



GEOGRAPHY

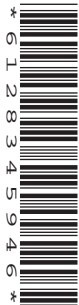
9768/04

Paper 4 Research Topic

May/June 2011

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**, Environmental Degradation, 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 and **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 information about night time temperatures in a large city and the surrounding rural area in the UK in March 2009.
- (a) Giving evidence from Fig. 2, state the range of temperature between the city centre and the surrounding rural area. [2]
- (b) Using both Fig. 1 and Fig. 2, describe the form of the city's urban heat island. [4]
- (c) Study Figs 3A, 3B and 3C which show the city of New York, USA.
- Fig. 3A shows temperature information. Fig. 3B shows vegetation density. Fig. 3C names the boroughs within New York.
- Using both Fig. 3A and Fig. 3B, to what extent is there a relationship between temperature and vegetation cover in New York? [6]
- (d) Evaluate the usefulness and the limitations of Fig. 3A and Fig. 3B to those who study urban heat islands. [8]

- 2 (a) Study Fig. 4, which shows wind speed measurements collected at a suburban shopping centre. The measurements shown are the maximum wind speed at each point recorded over a 15 minute period.

Describe the pattern of wind speeds shown in Fig. 4. [5]

- (b) From your wider study of microclimates, consider the extent to which urban areas make their own climates. [10]

EITHER

- 3 With reference to your own investigation of microclimates, evaluate the extent to which the use of secondary sources enhanced your investigation.

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 your study supported the geographical theories or concepts being studied.

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

Section B: Environmental Degradation

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

- 5** Figs 5 and 6 show information from a study of air quality in Port Talbot, South Wales, between December 2006 and August 2007.
- (a)** Using Fig. 5, describe the main direction from which the wind blew and the percentage of days on which the wind came from that direction. [2]
- (b)** Fig. 6 shows hourly sulphur dioxide (SO₂) concentrations over Port Talbot for different wind directions.
- Using Fig. 6, contrast the pattern of SO₂ concentrations throughout the day when the wind came from ENE with that when the wind came from SSE. [4]
- (c)** Referring to both Fig. 5 and Fig. 6, to what extent is it true to say that there was a link between SO₂ pollution and wind direction in Port Talbot during the study? [6]
- (d)** Assess the usefulness of Figs 5 and 6 to those responsible for the management of environmental degradation in the Port Talbot area. [8]

- 6 (a) Study Fig. 7, which shows the main threats to coral reefs in the Indian and Pacific Oceans.

To what extent does Fig. 7 support the view that the threats to coral reefs in the Pacific Ocean are different from the threats in the Indian Ocean? [5]

- (b) 'International co-operation is essential if solutions are to be found to the world's pollution problems.'

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

EITHER

- 7 With reference to your own investigation of environmental degradation, evaluate the extent to which the use of secondary sources enhanced your investigation.

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

OR

- 8 With reference to your own investigation of environmental degradation, discuss the extent to which your study supported the geographical theories or concepts being studied.

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 Figs 8 and 9, which show information about Barnsley, a borough in South Yorkshire, UK.

Fig. 8 ranks the living environment of areas in Barnsley in 2004 and 2007, with 1 being the most deprived and 100 being the least deprived.

Fig. 9 shows the distribution of income deprivation in Barnsley in 2007.

- (a) Giving evidence from Fig. 8, state whether the living environment in area **A** on the graph improved or declined from 2004 to 2007. [2]
- (b) Using Fig. 8, how far is it true to say that the living environment improved for all but the least deprived areas in Barnsley between 2004 and 2007? [4]
- (c) To what extent does Fig. 9 show an East-West division of income deprivation in Barnsley? [6]
- (d) Assess the usefulness of Figs 8 and 9 to those responsible for reducing deprivation in Barnsley. [8]

10 Study Fig. 10, which shows the most deprived and least deprived areas in selected regions of England in 2007. Fig. 11 locates the regions.

(a) Using Fig. 10, discuss the extent to which there is a North-South divide in deprivation in England. [5]

(b) 'Though income deprivation should be recognised in its own right, it should not be the only measure of deprivation.'

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

EITHER

11 With reference to your own investigation of deprivation, evaluate the extent to which the use of secondary sources enhanced your investigation.

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 your study supported the geographical theories or concepts being studied.

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

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Copyright Acknowledgements:

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|---------------------------|--|
| Question 1 Figs 3A and 3B | © New York Satellite Images; http://earthobservatory.nasa.gov/Features?GreenRoof/greenroof2.php ; 9 April 2010. |
| Question 5 Figs 5 and 6 | © <i>National Monitoring and Assessment Report: Study of Ambient Air Quality at Port Talbot</i> ; 16 December 2006 to 2 October 2007; Environment Agency Website. |
| Question 6 Fig. 7 | © Coral Reefs Map Source; <i>Threats to the World's Coral Reefs</i> ; http://maps.grida.no/go/graphic/threats_to_the_world_s_coral_reefs ; 8 April 2010. |
| Question 9 Figs 8 and 9 | © <i>Index of Multiple Deprivation 2007 – Barnsley</i> ; http://www.barnsley.gov.uk/centralresearchteam ; g:\bttech\resources\research\deprivation index\indices of deprivation\2007\index of multiple deprivation 2007 final paper.doc. |
| Question 10 Fig. 11 | © <i>Map of UK Regions</i> ; www.maxxrax.co.uk/Help/UK_regional_map.html . |

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