UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

Pre-U Certificate

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

9768 GEOGRAPHY

9768/02 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 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

Guidance notes for marking 9768/01

In marking questions in Sections A and B of this paper, the indicative content and levels descriptors on the following pages should be used throughout. In marking questions in Section C, which are worth 25 marks and based upon extended writing, the **Generic Mark Scheme** (GMS), used for assessing all pieces of extended writing bearing 25 marks in the Cambridge Pre-U Geography, should be used in conjunction with the **Indicative content** for each question.

Whilst the GMS captures the essential generic qualities of responses in 5 mark bands, the Indicative content is what it says: some indication of the probable content in responses, 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, such as to achieve a Level 5 award. The same mark may be awarded to different pieces of extended writing for different reasons.

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.

Use of the Generic Mark Scheme

The Generic Mark Scheme is used together with the indicative content for each essay question.

Responses may be placed in any level without fulfilling all the descriptors for that mark band, for example where the essay does not lend itself to the use of sketch maps and diagrams. Responses may exhibit characteristics of more than one Level and so examiners use the principle of best fit in determining response quality. The grid below gives an indication of the relative weightings of the Assessment Objectives at each Level.

Level	Marks	AO1 Knowledge and Understanding	AO2 Skills	AO3 Analysis and Evaluation
5	**22–25**	15	3	7
4	**18–21**	14	2	5
3	**14–17**	12	2	3
2	**10–13**	10	1	2
1	**0–9**	8	0	1
Total		15	3	7

Guidance on how to use the above table relating Assessment Objectives to marks, when awarding credit to essays is given in boxed text at the bottom of page 4.

The Generic Mark Scheme (GMS)

Examiners are encouraged to copy this page (or the same page in the Specimen Papers) and to keep it in front of them at all times when marking.

Level	Marks	Assessment criteria
5	**22–25**	• 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**	• 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 well 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**	• 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**	• 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 and 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**	• 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

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 in the margin, irrelevance
(text**)**	identification of text for associated marginal comment
e.g.	example

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 usually reflect the descriptors in the GMS and/or the Indicative content, but other comments may be helpful, such as when an essay is clearly unfinished.

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. The marks derived from each AO, in whole marks (no half marks) should be given, totalling to the total mark awarded, for example:

L4	Good K and depth of U, diagrams accurate and well-integrated, sound conc. based on evidence and argument.					
	AO1	13	**AO2**	2	**AO3**	4	19/25

Section A

Arid and Semi-Arid Environments

1 Examine the extent to which water supply can be sustainably managed in desert environments. [25]

Indicative content:

Water supply is a crucial issue in many desert environments and its sustainable management a source of considerable concern for many regions. However, this concern will vary considerably depending on:

- Population pressure;
- Degree of aridity;
- Presence of allogenic rivers;
- Aquifer supply.

In areas such as the southern USA, high (and increasing) population pressure along with low (and decreasing) precipitation cause considerable concern and, in many areas, unsustainable management. The same can certainly be said of many Middle Eastern and north African regions (Jordan and Libya being good examples). However, there are also examples of effective sustainable management – particularly where an allogenic river feed water supply in an otherwise arid region (parts of Egypt and Turkey being such examples).

Lower level responses are likely to focus on the unsustainability of water supply in arid environments and the 'inevitability' of human demand outstripping supply. They are likely to show a limited appreciation of the various considerations and will tend to generalise all arid regions without appreciating the highly locationally specific features of this debate. Higher level responses are likely to be more evaluative, explaining the complexity of the debate and the various examples that show how it might be more or less of a concern depending on location.

2 'The hydrological cycle in desert environments is mainly characterised by a lack of precipitation'. To what extent do you agree with this view? [25]

Indicative content:

The lack of precipitation in desert environments is clearly a key characteristic with many classification systems using this as the principal distinguishing feature (i.e. less than 250mm = arid). However there is considerable variation within this and candidates may well discuss contrasting deserts with some areas (e.g. Patagonia) being termed desert but with relatively high rainfall (up to 500mm). Most importantly is a consideration of the many other unique qualities that characterise the desert hydrological cycle – in particular, the high evapo-transpiration rates and also other flows (high surface run off, low infiltration etc.) and stores (low interception, low soil storage etc.). Whilst it is possible to generalise the desert hydrological cycle, candidates are expected to appreciate that cycles will vary considerably depending on the location in which they are discussing.

Lower level candidates will likely to generalise the cycle and not see it as varying by desert region. They are unlikely to discuss, in detail, other stores and flows and will see the desert cycle as being characterised by low inputs and high outputs. Higher level candidates will have a far greater knowledge of the complexity of different desert systems and will, in particular, make detailed reference to a range of other stores and flows.

Glacial and Periglacial Environments

3 With the help of annotated diagrams, examine the sequence of processes responsible for the formation of corries and of ribbon lakes. [25]

Indicative content:

Processes and sequence and fundamental to this question. Candidates are expected to understand the processes of movement, energy and erosion / deposition and be able to relate these accurately to landform formation. Sequentially it is expected that candidates will show the gradual evolution of these landforms.

Lower level responses are unlikely to have detailed and / or accurate labelling of diagrams. Such responses will likely find it difficult to link process to landform and will tend to be general in the sequential analysis. They may well skip stages of formation or offer just one plausible theory (in the case of ribbon lakes). Higher level responses will contain detailed and well annotated diagrams for **both** landforms showing a thorough understanding of process and sequence. However it should be noted that there does not have to be a perfect balance between the two landforms for a higher level response. Candidates will have a good understanding of the way in which ice movement links to process which in turn links to landform.

4 Examine the extent to which human induced climate change is changing glacial and periglacial landscapes. [25]

Indicative content

Human induced climate change implies fairly recent changes which have had effects on both glacial and periglacial landscapes but it is difficult to generalise. Clearly many areas are suffering from warming and as a consequence ice (both ground and surface) is retreating. This offers significant changes to the landscape, such as ground subsidence and mass movement. The emphasis here is to do with the impact on landscape and this could include geomorphology, ice cover and vegetation. It is important to note that other climatic changes have led to different landscape changes. Greater volumes of snow fall in East Antarctica, for example, have led to glacial surge and greater rates of erosion associated with thicker ice. It ought to be added that there are few (if any) areas where permafrost is expanding.

Lower level responses are likely to focus exclusively on ice retreat and may well not make the link to landscape change. Such responses are likely to offer an imbalance between the treatment of periglacial and glacial change. Higher level responses will tackle both glacial and periglacial landscapes in some detail, discussing the link between changing climate and specific features of landscape. These responses are likely to show a sense of 'landscape' rather than landforms per se. Also, these responses may well refer to the notion that the climate is not changing equally and that some areas are not warming to the same extent and that other areas are experiencing positive mass balance due to increased precipitation.

Coastal Environments

5 To what extent are soft engineering strategies preferable to hard engineering when preventing cliff erosion? [25]

Indicative content:

Soft engineering is an increasingly popular form of cliff protection mainly due to its environmental sustainability and also as a low cost alternative. Strategies include beach nourishment and sand dune stabilisation (as mentioned in the syllabus) but also many other forms that would be worthy of discussion (eg. tree growth to prevent sub-aerial processes, salt marshes and mangroves). Hard engineering involves a great range of strategies and techniques all of which tend to be more costly and environmentally less sound. Evaluation is implicit in this question, as responses should encapsulate an understanding of 'preferable'. This could be approached by Cost-Benefit Analysis or from the point of view of interest groups/stakeholders – different people will prefer different strategies depending on their agenda. Environmentalists will have preference for low impact soft engineering approaches whereas residents and local businesses will tend to prefer hard engineering approaches. Local government may well have more of a concern over finance and therefore take more of a cost-benefit approach. Exemplification is expected with examples which may be drawn from a range of places, scenarios and stakeholders. Alternatively one case study could serve to exemplify the points made about preferred strategies and interest groups.

Lower level responses are unlikely to appreciate the complexity of this debate and may well be immediately conclusive in the relative benefits of one approach as opposed to the other. Such responses will lack exemplifying evidence and are unlikely to consider the range of stakeholders engaged in the debate. Higher level responses will consider the relative merits of both and will acknowledge that the answer is highly dependent on the stakeholders involved and the location in question.

6 Why are some coastlines physically more vulnerable to erosion than others? [25]

Indicative content:

There are a great many factors that determine the physical vulnerability of a coast to wave erosion. These features can be divided into – waves, physical properties of the cliff and climate. All of these factors will play an important role in determining just how easily a coastline will retreat. In this way the vulnerability of coastal systems depends on location so ideally examples should be used exemplify this. Candidates might take separate sections of the same coastline (e.g. differential rates of erosion on the Dorset coast) or they might compare completely different coastlines (e.g. NE USA with SW UK).

Lower level responses are unlikely to examine all the factors involved in affecting cliff vulnerability and answers may well be imbalanced, focusing more on the geology of a cliff, for example. Such responses are unlikely to be locationally specific and examples will lack detail. Higher level responses will offer detailed examples to exemplify the specifics of location. They are likely to give a more balanced account of the whole range of factors that can affect the vulnerability of a coastline.

Section B

Tropical Environments

7 Examine how plant life in tropical rainforests is related to specific climatic factors. [25]

Indicative content:

Plant life in tropical rainforests is inherently linked to climate. In particular, plants and their characteristics are related to high levels of precipitation, high temperatures and the competition for light. Floral characteristics that would merit discussion would include techniques for shedding excess water (waxy leaves, drip tips etc.), techniques for gaining light (gigantism found in the lower reaches of the forest, quick growth rates in response to 'gaps', climbers and stranglers), techniques for reducing scorching (small leaves of the upper canopy). Candidates may well discuss how plant life changes with altitude and associated climatic changes. Responses may also relate plant life to climate through the role of more complex food webs (ultimately inspired by a more energy rich climate) and in this way discuss colouration and pollination adaptations.

Lower level responses are likely to concentrate on floral adaptations but without really linking these adaptations to specific climatic factors. Such responses are unlikely to discuss the full range of climatic limitations / triggers for adaptation. Higher level response will develop a clear link between climate and the unique behavioural / adaptive adaptations of floral communities and will exemplify their response with detailed examples.

8 Examine how and why the distribution of different tropical environments varies across the world. [25]

Indicative content:

Tropical environments encompasses a huge range of different biomes, many of which are listed in the specification. Detailed appreciation of location and distribution is expected here. In particular, candidates are expected to be able to draw examples from the four continents – Asia, Africa, S. America and Oceania. It is also hoped that candidates will identify key differences between the continents, citing, for example the importance of montane forest in Africa, lowland forest in South America and monsoon forest in Asia. Links should be made to the geology of the land and the predominance of specific climatic regimes (e.g. monsoon in Asia), as well as more local factors such as the role of management, clearance and riverine systems.

Lower level responses are likely to rely on only one or two biomes and will be unable to distinguish clearly between the distribution of different tropical environments. Such responses are likely to be poorly exemplified and will offer very limited explanation for difference. Higher level responses are likely to have a firm grasp of a range of different environments, be well exemplified and offer a continental comparison / evaluation by way of explanation.

Temperate Grassland and Forest Environments

9 How and why does nutrient cycling differ between deciduous woodland and coniferous forest? [25]

Indicative content:

The question is examining rates of transfer, storage and flow of nutrients. All stores and flows can be examined although it is not expected that candidates will tackle them in their entirety. It would seem particularly sensible to include diagrams in this answer. It is commonly shown that deciduous woodland has higher rates of nutrient circulation than coniferous woodland. Deciduous woodland has higher rates of uptake and decomposition. Deciduous trees tend to be far more demanding of nutrients than are coniferous species. Biomass store in deciduous wood is proportionally larger, principally due to the increased demand posed by leaves. Most explanations relate to climate and / or geology of bedrock.

Lower level responses are unlikely to provide balanced treatment of both ecosystems. They may well be inaccurate and a thorough knowledge of both stores and flows is unlikely to be forthcoming. Such responses will lack accurate comparative explanation. Higher level responses are likely to have a strong understanding of stores, flows and rates of transfer, successfully comparing both ecosystems and explaining them in relation to climate and geology.

10 Consider the assertion that the introduction of non-native species been the most important factor in changing the nature of temperate ecosystems? [25]

Indicative content:

Non-native introduction has been an extremely important factor in generating change in temperate ecosystems and, in particular, the creation of plagioclimatic communities (e.g. conifer introduction to deciduous woodland and rhododendron addition to heathlands). This question is not restricted to floral introduction and there is scope for candidates to discuss the introduction of fauna and associated impact on the ecology of specific regions (e.g. grey squirrel). However, there are many other factors that have been as important, if not more so. The role of land clearance for agriculture and timber, coppicing and pollarding, recreational pressure, climate change and acidification have all had far reaching consequences on temperate ecosystems. In terms of changing the 'nature' of ecosystems this can be interpreted in terms of structure and form or processes at work.

Lower level responses are unlikely to discuss the range of different factors and will lack any clear evaluation of relative significance. Such responses will typically be poorly exemplified. Higher level responses will have a more evaluative stance, examining the relative significance of non-native introduction and are likely to be well exemplified as well as observing that the situation is highly place dependent.

Atmospheric Environments

11 Outline the distribution of the global climate zones and discuss how they might be classified. [25]

Indicative content:

The climatic zones listed in the specification are equatorial, semi-arid tropical, arid tropical, arid temperate, humid temperate, boreal and arctic. This list is not expected to be treated in its entirety, nor is it exhaustive. It is expected that candidates will tackle at least three different zones and that they will have a good understanding of both the distribution and characteristics. In terms of distribution, it is hoped that candidates will use detailed understanding and knowledge of the world to exemplify their writing, using specific continent and national examples as well as latitude and longitude, where appropriate. Classification is intentionally broad but it is hoped for a number of possible ideas, including statistical support (e.g. rainfall amounts). Precipitation, temperature and evapotranspiration rates would all be worthy of credit.

Lower level responses are unlikely to study a range of global climate zones and will likely focus on just one or two. Such climatic zones will be characterized in a simplistic fashion without a real understanding of the quantitative defining points. Higher level responses are likely to examine a range of zones with thorough understanding of where they are located (being appropriately evidenced) and a good idea of how their characteristics might be used by way of classification.

12 'Current climate trends are part of Earth's natural climate cycle and should not be seen as man-made'. To what extent do you agree with this point of view? [25]

Indicative content:

Current climate trends show a clear warming with 0.65 degree change over the past 100 years. Precipitation shows less of a clear trend with possible increases in the extremes of rainfall events as well as a distinct drying in the tropical latitudes. The extent to which they are not man made is no longer a real scientific debate but it is hoped that candidates will pick up on the controversy, especially that continuing to be lived out in the popular press. Certainly candidates who discuss some alternative theories, such as hotspot behaviour and orbital eccentricity would warrant credit. However, it is hoped that most candidates will discuss the rate of temperature change in a longer term context and will thus see climate change as outside the normal climatic cycles and inherently linked to man's activities. 'Trends' is important in this context as candidates may well mention the colder and warmer times typifying past regimes, without duly emphasising the importance of rate.

Lower level responses are unlikely to give a well supported argument. They may reach conclusions quickly and without due evidence or detail of discussion. Higher level answers are expected to lend detail to both sides of the discussion although these responses might well be highly biased to one side of the argument. The responses doesn't need to be balanced to be well rewarded, rather well argued and evidenced.