Cambridge Assessment International Education

Cambridge Pre-U

GEOGRAPHY **9768/04**

Paper 4 Research Topic **October/November 2020**

1 hour 30 minutes

O053062297

You must answer on the answer booklet/paper.

You will need: Answer booklet/paper
Insert (enclosed)

INSTRUCTIONS

- Answer **three** questions in total:
  Choose Section A, B or C according to your research topic.
  Answer three questions from the same section.
  For Section A, answer Question 1, Question 2 and **either** Question 3 **or** Question 4.
  For Section B, answer Question 5, Question 6 and **either** Question 7 **or** Question 8.
  For Section C, answer Question 9, Question 10 and **either** Question 11 **or** Question 12.
- If you have been given an answer booklet, follow the instructions on the front cover of the answer booklet.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number on all the work you hand in.
- Do **not** use an erasable pen or correction fluid.
- You should support your answers with appropriate examples, sketch maps and diagrams.
- At the end of the examination, fasten all your work together. Do **not** use staples, paper clips or glue.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].
- The insert contains all the resources referred to in the questions.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 3 Pre-U Certificate.

This document has **8** pages. Blank pages are indicated.

DC (MB) 208029

Section A: Microclimates

Answer **three** questions:
Question 1, Question 2
and **either** Question 3 **or** Question 4

1 Study Fig. 1.1 which shows average monthly maximum and minimum temperatures for St Athan and Cardiff. St Athan is a small settlement 20 miles south west of the city of Cardiff in South Wales.

(a) Giving evidence from Fig. 1.1, which month shows the largest difference in maximum temperatures between St Athan and Cardiff? [2]

(b) Using Fig. 1.1, compare and contrast the minimum temperatures throughout the year for St Athan and Cardiff. [4]

Study Fig. 1.2 which shows average monthly rainfall totals for the two settlements.

(c) Using Figs. 1.1 and 1.2, assess whether St Athan and Cardiff have different microclimates. [6]

Study Fig. 1.3 which shows average wind direction percentages in October for Cardiff from 2001 to 2018.

(d) Evaluate the usefulness of Figs. 1.1, 1.2 and 1.3 to those studying the microclimates of settlements near each other. [8]

[Total: 20]

2 **(a)** Study Fig. 2.1, which shows the impact of a one-metre high hedgerow on air temperature, relative humidity and wind speed.

Using Fig. 2.1, assess the impact of the hedgerow on air temperature, relative humidity and wind speed. [5]

(b) From your wider study of microclimates, explain why microclimates vary between different cities. [10]

[Total: 15]

EITHER

3 With reference to your own study of microclimates, explain how you ensured the accuracy and reliability of the primary data you collected.

Begin by stating the question or hypothesis that you investigated. [15]

OR

4 With reference to your own study of microclimates, justify the methods you used to present and analyse your findings.

Begin by stating the question or hypothesis that you investigated. [15]

Section B: Small-scale ecosystems

Answer **three** questions:
Question 5, Question 6
and **either** Question 7 **or** Question 8

5 Study Fig. 5.1 which shows changes in percentage cover of selected vegetation types over time after a controlled burn on a heather moorland ecosystem in the North York Moors National Park. A controlled burn is one method of managing moorland ecosystems.

(a) Giving evidence from Fig. 5.1, state the overall change in the percentage of mosses and lichens from year 2 to year 25 after the controlled burn. [2]

(b) Using Fig. 5.1, compare the change in percentage cover of heathers with that of grasses and herbs from years 10 to 25 after the controlled burn. [4]

Study Fig. 5.2, which shows phosphorous content and pH of soils on heather moorland over time after a controlled burn.

(c) Using Fig. 5.2, compare and contrast phosphorous content with the pH of soils over the period shown. [6]

(d) Assess the value of Figs. 5.1 and 5.2 to those responsible for managing heather moorland ecosystems. [8]

[Total: 20]

6 **(a)** Study Fig. 6.1, which shows the negative impacts of selected human activities on freshwater ecosystems in the state of Maine, USA.

Using Fig. 6.1, to what extent are agriculture and deforestation the main threats to freshwater ecosystems in Maine? [5]

(b) 'Successful management of small-scale ecosystems involves maintaining the often delicate balance between the biotic and abiotic components.'

From your wider study of small-scale ecosystems, how far do you agree with this statement? [10]

[Total: 15]

EITHER

7 With reference to your own study of small-scale ecosystems, explain how you ensured the accuracy and reliability of the primary data you collected.

Begin by stating the question or hypothesis that you investigated. [15]

OR

8 With reference to your own study of small-scale ecosystems, justify the methods you used to present and analyse your findings.

Begin by stating the question or hypothesis that you investigated. [15]

Section C: Conservation

Answer **three** questions:
Question 9, Question 10
and **either** Question 11 **or** Question 12

9 Study Figs. 9.1 and 9.2 which show information about a footpath in an upland part of the UK. Fig. 9.1 is a map to show the location of the footpath. Fig. 9.2 shows cross sections of part of the footpath at site **X** shown on Fig. 9.1 for 2007, 2012 and 2017.

(a) Giving evidence from Fig. 9.2, at what distance across the footpath did most vertical erosion take place between 2007 and 2017? [2]

(b) Using Fig. 9.2, describe how the cross section of the footpath changed between 2012 and 2017. [4]

Study Fig. 9.3 which shows a kite diagram of vegetation across the footpath at site **X** in 2017.

(c) With reference to Figs. 9.2 and 9.3, to what extent is there a link between vegetation and footpath erosion in 2017? [6]

(d) Assess the usefulness of Figs. 9.1, 9.2 and 9.3 to those responsible for managing footpaths in upland areas. [8]

[Total: 20]

10 **(a)** Study Fig. 10.1, which shows rural service centres and conservation areas in the Lake District National Park, England. Conservation areas are those in which cultural heritage and the built environment are protected.

To what extent is there an east–west division to the pattern of rural service centres and conservation areas shown on Fig. 10.1? [5]

(b) 'Commercial interests will always triumph over conservation.'

From your wider study of conservation, how far do you agree with this statement? [10]

[Total: 15]

EITHER

11 With reference to your own study of conservation, explain how you ensured the accuracy and reliability of the primary data you collected.

Begin by stating the question or hypothesis that you investigated. [15]

OR

12 With reference to your own study of conservation, justify the methods you used to present and analyse your findings.

Begin by stating the question or hypothesis that you investigated. [15]

BLANK PAGE

BLANK PAGE

BLANK PAGE

BLANK PAGE