



GEOGRAPHY

9768/04

Paper 4 Research Topic

May/June 2016

MARK SCHEME

Maximum Mark: 50

Published

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.

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Section A: Small-scale Ecosystems

1 Study Fig. 1 which shows the survival rates of new ash and sycamore saplings at a woodland near Thetford, England over a 5 year period.

(a) Using evidence from Fig. 1, give the difference in survival rate between ash trees which have been browsed by deer and those protected from browsing in year 4. [2]

- 97/98 – 80
- 18/17

(b) Using Fig.1, compare and contrast the survival rates for browsed and protected sycamore trees over the 5 year period. [4]

Accept any valid comparisons or contrasts e.g.:

- Both show an overall decline; similar decline for both between Yr 1 and Yr 2
- Protected decline much less (50% v 95%)
- Yr 2 to Yr 4 – V steep decline for browsed; much gentler drop for protected
- Mark 3 @ 1 plus one mark for supporting data; must be at least one comparison and one contrast.

(c) Study Fig. 2, which shows the change in biomass volume of newly planted scots pine trees and sitka spruce trees at selected sites in the UK between 1995 or 2004. To what extent are the trends shown in Fig. 2 similar for scots pine and sitka spruce? [6]

The graph shows two types of change – the change in volume over a 5 yr period, then changes in the change of volume over the two 5 year periods. There are many contrasts and discussion of these is valid (e.g. differences in the scale of change) but candidates must draw out the similarities (e.g. a mixed pattern for both species) and, importantly, assess the differences and similarities in order to arrive at a judgement.

L3 (5–6 marks)

Sophisticated treatment – identifies 5 yr changes between the two 5 year bands.
Accurate data support.

L2 (3–4 marks)

Some assessment of the similarities and differences shown on the graph.
Provides some data to support points.

L1 (0–2 marks)

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

(d) Evaluate the usefulness of Figs 1 and 2 to those studying the biotic components of small scale ecosystems. [8]

The question is deliberately broad and reference to any small scale ecosystem(s) and any aspect of 'study' would be relevant.
Both resources are related to woodland, but candidates need not be confined to this.

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Fig. 1 is useful because it quantifies the effects of browsing by deer and human intervention (protection from browsing). However, although the location is given, there is little other spatial information or any detail about the site characteristics (e.g. microclimate, soils, aspect, slope) Fig. 2 is useful because it shows different rates of growth for different species. However, the limitations of Fig. 2 are similar to those of Fig. 1.

Depending on the approach in terms of 'study' a discussion of other resources which might be useful would be relevant.

A good answer will possess a discussion of the pros and cons of the resources along with an evaluation of their usefulness.

L3 (6–8 marks)

A clear understanding of the strengths and limitations of the resources with evaluation 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 'study' 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.

- 2 (a) Study Fig. 3 which shows the location of sand dunes at Beadnell Bay, Northumberland, England. Using Fig. 3, suggest how the area has been managed to conserve and enable public access to the dune system. [5]**

In terms of public access, there seems to be a channelling towards the north of the sand dunes. The road, car park, toilets, water activities and caravan sites are all to the north. Towards the centre and southern part of the map there is little evidence of human activity – the path and footpath are both inland from the dunes. Additionally, there's a bird sanctuary. Conservation seems to be the main feature here.

L3 (4–5 marks)

Clear and detailed discussion of the management of the area, addressing both public access and conservation. Data from Fig. 3 is well used to support the points made.

L2 (2–3 marks)

A valid attempt to address the question. Map evidence is used to support the points made. Lacks detail or clarity.

L1 (0–1 marks)

Simple description with little attempt to address the question. [5]

- (b) 'The main aim of small scale ecosystem management is to change how humans value environments'. From your wider study of small scale ecosystems, how far do you agree with this statement. [10]**

An opportunity here for candidates to use the knowledge they've gained from their individual research to explore the topic of ecosystem management. 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 address the evaluative aspect of the question – this will indicate L3. Similarly, the statement assumes that humans are the main threat to small scale ecosystems – able candidates may challenge that assumption and use the material they have to support their view.

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L3 (8–10 marks)

A clear focus on the question with appropriate exemplar support. There is a sophisticated understanding. The evaluation is well supported by exemplar material. If reference to only one example, then max 8 if done very well.

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 or in exemplification.

L1 (0–4 marks)

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

EITHER

- 3 With reference to your own investigation of small scale ecosystems, assess the relative contributions of primary and secondary data to your 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.

For the research topics this year investigations should include both primary and secondary data. Much depends on the nature of the investigation, but good responses will discuss the pros and cons of primary and secondary data with an assessment of the relative contributions to the fore. Primary data is focussed on the chosen investigation, relevant and up to date, but may be limited by the time available, equipment, size of sample, accessibility, inexperience etc. Secondary data may provide background information, may be used to compare the primary data to, have a larger data set so may be more reliable. It has limitations of its own – it may be dated and may not be strictly comparable, may not be for the specified location etc.

L4 (13–15 marks)

The candidate displays a high order understanding. The relative contributions are assessed in a mature fashion and are well supported with examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of the contributions of primary and secondary data. 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 primary and secondary data, 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, assess the limitations of your study in terms of the data collected and the methods used. 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.

Clearly, much depends on the investigation and both the data and the collection methods chosen. Limitations of the data (e.g. sample size, sample strategy, representativeness, reliability, accuracy etc.) and the limitations of the data collection methods (e.g. equipment, the method, sources of error, accuracy etc.) both need to be discussed. A good response will have clear focus and address the evaluative aspect of the question.

The wording of the syllabus suggests we should allow secondary data.

L4 (13–15 marks)

The candidate displays a high order understanding and makes a mature assessment. The points made are 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.

L1 (0–6 marks)

Discussion lacks detail. Perhaps weak description only. Little reference to candidate's own investigation.

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Section B
Managing Rural Environments

5 Study Fig. 4, which shows the number of new housing completions in the Lake District National Park, England from 2007 to 2012.

(a) Giving evidence from Fig. 4, state the difference in the number of houses completed in 2011–2012 and 2007–2008. [2]

117 to 118 – 60 = accept 57 to 58

(b) Using Fig. 4, contrast the change in the number of completed unfettered housing with that of completed affordable housing between 2007 and 2012. [4]

Unfettered housing shows a steadily (regularly) declining trend from 30 to 8, in contrast to affordable housing which shows a very variable trend.

Two marks for identifying the contrast in the trend, plus two marks for supporting data from the graph.

Study Fig. 5A which shows information about second homes in Wales in 2011. Fig. 5B shows the local authorities in Wales.

(c) To what extent does there appear to be a North-South pattern to the distribution shown on Fig. 5A? [6]

An opportunity to describe the pattern shown and to make a judgement about the distribution.

Candidates might well agree with the suggestion in the question, however, equally valid would be the argument for an E/W division or a coastal/inland distribution.

A good response will consider both more dense and less dense areas along with any anomalies. They will have good support from both Figs, and the evaluative aspect of the question will be to the fore.

L3 (5–6 marks)

Clear and detailed assessment, well focused on the evaluative aspect of the question, with extensive and accurate data support from the resource

L2 (3–4 marks)

Clear attempt to address the question;

Provides data support;

Evaluation likely to be brief or superficial/poorly supported.

L1 (0–2 marks)

Descriptive with little attempt to address the question.

Data support inaccurate or lacking.

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- (d) The Lake District National Park Core Strategy has set a target of 60 new houses per annum until the year 2025. Assess the value of Figs 4 and 5 to those responsible for managing housing provision in rural areas. [8]

There needs to be a consideration 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 judgement must be well supported to gain maximum marks.

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

Fig. 4 shows housing completions in the LDNP from 2007 to 2012. It usefully shows trends and totals over that time period for the different types of housing. However, there are no absolute values of housing cost, what exactly is defined as 'affordable' and how is a 'local' resident defined? Also, more recent data would be valuable, as well as some indication of exact/specific locations.

Fig. 5 adds a spatial dimension to the information given, but fails to show the exact locations of housing. Also, the information will need to be updated to be of real value.

The question is deliberately wide in scope, so accept any valid comments about other resources which would inform the work of those responsible for managing housing provision in rural areas – e.g. household incomes, employment figures etc.

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. May simply be a listing of the strengths and weaknesses of the resources with little attempt to provide an evaluation.

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 the index of rurality for selected villages along a transect leading from the edge of a UK city into the surrounding rural area. The index of rurality measures the urban and rural characteristics of the selected villages. 'Villages closer to large cities are less rural in character than more remote settlements'. How far does Fig. 6 support this statement? [5]

Fig. 6 at a general level tends to show agreement with the assertion, with the village nearest the city (Kilner Hill) ranging from -2 to $+8$, whereas Church Green (furthest away) ranges from -12 to $+2$. There are anomalies and these need to be identified e.g. Dobbridge has similar values to Kilner Hill but is ranked 5th in terms of distance; Laphorn Court is similar to Church Green in spite of being much nearer.

L3 (4–5 marks)

Clear and detailed analysis. Well focused on the question, with evaluation to the fore. Evidence from Fig. 6 is convincingly used to support the points made.

L2 (2–3 marks)

A valid attempt to address the question. Evidence from Fig. 6 is used to support the points made. Evaluation limited.

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 managing rural environments, explain why some rural settlements are more likely to change than others. [10]

Much will depend upon the examples chosen. Candidates might usefully consider a range of factors – social, economic, environmental, political. Discussions of proximity to employment, ease of commuting and a countryside living environment are likely to be common. A good answer will consider why some have changed very little while others have experienced much change.

L3 (8–10 marks)

The question is to the fore with sophisticated exemplar support. There is a clear and well supported attempt to address both sides of the question.

L2 (5–7 marks)

Attempts to address the question and there is some discussion, perhaps based on settlements that are much changed. 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 managing rural environments, assess the relative contributions of primary and secondary data to your 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.

For the research topics this year investigations should include both primary and secondary data.

Much depends on the nature of the investigation, but good responses will discuss the pros and cons of primary and secondary data with an assessment of the relative contributions to the fore. Primary data is focussed on the chosen investigation, relevant and up to date, but may be limited by the time available, equipment, size of sample, accessibility, inexperience etc.

Secondary data may provide background information, may be used to compare the primary data to, have a larger data set so may be more reliable. It has limitations of its own – it may be dated and may not be strictly comparable, may not be for the specified location etc.

L4 (13–15 marks)

The candidate displays a high order understanding. The relative contributions are assessed in a mature fashion and are well supported with examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of the contributions of primary and secondary data. 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 primary and secondary data, 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.

OR

- 8 With reference to your own investigation of managing rural environments, assess the limitations of your study in terms of the methods used and the data collected. 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.

Clearly, much depends on the investigation and both the data and the collection methods chosen. Limitations of the data (e.g. sample size, sample strategy, representativeness, reliability, accuracy etc.) and the limitations of the data collection methods (e.g. equipment, the method, sources of error, accuracy etc.) both need to be discussed. A good response will have clear focus and address the evaluative aspect of the question.

The wording of the syllabus suggests we should allow secondary data.

L4 (13–15 marks)

The candidate displays a high order understanding and makes a mature assessment. The points made are well supported by examples drawn from the candidate's own investigation.

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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.

L1 (0–6 marks)

Discussion lacks detail. Perhaps weak description only. Little reference to candidate's own investigation.

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Section C
Fluvial Geomorphology

9 Study Fig. 7 which shows the sinuosity index for 10 meanders along the course of a river between 1997 and 2010.

(a) Giving evidence from Fig. 7, state which meander showed the greatest change in sinuosity index between 1997 and 2010. [2]

- Meander 3
- 2.25 (± 0.5) to 1.35 (± 0.5) or largest range (0.9 ± 0.1)

(b) Using Fig. 7, contrast the change in sinuosity index for meander 7 with the change in meander 8 between 1997 and 2010. [4]

Accept any valid contrast, for example:

- Meander 7 SI decreasing, while for 8 SI is increasing
- M7 – most increase form 97–06; M8 increase more gradual over whole time period
- M7 range is 0.5; M8 range is 0.3
- M7 minimal change 06–10; M8 slight increase
- M8 in 2010 greater than M7

Each contrast = 1 mk, plus accurate support = 1 mark
Reserve one mark for variations within the time span

(c) Study Fig. 8, which shows maps of meanders 2 and 3 in 1997, 2006 and 2010. Compare and contrast the change in form of the two meanders shown in Fig. 8. [6]

A requirement to compare and contrast. Accept any valid comparisons and contrasts in the change in form over time. Statements should contain technical terms (e.g. channel, outer bank, neck) and be supported with accurate evidence (e.g. distances, compass directions) and dates.

The wording of the question requires at least one comparison and one contrast.

L3 (5–6 marks)

Clear and detailed, well focused on the question. The comparisons and contrasts have extensive and accurate support from the resource (e.g. distances, directions).

L2 (3–4 marks)

Clear attempt to address the question. Provides some data support, although it may be limited.

L1 (0–2 marks)

Weak description, showing little understanding of the question
Data support inaccurate or lacking

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(d) Assess the value of Figs. 7 and 8 to those studying changes in river meanders over time. [8]

There needs to be a consideration 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 judgement must be well supported to gain maximum marks.

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

Fig. 7 shows change over time for 10 meanders, but is specific to one river and to these meanders only. The changes shown may be useful for predicting the behaviour of meanders, but gives no information about other rivers and meanders.

Fig. 8 gives spatial information about 2 of the meanders shown on Fig. 7. However, the information will require updating and also shows only meanders, giving no information about other landforms associated with meanders – river cliffs, point bars, pools and riffles for example.

The question is deliberately wide in scope, so accept any valid comments about other resources which could inform the work of those studying changes in river meanders e.g. larger scale maps, data about other rivers, geology, climate, land use etc.

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

L3 (6-8 marks)

Clear and detailed assessment of the usefulness of the resources, considering both the pros and cons. A discussion of some 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.

L1 (0-2 marks)

Little understanding of the question; perhaps simple description.

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- 10 (a) Study Fig. 9 which shows the height of a river channel bed upstream of a new dam between 1950 and 2010. The dam was completed in 1948. Heights shown are in metres above the pre-dam level of the river channel bed. Using Fig. 9, describe how the dam has changed the level of the river channel bed between 1950 and 2010. [5]

A number of valid points can be made. To score well each observation should be supported with accurate data from the graph.

Some points which might appear:

A general increase in height of the river bed; a rapid increase from 1950 to 1952; marked fluctuations in the river bed from 1963 onwards.

Credit any valid points with support.

L3 (4–5 marks)

Clear and detailed description. The main trends and anomalies are described. The resource is well used to support the points made.

L2 (2–3 marks)

A valid description. The points made are supported by reference to the resource.

L1 (0–1 marks)

Limited attempt to answer the question, weak description with no support.

- (b) ‘Sudden variations in the magnitude of discharge are the dominant factor in the formation of fluvial landforms’. From your wider study of fluvial geomorphology, to what extent do you agree with this statement? [10]

A wide ranging question to which, given the mark and time allocation, we can't expect a comprehensive answer.

A discussion of a limited number of landforms, preferably of different character (e.g. erosional v depositional, or upper course v lower course) should provide enough material to enable a judgement to be made. Located examples will characterise good answers.

A judgement anywhere on the spectrum is acceptable – but it is important that it is well supported.

L3 (8–10 marks)

The answer is well focused on the evaluative requirement of the question with sophisticated exemplar support. There is detailed knowledge of fluvial landform development. A range of landforms (minimum 3) will be discussed.

L2 (5–7 marks)

Addresses the evaluative element of the question, but the treatment is expressed without any depth of argument or only a superficial level of support. Perhaps only 2 landforms considered.

L1 (0–4 marks)

The approach is largely descriptive and piecemeal.

No attempt to address the question. Response based mostly on faulty K & U of fluvial landform development

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EITHER

- 11 With reference to your own investigation of fluvial geomorphology, assess the relative contributions of primary and secondary data to your 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.

For the research topics this year investigations should include both primary and secondary data.

Much depends on the nature of the investigation, but good responses will discuss the pros and cons of primary and secondary data with an assessment of the relative contributions to the fore. Primary data is focussed on the chosen investigation, relevant and up to date, but may be limited by the time available, equipment, size of sample, accessibility, inexperience etc.

Secondary data may provide background information, may be used to compare the primary data to, have a larger data set so may be more reliable. It has limitations of its own – it may be dated and may not be strictly comparable, may not be for the specified location etc.

L4 (13–15 marks)

The candidate displays a high order understanding. The relative contributions are assessed in a mature fashion and are well supported with examples drawn from the candidate's own investigation.

L3 (10–12 marks)

Good understanding of the contributions of primary and secondary data. 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 primary and secondary data, 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.

OR

- 12 With reference to your own investigation of fluvial geomorphology, assess the limitations of your study in terms of the methods used and the data collected. 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.

Clearly, much depends on the investigation and both the data and the collection methods chosen. Limitations of the data (e.g. sample size, sample strategy, representativeness, reliability, accuracy etc.) and the limitations of the data collection methods (e.g. equipment, the method, sources of error, accuracy etc.) both need to be discussed. A good response will have clear focus and address the evaluative aspect of the question.

The wording of the syllabus suggests we should allow secondary data.

L4 (13–15 marks)

The candidate displays a high order understanding and makes a mature assessment. The points made are well supported by examples drawn from the candidate's own investigation.

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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.

L1 (0–6 marks)

Discussion lacks detail. Perhaps weak description only. Little reference to candidate's own investigation.