 1 shows mean rainfall relative to depression tracks over the British Isles.



(Source: J.S. Sawyer, *Rainfall of depressions which pass eastwards over or near the British Isles*, Professional Notes 7 118, H.M.S.O., 1956)

Figure 1

(a) Outline how **mid-latitude depressions** are formed.

(5)

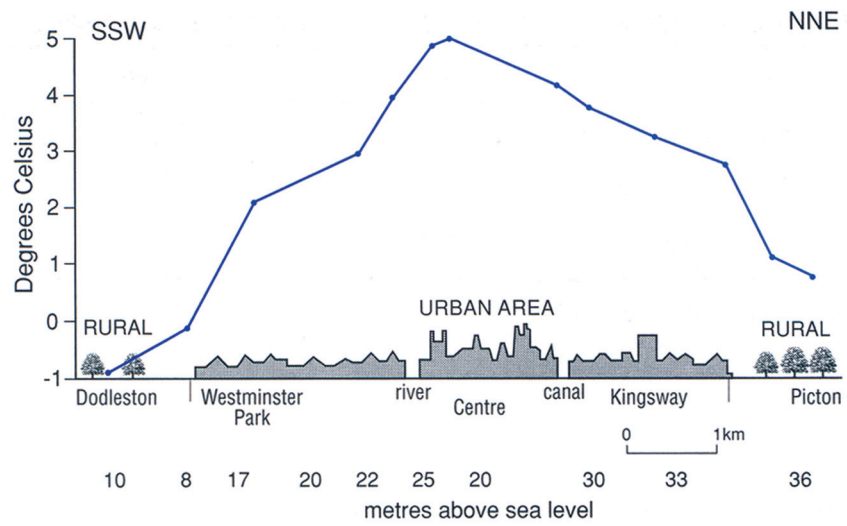
(b) Examine the varied impacts of the passage of mid-latitude depressions on the **weather** of the British Isles.

(20)

(Total 25 marks)

Leave blank

2. Figure 2 shows temperature variations along a transect through the urban area of Chester, Cheshire.



(Source: G.J. Nelder, *Chester's Climate: past and present*, published privately, 1985)

Figure 2

(a) Outline the characteristics of **urban heat islands**.

(5)

(b) Examine the factors influencing the spatial and temporal variations in the **micro-climates** of urban areas.

(20)

(Total 25 marks)

M 2 4 7 2 1 A 0 3 2 8

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If you choose to answer a question from Section A indicate which question you are answering by marking the box (☒). If you change your mind, put a line through the box (☒) and then indicate your new question with a cross (☒).

Chosen Question Number: **Question 1** ☐ **Question 2** ☐

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M 2 4 7 2 1 A 0 6 2 8

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M 2 4 7 2 1 A 0 8 2 8

Leave blank

(Total 25 marks)

Section A

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SECTION B: GLACIAL SYSTEMS

Do not answer more than ONE question from this section.

3. Figure 3 is a photograph of a periglacial landscape in Canada.

(Source: Tony Waltham, Geophotos)

Figure 3

(a) Outline the climatic characteristics of **periglacial** areas.

(5)

(b) Describe and account for the variety and location of periglacial landforms.

(20)

(Total 25 marks)

Leave blank

4. Figure 4 shows rates of erosion beneath selected glaciers.

Glacier	Erosion rate (mm per year)
Nansen, Greenland	0.01
Engabreen, Norway	0.41
Fedchenko, Central Asia	4.36
Gornergletcher, Switzerland	2.22
Johns Hopkins, Alaska	47.24

Figure 4

(a) Outline the processes by which glaciers erode.

(5)

(b) Assess the relative importance of the factors influencing rates of glacial erosion.

(20)

(Total 25 marks)

Leave blank

If you choose to answer a question from Section B indicate which question you are answering by marking the box (☒). If you change your mind, put a line through the box (☒) and then indicate your new question with a cross (☒).

Chosen Question Number: **Question 3** ☐ **Question 4** ☐

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Leave blank

M 2 4 7 2 1 A 0 1 6 2 8

Leave blank

(Total 25 marks)

Section B

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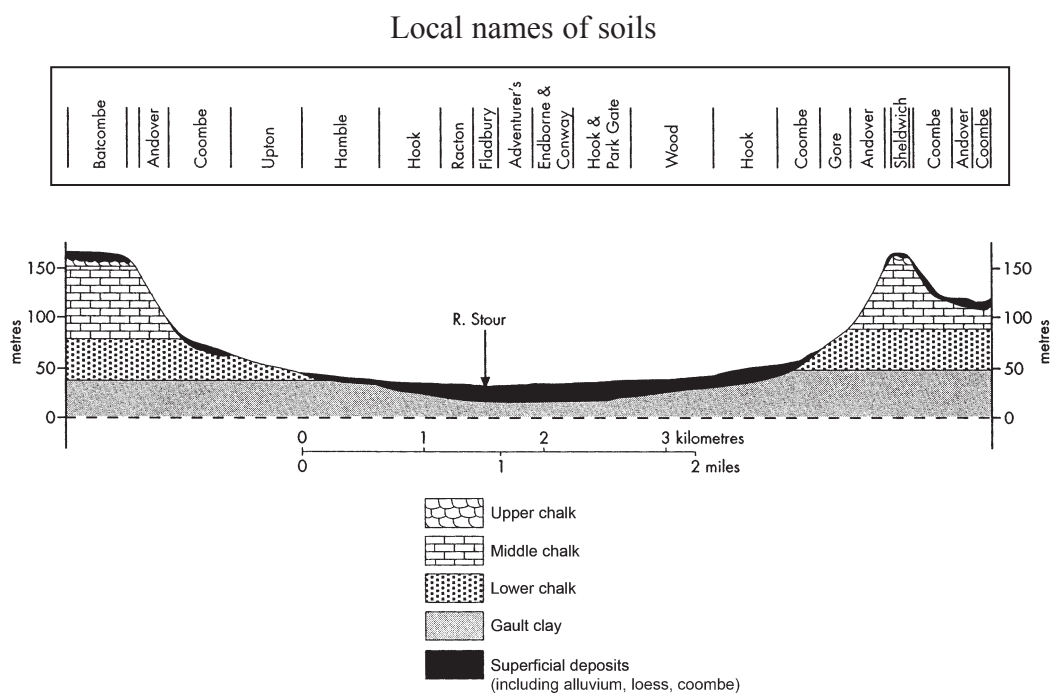
SECTION C: ECOSYSTEMS

Do not answer more than ONE question from this section.

5. Figure 5 shows a section across the Stour valley, southeast England, showing the relationships between soils, topography and parent material.



(Source: Adapted from J.A. Catt, *Soils and Quaternary Geology: A Handbook for Field Scientists*, Clarendon Press, 1986)

Figure 5

(a) Distinguish between **azonal** and **intrazonal** soils.

(5)

(b) Assess the relative importance of the factors influencing soil characteristics.

(20)

(Total 25 marks)

Leave blank

6. Figure 6 shows energy flows in a natural ecosystem.

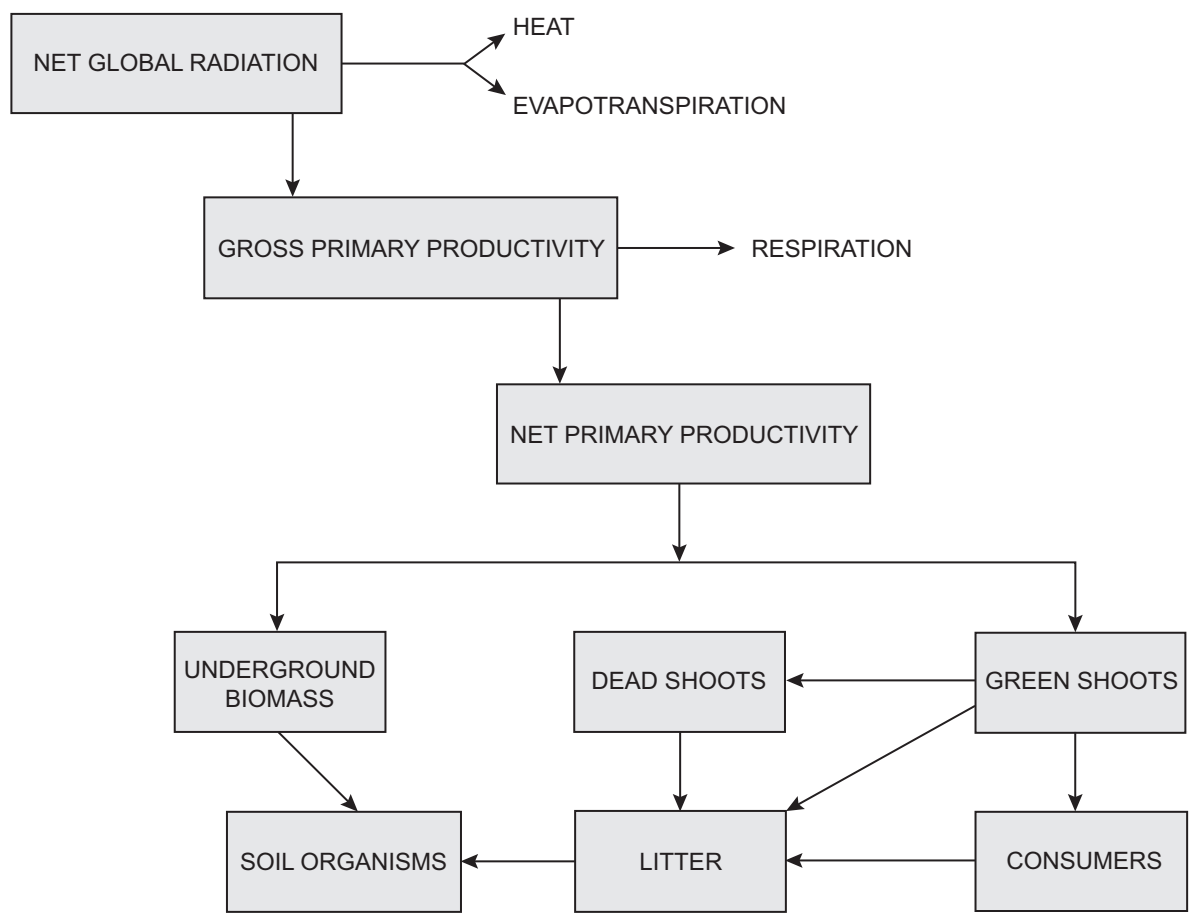


Figure 6

(a) Define the terms **G.P.P.** and **N.P.P.** and distinguish between them.

(5)

(b) How and why does the productivity of ecosystems vary spatially and temporally?

(20)

(Total 25 marks)

Leave blank

If you choose to answer a question from Section C indicate which question you are answering by marking the box (☒). If you change your mind, put a line through the box (☒) and then indicate your new question with a cross (☒).

Chosen Question Number: **Question 5** ☐ **Question 6** ☐

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Section C

(Total 25 marks)

TOTAL FOR PAPER: 50 MARKS

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