



GEOGRAPHY

9768/04

Paper 4 Research Topic

May/June 2012

1 hour 30 minutes

Additional Materials: Answer Booklet/Paper



READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use paper clips, highlighters, glue or correction fluid.

Choose Section A **or** Section B **or** Section C, according to your research topic.

Answer **three** questions, from the same section.

You are advised to spend thirty minutes on each Question.

For **Section A**, Microclimates, answer:
Question 1, Question 2 and **either** Question 3 **or** Question 4.

For **Section B**, Conservation, answer:
Question 5, Question 6 and **either** Question 7 **or** Question 8

For **Section C**, Deprivation, answer:
Question 9, Question 10 and **either** Question 11 **or** Question 12.

The Insert contains all the Figures referred to in the Question Paper.

This document consists of **7** printed pages, **1** blank page and **1** Insert.



Section A: Microclimates

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

- 1 Study Figs 1 and 2, which show temperature data for the city region of San Juan, Puerto Rico.

Fig. 1 shows average temperatures throughout the day for selected land-uses in San Juan. Fig. 2 shows the average daily temperature range for these land-uses.

- (a) Use Fig. 1 to state the time of day when, for the CBD, the following were recorded:
- (i) maximum average temperature;
 - (ii) minimum average temperature. [2]
- (b) Using Fig. 1, compare the average temperatures throughout the day for mowed grassland areas with those of forested areas. [4]
- (c) To what extent does there appear to be a link between the maximum average temperatures shown on Fig. 1 and the average daily temperature ranges shown on Fig. 2 for the different land-uses? [6]
- (d) Assess the value of Figs 1 and 2 to those studying the intensity of the heat island effect in urban areas. [8]

- 2 (a) Study Fig. 3, which shows the probability of fog on selected routes serving the city of Breda in the Netherlands.

Outline the spatial pattern of the probability of fog for the selected routes shown in Fig. 3. [5]

- (b) 'Knowledge of microclimates has a greater impact on decision making at the local scale than knowledge of climate.'

From your wider study of microclimates, to what extent do you agree with this statement?[10]

EITHER

- 3 With reference to your own investigation of microclimates, to what extent were you able to minimise potential errors in your data collection?

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

OR

- 4 With reference to your own investigation of microclimates, discuss the extent to which you were able to explain all your findings.

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

Section B: Conservation

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

- 5 Study Fig. 4, which shows reported catches of polar bears in Baffin Bay and East Greenland between 1996 and 2003.
- (a) Giving evidence from Fig. 4, state the year in which there was the smallest difference between the reported polar bear catch in Baffin Bay and the catch in East Greenland. [2]
- (b) Using Fig. 4, compare and contrast the trend in the reported catch of polar bears in Baffin Bay with that of East Greenland between 1996 and 2003. [4]
- (c) Fig. 5 shows, for the Arctic, the distribution of polar bears and pollution by toxic contaminants called PCBs. It has been suggested that polar bears may be particularly vulnerable to this type of pollutant.
- Discuss whether Fig. 5 confirms a link between polar bear populations and contamination by PCBs. [6]
- (d) Assess the strengths and weaknesses of Figs 4 and 5 for those responsible for conserving natural environments. [8]

6 Study Fig. 6, which shows the populations of trout and pH values for selected lakes in Southern Norway in 1972.

(a) 'The higher the trout population, the greater the pH value of the lake.'

How far does Fig. 6 support this statement? [5]

(b) From your wider study of conservation, consider the extent to which initiatives designed to conserve natural environments have been successful. [10]

EITHER

7 With reference to your own investigation of conservation, to what extent were you able to minimise potential errors in your data collection?

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

OR

8 With reference to your own investigation of conservation, discuss the extent to which you were able to explain all your findings.

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

Section C: Deprivation

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

- 9 Study Fig. 7, which shows the index of multiple deprivation for selected villages and for selected areas in the urban fringe in England in 2007.
- (a) Using Fig. 7, state the difference between the number of census areas in the 10% most deprived areas and the 10% least deprived areas in villages. [2]
- (b) Describe the differences between the distribution of deprivation in villages and the distribution of deprivation in the urban fringe shown in Fig. 7. [4]
- (c) Fig. 8A shows employment deprivation and Fig. 8B health deprivation for Eastern and Southern England in 2007. Fig. 8C names and locates the regions shown.
- Using Figs 8A and 8B, suggest how similar are the spatial patterns of employment and health deprivation. [6]
- (d) Assess the value of Figs 7, 8A and 8B for displaying patterns of deprivation. [8]

- 10** Fig. 9 shows information about poverty and cholera in the province of KwaZulu-Natal, South Africa, in January 2001.
- (a) To what extent is there a relationship between cholera and poverty shown in Fig. 9? [5]
- (b) From your wider study of deprivation, consider the extent to which initiatives designed to reduce deprivation have been successful. [10]

EITHER

- 11** With reference to your own investigation of deprivation, to what extent were you able to minimise potential errors in your data collection?

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

OR

- 12** With reference to your own investigation of deprivation, discuss the extent to which you were able to explain all your findings.

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

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Copyright Acknowledgements:

- Question 1 Figs 1 & 2 © Murphy et al; *The Relation between Land-Cover and the Urban Heat Island in Northeastern Puerto Rico*;
http://ams.confex.com/ams/7Coastal7Urban/techprogram/paper_126931.htm.
- Question 2 Fig. 3 © F J M van der Wel; *Introducing GIS Technology at the Royal Netherlands Meteorological Institute*;
<http://proceedings.esri.com/library/userconf/proc98/proceed/TO800/PAP761.HTM>; March 2011.
- Question 5 Fig. 5 © <http://maps.grida.no/go/graphic/polar-bear-sub-populations-and-pollution>.
- Question 9 Figs 7, 8A and 8B © Understanding patterns of deprivation; *Regional Trends* 41; 2009;
<http://www.statistics.gov.uk/articles/RegionalTrends/RT41-Article6.pdf>.
- Question 10 Fig. 9 © <http://maps.grida.no/go/graphic/poverty-and-cholera-in-kwazulu-natal-january-2001>.

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