Geography

Assessment Unit AS 1
assessing
Physical Geography

[AG111]

FRIDAY 7 JUNE, AFTERNOON

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) Study Resource 1A below, which displays a list of tasks compiled by a geographer when planning a field study. Select two from the list and discuss how they were completed as part of your fieldwork.

Resource 1A

- Use of GIS
- Pilot Testing
- Sampling
- Risk Assessment
- Personal Research

Source: Principal Examiner
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) Study Resource 1A below, which displays a list of tasks compiled by a geographer when planning a field study. Select two from the list and discuss how they were completed as part of your fieldwork.

Resource 1A

TASKS

- Use of GIS
- Pilot Testing
- Sampling
- Risk Assessment
- Personal Research

Source: Principal Examiner
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(b) (i) Distinguish between primary and secondary sources of data.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________ [2]

(ii) Describe and evaluate one of the primary data collection methods used to produce data displayed in your submitted table.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________ [5]
(c) (i) Using some, or all, of the data from your table, draw a graph relevant to the aim of your fieldwork. The graph should be presented with accuracy on the graph paper below.

Title of Graph
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Title of Graph

[7]
(b) (i) Distinguish between primary and secondary sources of data.

__________________________________________________________

__________________________________________________________

__________________________________________________________ [2]

(ii) Describe and evaluate one of the primary data collection methods used to produce data displayed in your submitted table.

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________ [5]
(ii) Outline and explain one geographical factor which may have influenced the results displayed on your graph.

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________________________________________________________________________[4]

(d) Explain the purpose of statistical analysis in a fieldwork investigation and discuss why your chosen statistical method was selected as suitable for your fieldwork.

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________________________________________________________________________[6]
Section B

Answer all three questions in this section.

2 (a) Study Resource 2A, which shows the impact of land-use change in the River Coalburn drainage basin, north east of Carlisle in northern England. In this upland area, rough grassland was replaced with plantation forestry.

Resource 2A

Source: adapted from Institute of Hydrology Report Number 133
Section B

Answer all three questions in this section.

2 (a) Study Resource 2A, which shows the impact of land-use change in the River Coalburn drainage basin, north east of Carlisle in northern England. In this upland area, rough grassland was replaced with plantation forestry.

Resource 2A

Source: adapted from Institute of Hydrology Report Number 133
(ii) Outline and explain one geographical factor which may have influenced the results displayed on your graph.

(d) Explain the purpose of statistical analysis in a fieldwork investigation and discuss why your chosen statistical method was selected as suitable for your fieldwork.
Using information from Resource 2A, describe and explain the changes in the stores and transfers within this drainage basin over time.
(b) Study Resource 2B which shows the changing meander patterns over time on part of the Mississippi River in the USA.

Resource 2B

![Diagram of meander patterns with positions of channels marked from 1765 to 1930.]

Source: adapted from projects.cie.org.uk/...physical/drainage

Describe the changing pattern and explain the river processes which form these meanders.

[6 marks]
(b) Study **Resource 2B** which shows the changing meander patterns over time on part of the Mississippi River in the USA.

**Resource 2B**

![Map of Mississippi River meanders showing channel positions from 1765 to 1930.]

Source: adapted from projects.cie.org.uk/.../physicaldrainage

Describe the changing pattern and explain the river processes which form these meanders.

---

[6 marks]
Using information from Resource 2A, describe and explain the changes in the stores and transfers within this drainage basin over time.
3 (a) Study **Resource 3A**, on page 11, which shows growing season precipitation and some of the soil conservation methods used in three provinces of the Canadian Prairies, a mid-latitude grassland ecosystem.

(i) Which province receives the highest amount of growing season precipitation?

__________________________________________________________________________ [1]

(ii) Compare the popularity of the soil conservation methods selected by farmers in any **one** province and explain why management of this ecosystem is necessary.

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__________________________________________________________________________

__________________________________________________________________________ [6]
Resource 3A

300 --- Average growing season precipitation (mm)

Soil Conservation methods selected in Alberta

Soil Conservation methods selected in Saskatchewan

Soil Conservation methods selected in Manitoba

Sources: maps adapted from Climate Research Volume 11: 191–208. Graphs by Principal Examiner
Resource 3A

--- 300 --- Average growing season precipitation (mm)

--- Soil Conservation methods selected in Alberta ---

<table>
<thead>
<tr>
<th>Percentage of farmers</th>
<th>Winter Cover Crops</th>
<th>Strip Cropping</th>
<th>Contour Ploughing</th>
<th>Wind Breaks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>5</td>
<td>20</td>
<td>35</td>
</tr>
</tbody>
</table>

--- Soil Conservation methods selected in Saskatchewan ---

<table>
<thead>
<tr>
<th>Percentage of farmers</th>
<th>Winter Cover Crops</th>
<th>Strip Cropping</th>
<th>Contour Ploughing</th>
<th>Wind Breaks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>10</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

--- Soil Conservation methods selected in Manitoba ---

<table>
<thead>
<tr>
<th>Percentage of farmers</th>
<th>Winter Cover Crops</th>
<th>Strip Cropping</th>
<th>Contour Ploughing</th>
<th>Wind Breaks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>5</td>
<td>20</td>
<td>35</td>
</tr>
</tbody>
</table>

3 (a) Study Resource 3A, on page 11, which shows growing season precipitation and some of the soil conservation methods used in three provinces of the Canadian Prairies, a mid-latitude grassland ecosystem.

(i) Which province receives the highest amount of growing season precipitation?

[1]

(ii) Compare the popularity of the soil conservation methods selected by farmers in any one province and explain why management of this ecosystem is necessary.

[6]
(b) Study Resource 3B which shows the proportion of energy stored within the trophic levels of a food chain.

Resource 3B

Producers 97,000 kJ

Primary consumer 7,000 kJ

Secondary consumer 600 kJ

Tertiary consumer 50 kJ

Describe the transfer of energy in this food chain and explain how energy is lost from the system.

[5]
(a) Study Resource 4A showing a general model for global solar energy input.

**Resource 4A**

**REFLECTION**
- scatter 6%
- clouds 21%
- ground 4%

**ABSORPTION**
- molecules and dust 18%
- clouds 3%

Entering solar radiation top of atmosphere 100%

land / ocean

**Source:** Adapted from "Modern Physical Geography" Strahler & Strahler

(i) Complete the box in Resource 4A to show the percentage of energy available for absorption at the ground surface. [1]

(ii) Outline one reason why the percentage of energy received at the ground surface may vary from one place to another.

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____________________________________________________________________________________________________________________________________________________

[2]
(a) Study Resource 4A showing a general model for global solar energy input.

Resource 4A

Enter solar radiation
at top of atmosphere
100%

Reflection
scatter 6%
coulds 21%
ground 4%

Absorption
molecules
and dust 18%
coulds 3%

land / ocean
Ground absorption
land / ocean

Source: Adapted from "Modern Physical Geography" Strahler & Strahler

(i) Complete the box in Resource 4A to show the percentage of energy available for absorption at the ground surface. [1]

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(b) Study Resource 3B which shows the proportion of energy stored within the trophic levels of a food chain.

Resource 3B

Producers
97,000 kJ

Primary consumer
7,000 kJ

Secondary consumer
600 kJ

Tertiary consumer
50 kJ

Describe the transfer of energy in this food chain and explain how energy is lost from the system.

[5]
(iii) Distinguish between horizontal and vertical heat transfers in relation to global energy balance.
(b) Study Resource 4B which shows some of the protective measures used in New York in preparation for Hurricane Irene in August 2011.

Resource 4B

Evacuate: A map showing New York's evacuation zones in colour.

http://www.telegraph.co.uk/news/worldnews/.../IRENEGET_1982209c.jpg
(b) Study **Resource 4B** which shows some of the protective measures used in New York in preparation for Hurricane Irene in August 2011.

**Resource 4B**

Evacuate: A map showing New York's evacuation zones in colour.

http://www.telegraph.co.uk/.../IRENEGET_1982209c.jpg
(iii) Distinguish between horizontal and vertical heat transfers in relation to global energy balance.
Use **Resource 4B and** your own case study to discuss how hurricane protective measures can be used to reduce loss of life and damage to properties.
Section C

Answer any two questions in this section.

5. Describe and explain the physical and human causes of flooding in a large scale drainage basin or its delta. [12]

6. Describe and explain the biotic and abiotic changes which occur in your small or regional scale study of vegetation succession. [12]

7. Explain the formation of a mid-latitude frontal depression and use your case study to analyse its impact on people. [12]
Section C

Answer any two questions in this section.

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