UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

Pre-U Certificate

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

9768 GEOGRAPHY

9768/04   Paper 4 (Research Topic), maximum raw mark 50

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2011 question papers for most IGCSE, Pre-U, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

UNIVERSITY *of* CAMBRIDGE
International Examinations

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]

- 11 (or 11.5) – 5 = 6 (or 6.5) °C
- 2 mks for stating the range alone

(b) Using both Fig. 1 and Fig. 2, describe the form of the city's urban heat island. [4]

- Suggest up to 3 marks for a description of the plan view
- 1/3 or 2/2 or 3/1
- Reserve 1 mark for reference to the 3rd dimension e.g. dome

(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]

The overall impression is of a strong relationship – expect candidates to draw this out with some valid support from the 2 satellite photographs.

L3 (5–6 marks)
Clear and detailed assessment of the relationship.
Extensive and accurate data support.

L2 (3–4 marks)
Some assessment of the relationship.
Provides data support at the top end of this level.

L1 (0–2 marks)
Little attempt to address the relationship; simple description.
Data support inaccurate or lacking.

(d) **Evaluate the usefulness and the limitations of Fig. 3A and Fig. 3B to those who study urban heat islands.** **[8]**

Urban heat islands develop best under particular meteorological conditions and during certain seasons and at particular times of day. The intensity of the heat island also depends on the interplay between these physical factors along with a number of human controlled factors including building density, building materials and land use.

The resources show the form of the urban heat islands but shed little light on the role of the factors mentioned.

L3 (6–8 marks)
Clear and detailed evaluation of the usefulness and limitations of the resources. The resources are well used to support the points made. A clear understanding of other information which would be of use.

L2 (3–5 marks)
Some analysis of the usefulness and limitations of the resources, which may be unbalanced. Provides support for some observations. At the top end there may be a limited awareness of other information which might be useful.

L1 (0–2 marks)
Little understanding of the usefulness of the resources; perhaps simple description. Support is inaccurate or lacking.

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]**

Generally, wind speed increases where the gap between buildings is at its narrowest. There also appears to be a frictional effect near the walls. In addition, there are some anomalies to this general pattern.

L3 (4–5 marks)
Clear and detailed description of the pattern of wind speed shown. The anomalies are clearly identified. Data from the map is well used to support the points made.

L2 (2–3 marks)
A valid attempt to describe the pattern. Data is used to support the points made. Less importance placed on the anomalies.

L1 (0–1 marks)
Limited ability to interpret the map and identify a pattern, may simply describe. Use of data is inaccurate or lacking.

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

An opportunity here to explore the topic of microclimates in an urban setting. Good responses will focus on the 'extent to which' with some useful exemplar support.

L3 (8–10 marks)
Evaluation is to the fore with appropriate exemplar support. There is a sophisticated understanding of the range of processes involved. The answer is well founded on evidence.

L2 (5–7 marks)
Able to describe and offer some explanation. Sound knowledge and understanding, lacking depth in places. Conclusion limited. May well refer to processes only without addressing the evaluative part of the question. UHI only.

L1 (0–4 marks)
The approach is largely descriptive and piecemeal with little or no attempt to address the question. Superficial statements. Little exemplar support.

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]

   Answers should be based firmly on their own investigations, quoting examples drawn from this.

   Clearly, much depends on the investigation and the choice of data. Candidates should be aware of the limitations of their own primary data (e.g. spatial, temporal, scale) and the way in which secondary data complements their primary data and enhances and extends their investigation.

   In terms of evaluation a range of responses is acceptable from 'to a large extent' to 'to a small extent' depending upon the investigation.

   L4 (13–15 marks)
   The candidate displays a high order understanding of the ways in which secondary sources enhanced (or otherwise) the investigation with good support. Evaluation to the fore.

   L3 (10–12 marks)
   Good understanding of the ways in which secondary sources enhanced (or otherwise) the investigation. The answer makes appropriate reference to the candidate's own investigation. Well focused on the question.

   L2 (7–9 marks)
   More focused on the candidate's own investigation. Describes the use of secondary sources, but only in a superficial fashion.

   L1 (0–6 marks)
   Discussion lacks detail. Perhaps descriptive only, with only piecemeal comments about secondary sources. Little reference to candidate's own investigation.

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.** [15]

Begin by stating the question or hypothesis that you investigated.

Answers should be based firmly on their own investigation, quoting examples drawn from this.

Clearly, much depends on the investigation. A range of responses is acceptable, but be wary of those which state their study completely confirmed what it set out to achieve.

L4 (13–15 marks)
The candidate displays a high order understanding of the limitations of the final outcomes. Evaluation is to the fore and well supported by examples drawn from the investigation.

L3 (10–12 marks)
Good understanding of what the investigation actually proved. The answer makes appropriate reference to the candidate's own investigation. Well focused on the question.

L2 (7–9 marks)
More focused on the candidate's own investigation. Attempts to address the question, but only in a superficial fashion. Only limited support from the candidate's own investigation.

L1 (0–6 marks)
Discussion lacks detail. Perhaps descriptive only, with little attempt to address the question. Little reference to candidate's own investigation.

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]

   - Most common direction from 260°/is 260 (W to E = 0)
   - Percentage – 8%

   NB do not carry error forward from part **(a)**

   (b) **Fig. 6 shows hourly sulphur dioxide (SO_2) concentrations over Port Talbot for different wind directions.** [4]

   Using Fig. 6, contrast the pattern of SO_2 concentrations throughout the day when the wind came from ENE with that when the wind came from SSE.

   ENE – generally undulating between 2–5; massive peaks at 10:00 (>16/17) and 11:00 (12)

   SSE – undulating 2–4 throughout the day; peaks at 09:00 (10.5) and 19:00 (9)

   Suggest 2/1 mks for description; 2/3 marks for drawing out the contrasts. (not 3/1)

© University of Cambridge International Examinations 2011

(c) **Referring to both Fig. 5 and Fig. 6, to what extent is it true to say that there was a link between SO$_2$ pollution and wind direction in Port Talbot during the study?** **[6]**

The link seems to be fairly clear from Fig 6. When the wind is from WSW and SSW the peaks are much higher and for much longer periods of time compared to other, especially easterly directions.
However, there are some anomalies e.g. the large peaks on the ENE graph and the SSE graph also seems higher than other easterly wind directions.

There should be some reference to Fig. 5 for full marks.

L3 (5–6 marks)
Clear and detailed description of the links; acknowledges the anomalies.
Extensive and accurate data support.

L2 (3–4 marks)
Clear description of the link shown.
Provides data support and, at the top end of this level, some awareness of the anomalies.

L1 (0–2 marks)
Descriptive with little attempt to address the question.
Data support inaccurate or lacking.

(d) **Assess the usefulness of Figs 5 and 6 to those responsible for the management of environmental degradation in the Port Talbot area.** **[8]**

Candidates are likely to respond that the figures are useful to some extent or only to a limited extent.

Environmental degradation is a wide ranging topic, including land, water and air. The resources give information which will help in terms of air pollution but they give little information about other aspects of environmental degradation. Additionally, the time scale is quite short and may not be representative of the longer term.
A good answer, while discussing the pros and cons of the resources provided, will acknowledge this and perhaps point out other sources of information which would inform the issue.

L3 (6–8 marks)
Clear and detailed analysis of the usefulness and limitations of the resources.
The resources are well used to support the points made. A clear understanding of other resources which would be of use.

L2 (3–5 marks)
Some analysis of the usefulness and limitations of the resources, which may be unbalanced.
Provides support for some observations. There may be a limited awareness of other resources which might be useful.

L1 (0–2 marks)
Little understanding of the usefulness of the resources; perhaps simple description.
Support is inaccurate or lacking.

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]**

Valid approaches would be to agree with or (less likely) to challenge the assertion in the question. Look for the quality of the argument and supporting evidence taken from the map.

Pacific Ocean – varied threats – main ones are pollution, dynamite fishing, coral harvesting and sedimentation.
Indian Ocean – again the threats are varied – main ones are pollution and dynamite fishing.

L3 (4–5 marks)
Clear and detailed analysis of the degree to which map evidence supports (or otherwise) the assertion in the question. Data is well used to support the points made.

L2 (2–3 marks)
A valid attempt to address the question. Data is used to support the points made.

L1 (0–1 marks)
Limited ability to interpret the map, may simply describe. Use of data is inaccurate or lacking. No attempt to address the question.

(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]**

Much will depend upon the examples chosen, and candidates may legitimately express total disagreement, partial disagreement or complete agreement with the statement. The important feature is that they must use a range of examples to support their point of view.

L3 (8–10 marks)
Evaluation is to the fore with sophisticated exemplar support. There is a clear assessment of the role of international co-operation.

L2 (5–7 marks)
Addresses the issue of international co-operation but the evaluation, though present, is less well thought out or weakly justified. Exemplar support limited.

L1 (0–4 marks)
There is some reference to international cooperation but the approach is largely descriptive and piecemeal. No attempt to evaluate or very superficial.

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]

Answers should be based firmly on their own investigations, quoting examples drawn from this.

Clearly, much depends on the investigation and the choice of data. Candidates should be aware of the limitations of their own primary data (e.g. spatial, temporal, scale) and the way in which secondary data complements their primary data and enhances and extends their investigation.

In terms of evaluation a range of responses is acceptable from 'to a large extent' to 'to a small extent' depending upon the investigation.

L4 (13–15 marks)
The candidate displays a high order understanding of the ways in which secondary sources enhanced (or otherwise) the investigation with good support. Evaluation to the fore.

L3 (10–12 marks)
Good understanding of the ways in which secondary sources enhanced (or otherwise) the investigation. The answer makes appropriate reference to the candidate's own investigation. Well focused on the question.

L2 (7–9 marks)
More focused on the candidate's own investigation. Describes the use of secondary sources, but only in a superficial fashion.

L1 (0–6 marks)
Discussion lacks detail. Perhaps descriptive only, with only piecemeal comments about secondary sources. Little reference to candidate's own investigation.

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]

Answers should be based firmly on their own investigation, quoting examples drawn from this.

Clearly, much depends on the investigation. In terms of evaluation a range of responses is acceptable from 'to a large extent' to 'to a small extent' depending upon the investigation, but be wary of those which claim their study completely confirmed what it set out to achieve.

L4 (13–15 marks)
The candidate displays a high order understanding of the limitations of the final outcomes. Evaluation is to the fore and well supported by examples drawn from the investigation.

L3 (10–12 marks)
Good understanding of what the investigation actually proved. The answer makes appropriate reference to the candidate's own investigation. Well focused on the question.

L2 (7–9 marks)
More focused on the candidate's own investigation. Attempts to address the question, but only in a superficial fashion. Only limited support from the candidate's own investigation.

L1 (0–6 marks)
Discussion lacks detail. Perhaps descriptive only, with little attempt to address the question. Little reference to candidate's own investigation.

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]

   •   2004 ranked 65th, 2007 ranked 40th
   •   Declined

(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]

   •   A larger number of least deprived (rank >70) areas are below the line (decline)
   •   However, still some above the line (improve)
   •   Most deprived areas (rank <30) – none below the line (improve)
   •   Some judgement (perhaps agreeing or challenging the assertion in the question)

   Suggest mark flexibly depending upon quality of judgement and support.
   3/1 or 2/2 for description/judgement.

(c)   To what extent does Fig. 9 show an East-West division to income deprivation in Barnsley?   [6]

   Expect comments in general agreement. Quality may be indicated by support from the Fig, the nature of the judgement and the identification of anomalies.

   L3 (5–6 marks)
   Clear and detailed assessment, acknowledging the anomalies.
   Extensive and accurate data support.

   L2 (3–4 marks)
   Clear description of the pattern, there may be some awareness of the anomalies.
   Provides data support.
   An attempt at evaluation.

   L1 (0–2 marks)
   Descriptive – Limited awareness of the pattern or no reference to the question.
   Data support inaccurate or lacking.

(d) **Assess the usefulness of Figs 8 and 9 to those responsible for reducing deprivation in Barnsley.** **[8]**

Deprivation has many dimensions (e.g. economic, social, environmental) and the resources given are limited in scope.
Fig. 1 shows "living environment" but there is no indication of how this has been determined. Additionally, it deals with ranks and therefore does not show absolute changes in living environment. However, a pattern does emerge and it is useful for this reason.
Fig. 2 deals only with income, but does reveal a clear spatial pattern.

Good responses will deal with the pros and cons of each resource, have a sound grasp of deprivation and probably acknowledge other resources which could be useful (e.g. other dimensions (domains) of deprivation, the views of local residents, experiences from other improvement schemes etc.).

L3 (6–8 marks)
Clear and detailed analysis of the usefulness and limitations of the resources. A sound grasp of deprivation. The resources are well used to support the points made. A clear understanding of other resources which would be of use.

L2 (3–5 marks)
Some analysis of the usefulness and limitations of the resources, which may be unbalanced. Provides support for some observations. At the top end there may be a limited awareness of other resources which might be useful.

L1 (0–2 marks)
Little understanding of the usefulness of the resources; perhaps simple description.
Support is inaccurate or lacking.

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]

To a large extent, although the anomaly of London should be pointed out for a full answer.
Most deprived areas – the SW, E and SE all have low (<10%) of the most deprived areas; exception – London (27–28%).
Least deprived areas – SW, E and SE all have high (21–38%); exception London (only 8%).

L3 (4–5 marks)
Clear and detailed analysis of the degree to which the graph supports the N/S divide. The anomalies are clearly identified. Data is well used to support the points made.

L2 (2–3 marks)
A valid attempt to address whether the N/S divide can be supported or otherwise. Data is used to support the points made. Less importance placed on the anomalies.

L1 (0–1 marks)
Limited ability to interpret the graph, may simply describe. Use of data is inaccurate or lacking. No attempt to address the N/S divide.

(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]

Candidates should be aware that deprivation has a number of dimensions (e.g. income, employment, health, crime, access etc.) and therefore we should expect them to largely agree with the statement. One legitimate approach would be for candidates to draw a distinction between poverty and deprivation and go on to elaborate on this.
Exemplar support will depend very much on the candidate's own studies, but may not be confined to a MEDC context.

L3 (8–10 marks)
Evaluation is to the fore with sophisticated exemplar support. There is clear consideration of the multi-dimensional nature of deprivation.

L2 (5–7 marks)
Addresses the evaluative element of the question, but the evaluation (probably agreement) is expressed without any depth of argument or support.

L1 (0–4 marks)
The approach is largely descriptive and piecemeal.
No attempt to address the question.

EITHER

11 With reference to your own investigation of deprivation, evaluate the extent to which the use of secondary sources enhanced your investigation. **[15]**

Begin by stating the question or hypothesis that you investigated.

Answers should be based firmly on their own investigations, quoting examples drawn from this.

Clearly, much depends on the investigation and the choice of data. Candidates should be aware of the limitations of their own primary data (e.g. spatial, temporal, scale) and the way in which secondary data complements their primary data and enhances and extends their investigation.

In terms of evaluation a range of responses is acceptable from 'to a large extent' to 'to a small extent' depending upon the investigation.

L4 (13–15 marks)
The candidate displays a high order understanding of the ways in which secondary sources enhanced (or otherwise) the investigation with good support. Evaluation to the fore.

L3 (10–12 marks)
Good understanding of the ways in which secondary sources enhanced (or otherwise) the investigation. The answer makes appropriate reference to the candidate's own investigation. Well focused on the question.

L2 (7–9 marks)
More focused on the candidate's own investigation. Describes the use of secondary sources, but only in a superficial fashion.

L1 (0–6 marks)
Discussion lacks detail. Perhaps descriptive only, with only piecemeal comments about secondary sources. Little reference to candidate's own investigation.

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. **[15]**

Begin by stating the question or hypothesis that you investigated.

Answers should be based firmly on their own investigation, quoting examples drawn from this.

Clearly, much depends on the investigation. A range of responses is acceptable, but be wary of those which state their study completely confirmed what it set out to achieve.

L4 (13–15 marks)
The candidate displays a high order understanding of the limitations of the final outcomes. Evaluation is to the fore and well supported by examples drawn from the investigation.

L3 (10–12 marks)
Good understanding of what the investigation actually proved. The answer makes appropriate reference to the candidate's own investigation. Well focused on the question.

L2 (7–9 marks)
More focused on the candidate's own investigation. Attempts to address the question, but only in a superficial fashion. Only limited support from the candidate's own investigation.

L1 (0–6 marks)
Discussion lacks detail. Perhaps descriptive only, with little attempt to address the question. Little reference to candidate's own investigation.