

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Pre-U Certificate

MARK SCHEME for the October/November 2013 series

9768 GEOGRAPHY

9768/02

Paper 2 (Global Environments), 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 October/November 2013 series for most IGCSE, Pre-U, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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Guidance notes for marking 9768/02

This Mark Scheme contains, on the following page, the **Generic Mark Scheme** (GMS), used for assessing all pieces of extended writing bearing 25 marks in the Cambridge Pre-U Geography, followed by **Indicative content** for each question.

Whilst the GMS captures the essential generic qualities of responses in 5 mark bands (Levels), the Indicative content is what it says: some indication of the probable content, or possible approaches to the questions and titles set. Candidates may develop their own approaches to questions. Examiners should not expect to find all the Indicative content in any one response. Responses may be placed in any GMS Level without fulfilling all the descriptors for that mark band, e.g. where the essay does not lend itself to the use of sketch maps or diagrams. Responses may exhibit characteristics of more than one Level and so examiners use the principle of best fit in determining response quality.

CIE expects Examiners to use their geographical judgement and professional experience, combined with guidance given by Senior Examiners at the Standardisation Meeting and during the standardisation process, in assessing responses appropriately.

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The Generic Mark Scheme (GMS)

Level	Marks	Assessment criteria
5	22–25	<ul style="list-style-type: none"> • Wide-ranging, detailed and accurate knowledge and clear, high order understanding of the subject content • Relevant, detailed and accurate exemplification used effectively • Logical and clear organisation; good English expression; full and accurate use of geographical terminology • Well annotated and executed sketch maps/diagrams integrated fully with the text • Fully focused on the specific demands of the question • Systematic analysis and a critical approach to evaluation; appropriate application of concepts and theories • Conclusion shows high level insight and is logical and well founded on evidence and argument
4	18–21	<ul style="list-style-type: none"> • Good knowledge and depth of understanding of the subject content • Appropriate and well developed exemplification • Logical organisation; sound English expression; appropriate use of geographical terminology • Clearly annotated sketch maps/diagrams integrated with the text • Well focused on the demands of the question • Elements of systematic analysis and ability to evaluate; generally appropriate application of concepts and theories • Conclusion is sound and based on evidence and argument
3	14–17	<ul style="list-style-type: none"> • Sound knowledge and understanding of the subject content lacking depth in some areas • Appropriate but partial exemplification, may not be integrated with the text • Generally clear communication but lacking some organisation; English expression and use of geographical terminology are mostly accurate • Sketch maps/diagrams generally used effectively and appropriately • Specific demands of the question mostly met • Some ability to analyse and evaluate; limited application of concepts and theories • Conclusion is limited and has some links to the rest of the response
2	10–13	<ul style="list-style-type: none"> • Some knowledge and understanding of the subject content lacking depth and detail • Exemplification used may be limited or not fully appropriate • Limited organisation; English expression is basic with some accurate use of geographical terminology • Sketch maps/diagrams may have inaccuracies or limited relevance • Question is addressed broadly or partially • Analysis, evaluation and application of concepts and theories are limited and may be superficial • Conclusion is basic and may not be linked to the rest of the response
1	0–9	<ul style="list-style-type: none"> • A little knowledge and understanding of the subject content; response may also contain unconnected material • Exemplification, if used, is simple and poorly related to the text or may not be relevant • Lack of clarity and organisation; English expression is simple with inaccuracies; geographical terminology, if used, is basic or not understood • Sketch maps/diagrams are limited or poorly executed and may lack relevance • Question is understood weakly and may be addressed slightly • Superficial statements replace analysis and evaluation; application may be minimal or absent • Conclusion may be absent or simply asserted

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How to annotate essays and show marks awarded

Ticks

Examiners are asked to tick at point of credit and not in a large or loose manner such that it is hard to ascertain what has been credited. Please avoid simply ticking at the end of paragraphs to indicate you have read them. All pages and sketch maps/diagrams, if used, should, however, bear some sign that they have received your attention, such as the simple annotation 'Seen'.

Other annotation

Examiners may find a number of symbols and annotations useful. The most commonly used are given here.

Indicating

- ? an uncertain or doubtful point or an unconvincing argument
- ^ omission
- ^^ major omission
- cf compare with ...
- IR or NR often accompanied by wavy down ruling, irrelevance
- (text) identification of text for associated marginal comment
- e.g. example
- NAQ Not Answering Question

Comments

Comments on responses are useful both in forming an initial assessment of quality and for any Senior Examiner who reviews the marking at a later stage. Comments will often reflect the descriptors in the GMS and/or the Indicative content.

Positive comments may be made, but derogatory remarks must be avoided.

Showing marks awarded at the end of a response

In awarding a mark to an essay, please indicate the level, quote one or more phrases from the GMS to support the award made and show the mark, out of 25, ringed. Half marks should not be used. For example,

L4 Good K and depth of U, diagrams accurate and well-integrated, sound conc. based on evidence and argument.

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25)

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Section A

Arid and Semi-Arid Environments

- 1 Assess the role of water in the formation of erosional landforms in arid and semi-arid landscapes. [25]**

Indicative Content

Water-formed features according to the syllabus are: wadis, canyons, mesas, buttes, inselbergs, pediments. Past climates may be referred to in the context of accounting for the formation of some large-scale features. Weathering processes preparatory to erosion could also be an appropriate approach. Modification of present-day landforms might be the result of aeolian processes which would also be valid.

Higher level answers demonstrate awareness of the relative roles of water in the past and present, in terms of dimensions/scale, nature of the landforms. Well labelled diagrams characterise these answers.

Lower level answers may demonstrate knowledge and include understanding, but they are less strong on marshalling an argument to assess the role of water. These answers will demonstrate less awareness of both past and present climates.

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2 To what extent are industrial activity and urban development causes of change in arid and semi-arid environments? [25]

Indicative content

This question takes two specified factors and asks about their relative importance in changing the landscape. Industrial activity and urban development may vary according to the location of the desert (LEDC v MEDC); e.g. oil in Libya v space and defence industries in Las Vegas in Nevada and nature and location of raw materials, e.g. oil, minerals. Candidates will need to define industrial activity. Their definition may or may not include service industries like tourism. Both, with or without, are perfectly acceptable. Tourism should be included as it is an important and, arguably an increasing aspect/agent of change.

Case study material and named locations to illustrate will contribute to an appropriately detailed answer, but details without commentary analysis and evaluation will not score the highest marks. This needs to be an integral part of the argument. So there needs to be a substantive section on these two factors and then candidates can be free to explore all the other factors, such as: other aspects of industry depending on their definition, resource exploitation like water supplies, irrigated agricultural projects, perhaps compared with smaller scale cultivation of the land in which there is an attempt at sustainability, e.g. overgrazing, over-cultivation, etc. An awareness of scale and technological level of the methods used could enhance the argument. Finally, climate change is an important and, arguably, partly a physical cause. Awareness that the changes may not necessarily be human-induced will produce a more sophisticated argument and attract marks that could be a discriminator.

Higher level answers will include a good range of the above.

For lower level answers, expect less breadth and depth, limited use of case study material and a possible imbalance between industrial activity and urban development.

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Glacial and Periglacial Environments

- 3 Examine the importance of permafrost and the active layer in the formation of landforms found in periglacial areas. [25]**

Indicative Content

Landforms will be the centrepiece of this answer, with well-labelled diagrams for best effect. Scale should be an important part of the answer. However, before the landforms there should be explanation of permafrost and ground ice and its forms. Knowledge of landforms will be based on the syllabus content which includes: involutions, ice lenses, ice wedge polygons, patterned ground, pingos, and thermokarst. The argument may extend to the landforms which result from extensions of these two features, e.g. mass movement producing gelifluction lobes, etc. Acceptable provided clear links are made to ground ice and permafrost.

Higher level answers focus on the assemblage of landforms clearly described and accounted for. There will be a strong evaluative argument running throughout to answer the question fully. Other factors may be referenced and discussed, and a useful evaluation may focus on the scale of these features and landscapes.

Lower level answers may have knowledge, include less well-integrated, labelled diagrams but the principal flaw will be a lack of assessment/evaluation.

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4 Under what circumstances can glacial and periglacial environments be considered hazardous? [25]

Indicative content

The syllabus defines glacial outbursts and avalanches which restrict the candidates, but good answers will include both aspects. The question ostensibly focuses on the physical conditions and processes which provoke such events, but good candidates will recognise the human causal element.

The question concerns hazards, therefore the impact of such events upon the human environment is integral to a successful argument. Both periglacial and glacial need to be covered although not necessarily in equal amounts.

Whereas it could be argued that glacial environments and the latter stages of glacial conditions create an environment conducive to outbursts (jökulhauks), and ice avalanches are also the result of melting and instability within the ice mass, they may also be initiated by skiing or changes to slopes in areas like the Alps (snow avalanches).

Jökulhauks are initiated by the bursting of marginal/pro-glacial lakes due to pressure of water, avalanches, sub-glacial volcanic eruptions. The best examples are found in Iceland and are well documented. Located examples and detail will be especially creditworthy. Periglaciation on the other hand produces hazardous conditions due to climate change, human activity such as economic exploitation and development, and tourism, and produces hazards like the melting of permafrost, pipeline collapse or breakage, failure of buildings, subsidence of landscapes and changes in topography. There may also be changes of vegetation which indirectly lead to species reduction amongst animal populations and possibly even humans. This may indicate a real doomsday scenario, which should, of course, be related to the hazards. Knowledge and understanding of physical processes will impress on this Physical Geography paper. However, the secret to success is recognition that the reasons and circumstances go beyond the physical environment.

Higher level answers will be characterised by both aspects of the question, detailed content and diagrams and an integral argument about hazard.

Lower level answers will probably be shaky on the content and will certainly not be able to argue about hazard effectively.

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Coastal Environments

5 Discuss the extent to which cliffs may be the result of a combination of factors. [25]

Indicative Content

The obvious starting point is the cliff as a system of inputs, processes and outputs, which taken together produce a characteristic profile. Inputs are: climate, especially temp and precipitation, rock lithology and structure, vegetation, sea-level change and human activities. Time may be included as a significant over-riding factor. A possible discriminator may be sea-level change although it is possible to write a good answer without mentioning every single factor. Outputs are material and water movement and the processes are a combination of sub-aerial and marine processes, both erosional and depositional processes and mass movement.

Contrasting profiles are needed for discussion and evaluation about the relative significance of the factors within the system. For instance, candidates may argue that the resistant, massive nature of granite produces characteristically high steep cliffs in which the rock structure and lithology are of over-riding importance although rates of retreat may be small. A useful contrast might be with the boulder clay cliffs of Holderness, for instance. The cliffs here are high and quite vertical but rates of retreat are much more rapid. The discussion will hinge, to some extent, on the examples offered and the conclusions may vary accordingly. It is necessary for candidates to analyse which of the factors play significant roles even if they conclude that, in fact, in most cases rock lithology and structure dominate the system although several factors play roles in most cases.

Clearly located named examples with diagrams will enhance responses.

Higher level answers will incorporate exemplar stretches of coastline in order to demonstrate the dynamic nature of the cliff system and the extent to which the system may, however, be dominated by one or two factors.

Lower level answers may have a working knowledge of cliff systems with examples, but lack an on-going evaluative element.

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6 Evaluate the relative impact of recreation on one named stretch of coastline. [25]

Indicative content

The scope of the response will be related to the stretch of coastline selected. Ideally processes as well as the features of the environment will be covered including both landforms and ecosystems. On-shore and off-shore environments may be the focus of comment. Those who select coral and/or mangrove coasts will provide a particular set of circumstances. For instance, loss of biodiversity in both ecosystems from boating, souvenir hunting, etc. Pollution of various types, hotels, sewage systems, hot water, increased turbidity, etc. may appear. For temperate coastlines, the range of activities will vary and so will the impacts.

Sandunes, salt marshes halting of plant succession on haloseres and psammoseres, footpath erosion on cliff tops, loss of ecosystems and linked cliff collapse and mass movement would demonstrate good knowledge and understanding.

Higher level answers will produce a well-identified and spatially-located secure stretch of coast, with unequivocal impacts of a range of recreational activities on both the human and physical environment. There will be an evaluative conclusion even if it is say that there is actually no great impact.

Lower level answers will tend to write about a vaguely located stretch of coastline in a less detailed way, mention the activities, but not include much impact or evaluation. Little recognition of off-shore areas or ecosystems, the answer will focus on cliff and beach.

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Section B

Tropical Environments

- 7 To what extent is rainfall the chief determinant in the distribution and characteristics of tropical rain forests? [25]**

Indicative Content

There are a range of tropical environments specified in the first section of the syllabus entitled: 'Classification and distribution patterns' in the section to which this question relates. The range specified is: tropical lowland evergreen rainforests, tropical semi-evergreen rainforest, the montane forest, heath forest, peat and freshwater swamp forest.

Candidates may take an appropriate ecosystem approach in which rainfall is only one of the controlling factors. Temperature: seasonal and diurnal ranges should be mentioned, with figures ideally. On a global scale, climate seems to dominate the distribution, as these areas correspond broadly to latitude. However, on a more local scale within these broad bands, vegetation variations can be seen which indicate the dominance of other factors such as drainage, rock type, altitude and human activities.

Convincing lines of argument might be as follows: candidates may see the variations as sub-climaxes within broader bands of vegetation.

Tropical rain forests may be seen as declining and disappearing due to human activities and climate change, but this argument should not be covered to the exclusion of other aspects.

Higher level answers will be able to highlight the importance and even dominating role of climate, but sees it in a context of the whole environment, both physical and human.

Lower level answers may be biased towards factors other than the natural environmental ones and write about human activity. However, most will be aware of the significant role of climate, but will tend to write all about how TRFs are adapted to the constantly humid atmosphere.

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- 8 'Sustainable use of tropical environments can be achieved only by traditional cultures'.
Examine the validity of this statement. [25]

Indicative Content

Traditional cultures involve hunting, gathering and shifting cultivation. It may be argued that these cultures are no longer dominant. However, some knowledge of these systems and why they were sustainable should be discussed. The concept of sustainability should be clearly outlined and understood. Candidates may be aware of regional variations of shifting cultivation, such as bush fallowing. The reasons for, and nature of, changes to the system should be made clear; outside pressures such as population increase amongst indigenous tribes may be discussed. Emphasis is likely to be put on outside pressures such as TNCs, large scale clearance for plantation agriculture, such as oil palms and bananas, ranching and logging for timber are also widespread. The extent to which these activities are compatible with sustainability must be discussed and candidates may be aware of recent changes in respect of TNCs such as Unilever who are now farming more responsibly. Local people are also now involved with activities such as ecotourism which could form a useful plank of the argument.

Higher level answers will show an awareness of the operation of ecosystems and the possibilities of sustainable co-existence between human activity and the physical environment, which is well understood. Often there will be theoretical concepts incorporated and applied in the best answers.

Lower level answers will be characterised by knowledge of shifting cultivation and bush fallowing, but there will be an absence of a theoretical underpinning of the argument and little departure from the statement to demonstrate alternative arguments and disagreement.

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Temperate Grassland and Forest Environments

- 9 'Climax communities are the exception rather than the rule in temperate environments'. Critically examine this statement. [25]**

Indicative Content

A definition of climax community is needed along with awareness of the ecosystems which may be included. These are specified as: temperate deciduous forest, northern coniferous forest, temperate grasslands (prairies and steppes), smaller scale ecosystems such as heathland and moorland. Not all of these need to be part of a successful answer, but there needs to be a clear locational/ecosystem framework for the answer.

There should be awareness of existence of natural primary forest/grassland if this exists, e.g. Wistman's Wood, a tiny fragment of primary deciduous forest on Dartmoor. Extensive human activity over time is a likely theme of the arguments presented. Details about the ways in which human activities have operated and what modifications have been made to the primary vegetation should be included to show knowledge and understanding of the physical processes. The concepts of seral stages, plagio- and sub-climaxes should be included.

Both exemplified natural ecological change such as disease and the natural disturbance theory may be set against human activities such as timber felling, agricultural practice, management techniques, such as coppicing and pollarding, recreational activities and the introduction of new species, etc. Climate change may also feature. To some extent the ecological changes discussed will be dependent upon the ecosystem choices made. Expect a large measure of agreement with the statement.

Higher level answers will have a solid theoretical foundation, a conclusive argument and detailed knowledge. They may well agree with the statement but be aware of exceptions. The ecosystem context is secure.

Lower level answers flounder with the theoretical background. They may be able to define a climax community but are less sure of plagioclimaxes and how these can be applied to the temperate ecosystem. There will not be a direct response to the question and the final paragraph may not address the question convincingly.

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- 10 Discuss the extent to which international and national approaches to management of temperate environments are effective. [25]**

Indicative Content

Choice of environments need to be made. To take all of them might be rather excessive and dilute the argument. Many will select from **either** forests **or** grasslands and the arguments will depend upon the case study material selected, which in all likelihood will be the UK and/or the US.

This is a question of scale of management, i.e. global-summits and worldwide policies from organisations like the UN and its branches such as IUCN and UNEP. Also Agenda 21 was proposed in Rio at the UN Earth Summit on Environment and Development which is implemented at a range of scales including the local scale. Also government policy at a national scale. Global NGOs, e.g. WWF, FOE and national organisations, such as Natural England and the Wildlife Trust. Most national organisations have local branches and operations and local initiatives such as Countryside Stewardship schemes. There are a plethora of organisations but it is important that their relationship to the environment is clearly explained and the relationship between the scales is also understood, as none of these organisations operate independently and implementation is often not at the scale at which the policy is proposed.

(The teacher's guide specifics: page 36). There is the SLOSS debate, regarding small reserves v large reserves for conservation, eco-regions, ecosystem approaches and nature reserves all of which try to address the issue of sustainability. There are protectionist policies as opposed to utilisation policies which are sustainable. Much will depend upon the case study material and exposure to concepts that have been introduced.

Higher level answers will be characterised by scale and detailed knowledge of the management strategies, their names and locations, and there will be an evaluative conclusion.

Lower level answers will be more generic, far less sure of the strategies, their scale and context. The range may be smaller, with some detail, but not wide ranging enough to satisfy the demands of the question.

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The Atmospheric Environment

11 Examine the reasons for the spatial variations in the global energy budget. [25]

Indicative Content

The global energy budget could be considered as a vertical and/or a horizontal budget. Ideally both should be covered.

An understanding of the concept of budget is needed; the balance between energy input from its source, the sun, and the outputs and transfers within the system. There should be an awareness of scale too.

Vertical budgets involve inputs: incoming ultra violet short wave radiation; transfers: direct and diffuse radiation, scattering, absorption by clouds, reflection, re-radiation; outputs: terrestrial, outgoing, infra-red, long-wave radiation, convection, conduction, sensible, latent heat, and albedo.

Most candidates may direct most of their response to horizontal variations and consider the major wind and pressure belts, the tri-cellular model with its heat surplus at the Equator and deficit at the poles. The reasons are due to spatial and seasonal variations in the solar energy and these should be known and understood. Ocean currents are also important and can influence the global energy as well as local budgets. Diagrams which are well integrated and illustrated will be of value.

Higher level answers are secure in their awareness of spatial variation and the meaning of the global energy budget. These answers are well-illustrated with acknowledgement of other factors facilitating evaluation.

Lower level answers may have knowledge of spatial variations of global circulation, but they are less able to explain the budget concept and integrate a range of factors into an evaluative argument.

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- 12 'The economic and environmental impacts of El Nino and La Nina events have far reaching consequences'. Discuss the validity of this statement. [25]**

Indicative content.

Teleconnections – for instance, the location of these events in the Pacific Ocean and what they are, their periodicity and reversals of ENSO. Maps may be usefully included.

The consequences such as: extreme weather events, locations, case studies and the global perspective.

Heat waves (Australia Jan 2013) drought, flooding (Brisbane 2010), three consecutive wet summers in the UK, the extreme weather events of 2011 and 2012, tropical storm intensity and frequency, changing seasonal length of these storms, delay of the monsoon rains. There are numerous examples. Explanations may include some reference to jet stream patterns and paths and the links back to ENSO.

The economic and environmental consequences are distinguished and linked and integral to the discussion of the events.

There may be links to increasing atmospheric temperatures and climate change generally.

Higher level responses will be able to set out the context of ENSO and then develop the teleconnections, making clear that there are economic and environmental consequences. The best candidates will show how the events have an environmental impact and affect the economy. Detailed statistics like GDP, imports and exports, food supply, etc., with a contrast between LEDCs and MEDCs would indicate the highest achievement.

Lower level answers will have some idea of these two events and their location, but knowledge and detail of the impacts globally and atmospherically, and the consequences, will be less detailed. There will be less spatial awareness and more generic commentary.