Geography

Assessment Unit AS 1

assessing

Physical Geography

[AG111]

MONDAY 15 JUNE, MORNING

TIME
1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Section A: candidates must answer this section.
Section B: answer all three questions in this section.
Section C: answer any two questions from this section.
You should write your answers in the spaces provided in this question paper.
At the end of the examination your summary of fieldwork and table of data should be attached securely to this paper using the treasury tag supplied.

INFORMATION FOR CANDIDATES

The total mark for this paper is 90.
Quality of written communication will be assessed in all questions.
Figures in brackets printed down the right-hand side of the pages indicate the marks awarded to each question or part question.
Section A

Answer this section

Submitted summary of fieldwork and table of data

At the end of the examination these should be attached securely to this paper using the treasury tag supplied.

1 (a) (i) Study Resource 1 on page 3, a partially completed chart illustrating the stages of a fieldwork investigation. Complete Stage 4 on Resource 1 to identify any two additional methods of data processing which are essential to reach a geographical conclusion. [2]

(ii) Stage 2 illustrates some of the fieldwork planning processes. Select any two of these processes and explain how and why they were completed as part of your fieldwork. [8]
Section A

Answer this section

Submitted summary of fieldwork and table of data

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1 (a) (i) Study **Resource 1** on page 3, a partially completed chart illustrating the stages of a fieldwork investigation. Complete Stage 4 on **Resource 1** to identify any two additional methods of data processing which are essential to reach a geographical conclusion. [2]

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<table>
<thead>
<tr>
<th>Question Number</th>
<th>Marks</th>
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<tbody>
<tr>
<td>1</td>
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<td>6</td>
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<td>7</td>
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</tr>
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<td><strong>Total Marks</strong></td>
<td></td>
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</table>
**Stage 1**
- Introduction
  - Aim stated
  - Hypothesis devised

**Stage 2**
- Planning
  - Selection of suitable location
  - Risk assessment
  - Pilot testing
  - Sampling

**Stage 3**
- Fieldwork
  - Primary data collection
  - Secondary research
  - Risk management

**Stage 4**
- Data Processing
  - Graphical Presentation
    - Hypothesis (accepted or rejected)
    - Geographical conclusion

**Stage 5**
- Conclusion

Source: Principal Examiner

Turn over
(iii) Describe any one of the primary data collection techniques used in your fieldwork to produce data presented in your table.

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[4]

(iv) Explain the importance of evaluation with specific reference to any one aspect of your fieldwork.

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[3]
(iii) Describe any one of the primary data collection techniques used in your fieldwork to produce data presented in your table.

[4]

(iv) Explain the importance of evaluation with specific reference to any one aspect of your fieldwork.

[3]
Stage 1

Introduction
- Aim stated
- Hypothesis devised

Stage 2

Planning
- Selection of suitable location
- Risk assessment
- Pilot testing
- Sampling

Stage 3

Fieldwork
- Primary data collection
- Secondary research
- Risk management

Stage 4

Data Processing
- Graphical Presentation

Stage 5

Conclusion
- Hypothesis (accepted or rejected)
- Geographical conclusion

Source: Principal Examiner
(b) (i) Select an appropriate graphical technique to present data displayed in your table. Your graph must be relevant to the aim/hypothesis of your fieldwork.

Title of Graph: ________________________________
(ii) Explain the results displayed on your graph using your geographical and locational knowledge.
(ii) Explain the results displayed on your graph using your geographical and locational knowledge.

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________________________________________________________________________ [6]
(b) (i) Select an appropriate graphical technique to present data displayed in your table. Your graph must be relevant to the aim/hypothesis of your fieldwork.

Title of Graph ________________________________
Section B

Answer all three questions in this section

2 Study Resource 2A below which shows storm hydrographs for two neighbouring streams in Washington State, USA, following a one day storm event. The drainage basin of Mercer Creek is 75% urbanised whereas Newaukum Creek is predominantly rural.

Resource 2A

(a) (i) Describe and explain the effects of this storm event on both streams up to the 2\textsuperscript{nd} of February as shown on Resource 2A.
(ii) Discuss why Newaukum Creek experienced higher stream flow between the 2\textsuperscript{nd} and 7\textsuperscript{th} of February.

[2]
(ii) Discuss why Newaukum Creek experienced higher stream flow between the 2nd and 7th of February.

[2]
Section B

Answer all three questions in this section

2 Study Resource 2A below which shows storm hydrographs for two neighbouring streams in Washington State, USA, following a one day storm event. The drainage basin of Mercer Creek is 75% urbanised whereas Newaukum Creek is predominantly rural.

Resource 2A

Adapted from USGS Fact Sheet FS-076-03 November 2003

(a) (i) Describe and explain the effects of this storm event on both streams up to the 2nd of February as shown on Resource 2A.
(b) Study Resource 2B below which illustrates the Seljalandsfoss waterfall in Iceland.

Resource 2B

Source: Principal Examiner
Describe the features of the waterfall shown in Resource 2B and explain the processes necessary for the formation of a waterfall.

[6]
Describe the features of the waterfall shown in Resource 2B and explain the processes necessary for the formation of a waterfall.
(b) Study **Resource 2B** below which illustrates the Seljalandsfoss waterfall in Iceland.

**Resource 2B**

*Source: Principal Examiner*
3 (a) Study Resource 3A below which shows a trophic pyramid of biomass for an area of temperate grassland.

Resource 3A

BIOMASS (g/m²)

10

Tertiary consumers (snakes)

100

Secondary consumers (toads)

1,000

Primary consumers (grasshoppers)

10,000

Producers (grass)

Source: http://www.ux1.ceu.edu/~cfru/fbio3002/biomass_pyramid.htm

(i) Define the term biomass and use Resource 3A to help you explain the relationship between biomass and trophic level.

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__________________________________________________________________________ [4]
(ii) Briefly explain **two** short term changes in the trophic pyramid if an outbreak of disease reduced the grasshopper population.

[2]
(ii) Briefly explain **two** short term changes in the trophic pyramid if an outbreak of disease reduced the grasshopper population.
3 (a) Study Resource 3A below which shows a trophic pyramid of biomass for an area of temperate grassland.

Resource 3A

BIOMASS (g/m²)

TROPHIC LEVEL

10
Tertiary consumers (snakes)

100
Secondary consumers (toads)

1,000
Primary consumers (grasshoppers)

10,000
Producers (grass)

Source: http://www.ux1.eiu.edu/~cfrut/bio3002/biomass_pyramid.htm

(i) Define the term biomass and use Resource 3A to help you explain the relationship between biomass and trophic level.

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[4]
(b) Study Resource 3B below which illustrates some of the characteristics of a mollisol/chernozem soil profile for a mid-latitude grassland ecosystem.

Resource 3B

Tall grass vegetation

Horizon Depth (m)

0.5

A

Topsoil

1

A/C

1.5

Calcium nodules

Lime rich parent material

C

2

Source: Principal Examiner

(i) Add labels to Resource 3B to illustrate any two additional characteristics of the topsoil (A Horizon) for this soil profile.  [2]
(ii) Explain two ways in which the climate influences the movement of water through this soil and describe how this affects the soil profile.

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_________________________________________________________________________ [4]
(ii) Explain two ways in which the climate influences the movement of water through this soil and describe how this affects the soil profile.
(b) Study Resource 3B below which illustrates some of the characteristics of a mollisol/chernozem soil profile for a mid-latitude grassland ecosystem.

![Resource 3B Diagram](image)

(i) Add labels to Resource 3B to illustrate any two additional characteristics of the topsoil (A Horizon) for this soil profile. [2]
(a) Study Resource 4A below showing average air mass frequencies for Kew, London.

Resource 4A

(i) State the average frequency of the Polar maritime air mass. [1]

(ii) Explain the typical weather conditions which occur when the UK experiences a Tropical maritime air mass. [3]
(b) Study Resource 4B below which illustrates a high pressure weather system over Western Europe in July 2013 and Resource 4C (on page 18) which shows the weather conditions associated with this anticyclone over the British Isles at 6am.

Resource 4B

![Map of weather system](image)

July 2013, 06.00

Source: Met Office

(i) Using evidence from Resource 4B, explain why area A experienced stronger winds than area B.

__________________________________________________________________________

[2]
(b) Study Resource 4B below which illustrates a high pressure weather system over Western Europe in July 2013 and Resource 4C (on page 18) which shows the weather conditions associated with this anticyclone over the British Isles at 6am.

Resource 4B

July 2013, 06.00

Source: Met Office

(i) Using evidence from Resource 4B, explain why area A experienced stronger winds than area B.

[2]
(a) Study Resource 4A below showing average air mass frequencies for Kew, London.

Resource 4A

(i) State the average frequency of the Polar maritime air mass. 

(ii) Explain the typical weather conditions which occur when the UK experiences a Tropical maritime air mass. 

Source: Advanced Geography through Diagrams, Nagle & Spencer.
Resource 4C

July 2013, 06.00

Symbols used on a weather chart

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Precipitation</th>
<th>Cloud cover</th>
<th>Wind speed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dizzle</td>
<td>Clear sky</td>
<td>Calm</td>
</tr>
<tr>
<td>△</td>
<td>Shower</td>
<td>One Okta</td>
<td>1 - 2 Knots</td>
</tr>
<tr>
<td>*</td>
<td>Rain</td>
<td>Two Oktas</td>
<td>5 Knots</td>
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<tr>
<td>△</td>
<td>Snow</td>
<td>Three Oktas</td>
<td>10 Knots</td>
</tr>
<tr>
<td>△</td>
<td>Thunderstorm</td>
<td>Four Oktas</td>
<td>15 Knots</td>
</tr>
<tr>
<td>△</td>
<td>Heavy rain</td>
<td>Five Oktas</td>
<td>20 Knots</td>
</tr>
<tr>
<td>△</td>
<td>Sleet</td>
<td>Six Oktas</td>
<td>50 Knots or more</td>
</tr>
<tr>
<td>△</td>
<td>Snow shower</td>
<td>Seven Oktas</td>
<td></td>
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<tr>
<td>△</td>
<td>Mist</td>
<td>Eight Oktas</td>
<td></td>
</tr>
<tr>
<td>△</td>
<td>Fog</td>
<td>Sky Obscured</td>
<td></td>
</tr>
</tbody>
</table>

Source: Principal Examiner – data extracted from
http://www.metoffice.gov.uk/public/weather/surface-pressure/#?tab=surfacePressureColour&fcTime=1373544000
(ii) Using some information from **Resource 4C**, explain the general weather conditions associated with this anticyclone.

[6]
(ii) Using some information from Resource 4C, explain the general weather conditions associated with this anticyclone.
Section C

Answer any two questions in this section

5 "Flooding can have both detrimental and beneficial impacts on people." Discuss this statement with reference to your case study of a large scale drainage basin or its delta. [12]

6 With reference to your small scale ecosystem case study, describe its biotic components and discuss fully their role in the nutrient cycling process. [12]

7 Explain the conditions necessary for the formation of a hurricane and use your case study of a hurricane/tropical cyclone to discuss its effects on people. [12]
Geography
Assessment Unit AS 1
assessing
Physical Geography
[AG111]
THURSDAY 5 JUNE, AFTERNOON

TIME
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