

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

**Tuesday 12 June 2007 – Afternoon
Time: 1 hour 30 minutes**

Examiner's use only

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Team Leader's use only

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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 winter and summer rainfall and temperature data for England and Wales between 1845 and 2003.

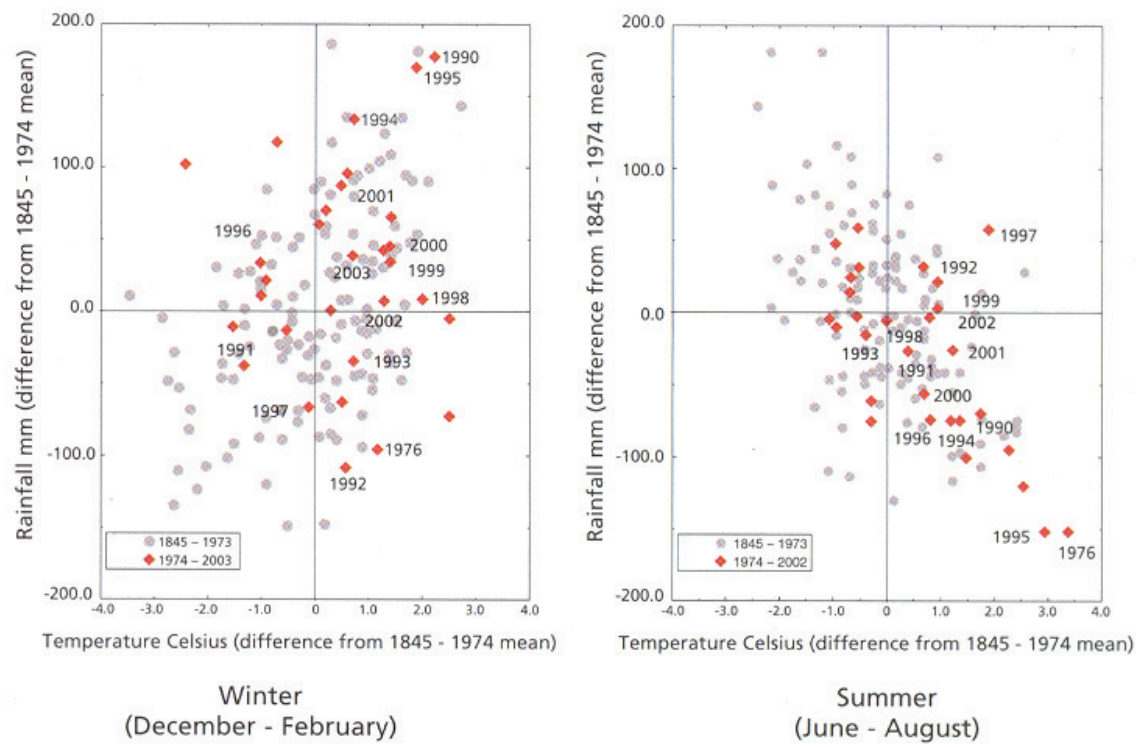


Figure 1

(Source: Centre for Ecology and Hydrology (Wallingford), Meteorological Office)

- (a) Outline how daily **rainfall** and **temperature** (including maximum and minimum) data are collected from a weather station. (5)
- (b) Explain how pressure systems affect the weather of the British Isles. (20)

(Total 25 marks)



2. Figure 2 shows the mean flow patterns of global surface winds in January and July.

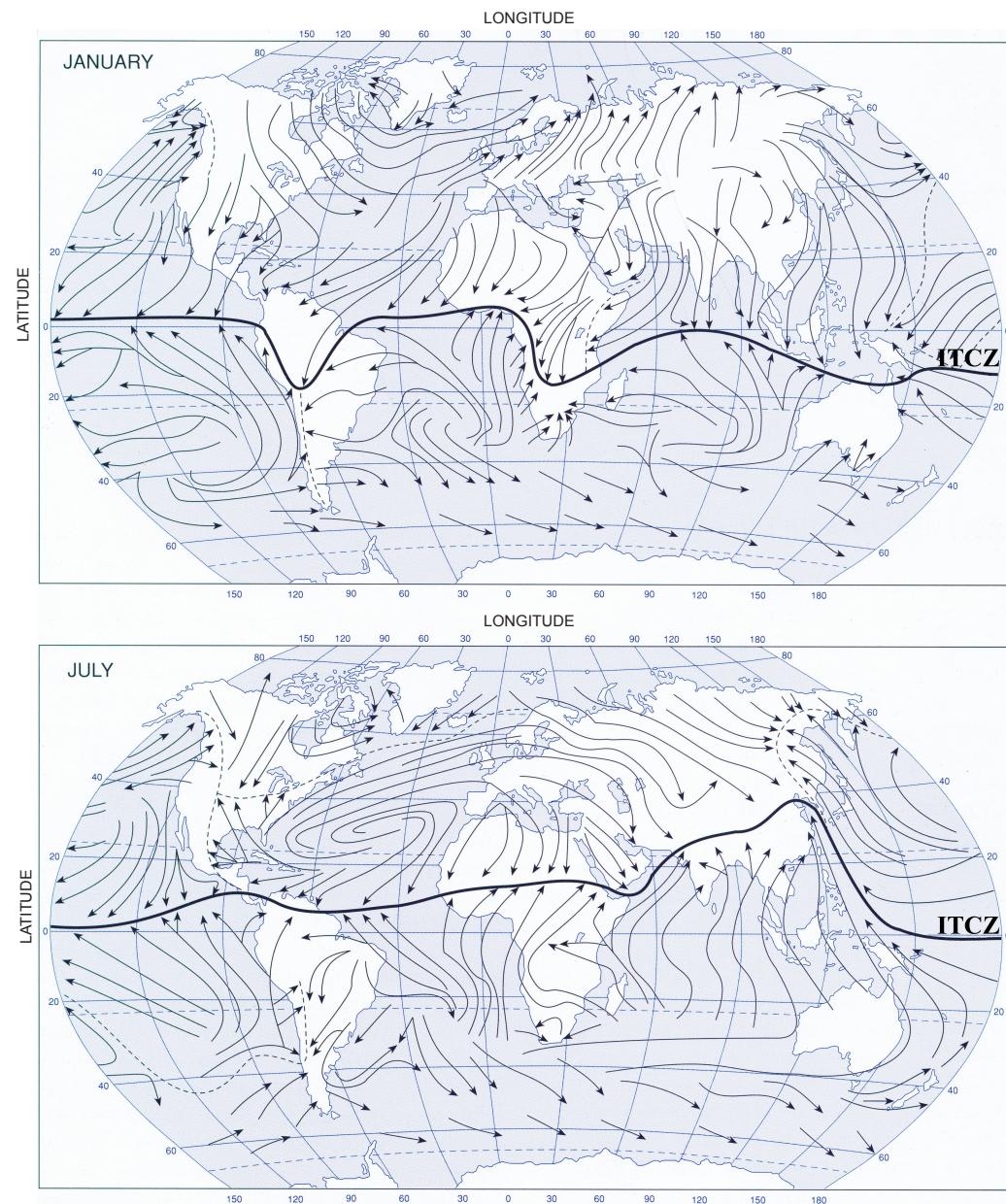


Figure 2

(Source: H.J.Critchfield, *General Climatology*, Prentice-Hall, 1983)

(a) What is the **Inter-Tropical Convergence Zone (ITCZ)** and why does its position change during the year? (5)

(b) Examine the factors influencing the mean flow patterns of global surface winds. (20)

(Total 25 marks)



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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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Section A

(Total 25 marks)

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SECTION B: GLACIAL SYSTEMS

Do not answer more than ONE question from this section.

3. Figure 3 shows the temperature profile in five glaciers.

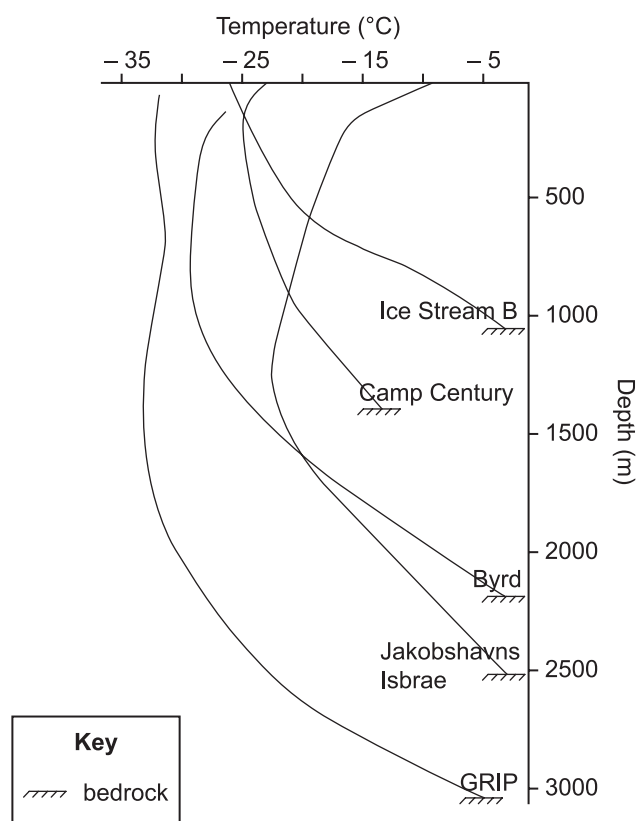


Figure 3

(Source: Robin Q. de C, *The Climatic Record in Polar Ice Sheets*, Cambridge University Press, 1983)

- (a) Distinguish between **polar** (cold) and **temperate** (warm) glaciers in terms of their typical temperature characteristics. (5)
- (b) Compare and contrast the mechanisms and rates of movement of **polar** (cold) and **temperate** (warm) glaciers. (20)

(Total 25 marks)



4. Figure 4 shows the typical thickness of glacial drift (glacial till and fluvio-glacial deposits) in selected lowland locations.

Location	Thickness (m)
Norrland, Sweden	7
East Anglia, England	143
Isle of Man, England	175
Mecklenberg, Germany	470
Po Valley, Italy	800
Central Ohio, U.S.A.	29
Fraser Delta, Canada	670

Figure 4

(Source: Garrett Nagle with Michael Witherick, *Cold Environments: Processes and Outcomes*, Nelson Thornes, 2002)

- (a) Distinguish between the characteristics of **glacial till** and **fluvio-glacial deposits**. (5)
- (b) Explain the formation of **glacial till** landforms and comment upon their impact on human activity. (20)

(Total 25 marks)



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Section B

(Total 25 marks)



SECTION C: ECOSYSTEMS

Do not answer more than ONE question from this section.

5. Figure 5 is an extract from a report on the burning of vegetation.

Grasslands are burned primarily to manipulate vegetation and enhance the biological productivity and diversity of specific organisms or to accomplish specific objectives.

Specific objectives may be broad (prairie restoration and maintenance) or narrow (management for endangered or rare species or reduction of woody plants).

Most of the recent prescribed (*planned*) fires in the Northern Great Plains have been used either for native prairie restoration or for wildlife habitat management. Very little burning has been done for livestock management purposes in this region.

From interviews with a sample of refuge and wetlands managers, we found that, where native prairie was not a major part of the management area, nearly all prescription fires were used to reduce vegetative litter, to control noxious weeds, or to improve the height and density of planted cover (dense nesting cover for wildlife).

Where native prairie was a major part of a management area, the primary reasons for burning were approximately 60% for wildlife habitat improvement and 40% for prairie restoration, improvement, or enhancement.

Figure 5

(Source: <http://www.npwrc.usgs.gov/resource/habitat/burning/reasons.htm>)

- (a) Outline the concept of **plant succession**. **(5)**
- (b) Assess the importance of human activity as a factor affecting plant successions. **(20)**

(Total 25 marks)



6. Figure 6 shows the extent of forest and grassland in selected countries in 1980 and their percentage loss since pre-agricultural times.

Country	1980 Forest (thousand hectares)	% Lost	1980 Grassland (thousand hectares)	% Lost
Burundi	117	91	246	80
Ethiopia	5570	86	27469	61
Peru	74270	12	13900	41
Thailand	13107	73	0	0
France	131	99	250	nd
Namibia	15020	52	14741	59

nd = no data available

Figure 6

(Source: World Resources Institute, *World resources 1994-5*, Oxford University Press, 1994)

- (a) What do you understand by the **distribution** and **functioning** of biomes? **(5)**
- (b) Examine the factors influencing the distribution and functioning of **either** ONE forest **or** ONE grassland biome. **(20)**

(Total 25 marks)





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