

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Pre-U Certificate

MARK SCHEME for the May/June 2014 series

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, Pre-U, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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- 1 Study Fig. 1, which shows the effect of trampling on a salt marsh in the estuary of the River Gann, Milford Haven, Wales over a 10 year period.

The species diversity index is a measure of the number of plant species present, a higher value indicating a greater number of plant species are present.

- (a) Using evidence from Fig. 1, give the height at which the difference in species diversity between the trampled and untrampled marsh is greatest. [2]

- 2.8 m – give 1 mark for value, 1 mark for units; so 2.8 m = 2 marks
- species diversity index 1.4 to 0.3 (accept 0.2–0.3)/range of 1.1 (accept 1.1–1.2)

- (b) ‘Trampling reduces species diversity’. How far does Fig. 1 support this statement? [4]

The question asks for an assessment. Credit this plus any valid supporting evidence e.g.

- Only true at heights between 2.2 and 2.5 and also at heights > 3.6 m above sea level (asl)
- Opposite effect between 2.5 and 3.6 m asl
- No impact between 1.8 and 2.2

Given the mark allocation do not expect too much – credit a sentence of assessment (1mk) plus 1mk for each of any three supporting pieces of evidence.

- (c) Study Fig. 2, which shows information about plant species in the salt marshes of Morecambe Bay, England.

‘Salt marsh zones are characterised by different species of vegetation’.

How far does Fig. 2 support this statement? [6]

Zoning is not straightforward due to the overlap of zones and the overlap of species. At a general level, there is a link between species and zone (height asl). Easier to achieve if concentrating on the range where species more frequent. Zoning works best if using a range of species rather than an individual species, e.g. Common cord-grass + Annual glasswort + Common saltmarsh grass = pioneer zone.

However, there are several anomalies, at least one of which should be identified e.g. Common saltmarsh grass occurs in both the pioneer and low marsh zones; sea milkwort occurs in all four zones.

L3 (5–6 marks)

Sophisticated treatment – addresses species and zones as well as difficulties
Tackles variations and anomalies comfortably
Accurate data support from the resource

L2 (3–4 marks)

Some assessment of the link between species and zones
Perhaps lacking anomalies
Provides some data to support points

L1 (0–2 marks)

Little attempt to address the question; simple description
Data support inaccurate or lacking

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(d) Assess the value of Figs 1 and 2 to those responsible for managing small scale ecosystems. [8]

The question is about the value of the resources. Look for this in relation to how useful they would be to the management process. Reference to any small scale ecosystem(s) would be relevant.

Fig. 1 covers both physical and human influences and shows results which may be surprising to some, but is limited by time scale, a lack of specific location and no details are given as to how trampling is measured. Also, species diversity is not the same as number of plants.

Fig. 2 illustrates zoning, which may be of use for targeting specific strategies at different zones.

A range of other information would be useful to consider, e.g. seasonal variations, the number of visitors, the locations of those areas most at risk to name only three. Clearly, much will depend on the ecosystems chosen.

L3 (6–8 marks)

A clear understanding of the strengths and limitations of the resources with management to the fore. Knowledge of other resources/information which would be of use. Mature assessment.

L2 (3–5 marks)

Discussion of the pros and cons of the resources but link to management weakly developed. Very limited knowledge of other resources which may be of use. Assessment limited.

L1 (0–2 marks)

Little understanding of the question, perhaps simple description of the data in the resources.

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- 2 (a) **Study Fig. 3 which shows the evolution of biomass and number of species of vegetation in a forested area over a period of time.**

Describe the trend in the relationship between biomass and number of species shown in Fig. 3. [5]

The focus here must be on the relationship between the two lines on the graph.

In the first four years (roughly equivalent to the herb stage) there's a rapidly expanding gap between the two, due to the very slow growth in biomass and the very rapid growth in species diversity.

Between 4 and 50 years (the shrub stage) the gap narrows as the sd declines and the biomass growth begins to accelerate, leading to a crossover point at 50 yrs.

Beyond 50 yrs (approx. the tree stage) biomass continues to grow while sd declines slowly. Reference to the stages may be useful, but it is not required.

L3 (4–5 marks)

Clear and detailed description of the trend between the two lines, displaying a degree of confidence. Data from Fig. 3 is well used to support the points made.

L2 (2–3 marks)

A valid attempt to describe the trend in number of species v biomass. Data is used to support the points made. Each line may be treated separately. Lacks the detail or clarity needed for L3.

L1 (0–1 marks)

Limited ability to interpret the graph. Use of data is inaccurate or lacking.

- (b) **'Very few truly natural ecosystems remain'.**

From your wider study of small scale ecosystems, consider the extent to which the evidence supports this statement. [10]

An opportunity here for candidates to use the knowledge gained from their individual research to explore the topic of human impact on ecosystems. Any point of view is acceptable, but credit well those who are able to support their view with useful exemplar support. The best candidates will 'consider the extent' – this will indicate L3.

L3 (8–10 marks)

A clear focus on the question with appropriate exemplar support. There is a sophisticated understanding shown. The viewpoint is well supported by exemplar material.

L2 (5–7 marks)

Expresses a view and provides some support. Sound knowledge and understanding, lacking depth in places. May be limited in range or in explanation.

L1 (0–4 marks)

The approach is largely descriptive and superficial with little or no attempt to address the question. Little exemplar support.

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EITHER

- 3 With reference to your own investigation of small scale ecosystems, examine how you identified a suitable geographical question or hypothesis for investigation.**

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

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

The syllabus suggests that questions/hypotheses should:

- be at a suitable scale
- be capable of research
- be clearly defined with named location(s)
- be based upon wider geographical theories, ideas or concepts.

An alternative approach might be to suggest that their questions/hypotheses are SMART (specific, measurable, achievable, realistic, time manageable).

Expect good responses to refer to most or all of these stages and develop them in some detail, using their own investigation to reinforce the points made.

L4 (13–15 marks)

The candidate displays a high order understanding. The points made are well supported with examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of what should be considered when developing a question/hypothesis. 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 some of the factors, but in only a superficial fashion.

L1 (0–6 marks)

Discussion lacks detail. Perhaps descriptive, with only piecemeal comments. Little reference to candidate's own investigation.

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OR

- 4 With reference to your own investigation of small scale ecosystems, describe and justify the techniques you used to present your findings.**

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 and the data presentation methods chosen. Both justification and description (which could be in the form of a diagram) need to be addressed; one indication of quality might be an evaluation of how successful their chosen methods were. The syllabus suggests methods could be justified in terms of appropriateness and relevance.

L4 (13–15 marks)

The candidate displays a high order understanding and fully justifies the choice of methods in terms of appropriateness and relevance. Evaluation may well be present. Well supported by examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of the question and addresses both dimensions. 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 in only a superficial fashion. Only limited support from the candidate's own investigation. There will be an imbalance, probably in favour of description.

L1 (0–6 marks)

Discussion lacks detail. Perhaps weak description only, with little attempt to justify. Little reference to candidate's own investigation.

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Section B: Conservation

- 5 Study Fig. 4, which shows the ecological footprint in low, middle and high income countries between 1961 and 2008.**

Ecological footprint can be defined as the area of land required by an individual in that country to maintain his or her standard of living.

- (a) Giving evidence from Fig. 4, state by how much the ecological footprint increased from 1961 to 2008 for middle income countries. [2]**

- 1.15 (accept 1.2) to 1.95
- = 0.8 (0.75 if 1.2 chosen)

- (b) Compare the trend in ecological footprint for high income countries with the trend for low income countries from 1961 to 2008 shown in Fig. 4. [4]**

Credit any valid comparisons

e.g. overall growth for high v zero growth for low income

marked fluctuation (high) v small fluctuations (low)

several periods of decline (high) v steady level (low)

A full answer must have comparisons and supporting data from Fig. 4

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Fig. 5 shows ecological footprint and the Human Development Index (HDI) for selected countries. Table 1 shows the annual population growth rate for those countries.

The HDI is a composite measure of development which takes into account life expectancy, education and income.

- (c) With reference to Fig. 5 and Table 1, to what extent does there appear to be a relationship between ecological footprint, HDI and annual population growth rate? [6]

Unusual in that there are 3 variables to consider.

The contrast between S/L at one end (low EF/low HDI/high PGR) of the spectrum and the DCs at the other end (high EF/high HDI and low PGR) is a good starting point and is worthy of credit, especially if well supported using both resources.

Cuba can be seen as an anomaly since HDI is high, but EF and PGR (negative) are both low.

Credit can also be given for the variation in EF and PGR for countries with similar HDIs (e.g. Norway v USA)

L3 (5–6 marks)

Clear and detailed account, well focused on the evaluative aspect of the question, with extensive and accurate data support from the graph and the table

L2 (3–4 marks)

Clear attempt to address the question

Provides data support

Perhaps little use of the table

L1 (0–2 marks)

Descriptive with little attempt to address the question.

Data support inaccurate or lacking

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(d) Assess the value of Figs 4 and 5 and Table 1 to those responsible for managing conservation. [8]

There needs to be a combination of both strengths and weaknesses to enable a valid assessment to be made, although there is no requirement for balance between the two. The assessment could be anywhere on the spectrum, but the opinion must be well supported to gain maximum marks.

Expect reference to the following, though other valid points could well be made:

Fig. 4 – strengths include time scale and differences on a global scale. Fig. 5 and Table 1 show the links between development and EF.

All very well at a large scale, but management usually has to be targeted at the local scale and towards specific issues, neither of which are illustrated by the resources.

L3 (6–8 marks)

Clear and detailed analysis of the strengths and weaknesses, solid evaluation well supported. Clear understanding of other resources which might be useful.

L2 (3–5 marks)

An understanding of some of the strengths and weakness, evaluation (if present) weakly supported. Some knowledge of other resources which may be of use.

L1 (0–2 marks)

Little understanding of the strengths and weaknesses; perhaps simple description.

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- 6 (a) Study Fig. 6 which shows trends in the population of dormice in England between 1993 and 2000. The populations are shown using an index which was calibrated at 100 in 1993.

Using Fig. 6, to what extent does the trend shown on the national graph reflect the trends shown for selected areas of northern and southern England? [5]

The National graph shows a steady decline over the period from 1993 to 2000. This contrasts with the graph for N England which shows initial growth followed by decline and S England which shows initial growth then a fall, eventually undulating around the starting level. To what extent? – only to a small extent.

L3 (4–5 marks)

Clear and detailed analysis. Well focused on the question. Data is convincingly used to support the opinion expressed.

L2 (2–3 marks)

A valid attempt to address the question. Data is used to support the points made. A superficial or limited evaluation.

L1 (0–1 marks)

Limited ability to interpret the resource, may simply describe. Use of data is inaccurate or lacking. No attempt to address the question.

- (b) **From your wider study of conservation, to what extent is it possible to manage the conflicting demands of access for the public to conservation areas and protection of those areas? [10]**

Much will depend upon the examples chosen. There should be some discussion of the access/conservation dilemma, as well as what might be considered 'successful' in management terms. The important feature is that an assessment is made and supported with exemplar material from candidates' wider research.

L3 (8–10 marks)

The question is to the fore with sophisticated exemplar support. There is a clear and well supported attempt to judge the degree of success of management.

L2 (5–7 marks)

Attempts to address the question and there is some discussion of the access/conservation conflict. Exemplar support, though present, may be limited in value.

L1 (0–4 marks)

The approach is largely descriptive and piecemeal, only a limited attempt to address the question.

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EITHER

- 7 With reference to your own investigation of conservation, examine how you identified a suitable geographical question or hypothesis for investigation. [15]**

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

The syllabus suggests that questions / hypotheses should:

- be at a suitable scale
- be capable of research
- be clearly defined with named location(s)
- be based upon wider geographical theories, ideas or concepts

An alternative approach might be to suggest that their questions/hypotheses are SMART (specific, measurable, achievable, realistic, time manageable).

Expect good responses to refer to most or all of these stages and develop them in some detail, using their own investigation to reinforce the points made.

L4 (13–15 marks)

The candidate displays a high order understanding. The points made are well supported with examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of what should be considered when developing a question/hypothesis. 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 some of the factors, but in only a superficial fashion.

L1 (0–6 marks)

Discussion lacks detail. Perhaps descriptive, with only piecemeal comments. Little reference to candidate's own investigation.

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OR

- 8 With reference to your own investigation of conservation, describe and justify the techniques you used to present your findings.**

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 and the data presentation methods chosen. Both description and justification need to be addressed; one indication of quality might be an evaluation of how successful their chosen methods were. The syllabus suggests methods could be justified in terms of appropriateness and relevance.

L4 (13–15 marks)

The candidate displays a high order understanding and fully justifies the choice of methods in terms of appropriateness and relevance. Evaluation may well be present. Well supported by examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of the question and addresses both dimensions. 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 in only a superficial fashion. Only limited support from the candidate's own investigation. There will be an imbalance, probably in favour of description.

L1 (0–6 marks)

Discussion lacks detail. Perhaps weak description only, with little attempt to justify. Little reference to candidate's own investigation.

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SECTION C: Central Business Districts

9 Study Fig. 7 which shows changing areas of selected land uses in the Central Business District (CBD) of Bangalore, India from 1985 to 2003.

(a) Giving evidence from Fig. 7, state which land use had the largest change in area between 1985 and 2003. [2]

- Residential
- Decline from 190 to 130; 60

(b) Describe the changes in land use in the CBD of Bangalore shown in Fig. 7 between 1985 and 2003. [4]

Decline – residential and, to a lesser extent, industrial
 Increase – commercial and transport
 No change – public and parks

Each point plus support = 1 mark

Reserve one mark for difference in rate of change within one category, e.g. large drop in residential followed by a more gradual decline

(c) Study Fig. 8 which shows land use in the CBD of Bangalore in 2003. Fig. 9 is a map of Bangalore's CBD.

Using both Figs 8 and 9, to what extent does there appear to be functional zoning of land use in the CBD of Bangalore? [6]

There does appear to be some evidence of zoning, e.g.:

Public – peripheral; transport – peripheral (absent from east) residential in an E/W band; industrial – isolated; parks – zoning less obvious.

No credit for explanation.

To what extent – visible in some land uses (as above) but the pattern is not immediately clear. Accept a judgement anywhere on the spectrum as long as it is well supported (place names and compass points required)

L3 (5–6 marks)

Clear and detailed, well focused on the question. Evaluation is present along with extensive and accurate support from Figs 8 and 9

L2 (3–4 marks)

Clear attempt to address the question in terms of zoning. Provides some data support. Judgement is superficial, lacks convincing support

L1 (0–2 marks)

Descriptive – fails to draw out zoning
 Data support inaccurate or lacking

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(d) Assess the usefulness of Figs 7, 8 and 9 to those studying the characteristics of CBDs. [8]

Accept any valid comments. Figs 7 and 8 focus on land use, with Fig. 7 having the additional bonus of change through time while Fig. 8 gives spatial information.

However, to study the CBD a wide range of other information would be necessary – e.g. pedestrian and traffic flows, rates, night time economy, vertical zoning to name but a few. Some may refer to the need for up to date information; 2003 is rather dated now.

Good responses will deal with each resource, explaining why they might be of use and discussing their limitations. There will be consideration of other information which might be of use – given the mark allocation this does not need to be exhaustive.

L3 (6–8 marks)

Clear and detailed assessment of the usefulness of the resources, considering both the pros and cons. A discussion of some of the other resources which may be of value.

L2 (3–5 marks)

An attempt to evaluate the resources. Some suggestions of other relevant resources, failing to explain why they are useful.

A discussion of what the resources show only in the context of Bangalore would be at the bottom of this level

L1 (0–2 marks)

Little understanding of the question; perhaps simple description.

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- 10 (a) Fig. 10 shows proposed changes to Quay Street in the CBD of Auckland, New Zealand. The aims of the proposed changes are to improve the economy, the environment and the accessibility of Quay Street.

Giving evidence from Fig. 10, show how the proposed changes will address the aims of the reforms.

There are a number of changes shown, some of which cut across all three aims. Examples of changes might be:

Economy: office buildings; improved transport; improved pedestrian flow

Environment: central reservation, vegetation, wider paths, less street furniture

Access: trams, central bus stops, 4 lanes of traffic, crossing point

The key is that the changes must be linked to the 3 central aims.

L3 (4–5 marks)

Clear and detailed attempt at the question. The resource is well used to support the points made. All three aims are tackled

L2 (2–3 marks)

A valid attempt to address the question. The points made are supported by reference to the resource. One or more aims might be missing

L1 (0–1 marks)

Limited attempt to answer the question, may simply describe, no link to aims

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- (b) 'The emergence of CBDs may have been a long process in most cities, but they are now rapidly approaching extinction'.

From your wider study of CBDs, consider the extent to which you agree with this statement. [10]

An opportunity for candidates to illustrate their understanding of the dynamics of CBDs by focussing on recent changes and the threats they pose to the CBD. Much depends on the examples chosen, and a range of responses would be valid e.g. to a large extent, to some extent or to a limited extent.

A good response will consider both aspects of the statement (growth and decline), address the evaluative nature of the question and be well supported with exemplar material.

Given the limited mark allocation we cannot expect an equal balance.

L3 (8–10 marks)

The answer is well focused on the question with sophisticated exemplar support. There is clear consideration of the evaluative aspect. An appreciation of the growth of CBDs

L2 (5–7 marks)

Addresses the evaluative element of the question, but the evaluation is expressed without any depth of argument; only a superficial level of exemplar support – this approach would be at the bottom of this level.

L1 (0–4 marks)

The approach is largely descriptive and piecemeal.
No attempt to address the question. No examples.

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EITHER

- 11 With reference to your own investigation of Central Business Districts, examine how you identified a suitable geographical question or hypothesis for investigation. [15]**

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

The syllabus suggests that questions / hypotheses should:

- be at a suitable scale
- be capable of research
- be clearly defined with named location(s)
- be based upon wider geographical theories, ideas or concepts

An alternative approach might be to suggest that their questions/hypotheses are SMART (specific, measurable, achievable, realistic, time manageable)

Expect good responses to refer to most or all of these stages and develop them in some detail, using their own investigation to reinforce the points made.

L4 (13–15 marks)

The candidate displays a high order understanding. The points made are well supported with examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of what should be considered when developing a question/hypothesis. 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 some of the factors, but in only a superficial fashion.

L1 (0–6 marks)

Discussion lacks detail. Perhaps descriptive, with only piecemeal comments. Little reference to candidate's own investigation.

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OR

12 With reference to your own investigation of Central Business Districts, describe and justify the techniques you used to present your findings.

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 and the data presentation methods chosen. Both description and justification need to be addressed; one indication of quality might be an evaluation of how successful their chosen methods were. The syllabus suggests methods could be justified in terms of appropriateness and relevance.

L4 (13–15 marks)

The candidate displays a high order understanding and fully justifies the choice of methods in terms of appropriateness and relevance. Evaluation may well be present. Well supported by examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of the question and addresses both dimensions. 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 in only a superficial fashion. Only limited support from the candidate's own investigation. There will be an imbalance, probably in favour of description.

L1 (0–6 marks)

Discussion lacks detail. Perhaps weak description only, with little attempt to justify. Little reference to candidate's own investigation.