CAMBRIDGE INTERNATIONAL EXAMINATIONS

Pre-U Certificate

MARK SCHEME for the May/June 2014 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.

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CAMBRIDGE
International Examinations

Arid and Semi-Arid Environments

1 Discuss the ways in which the characteristics of a typical desert climate contribute to its hydrological system and regime.

Indicative Content

Candidates will need to outline the characteristics of a desert climate temperatures, rainfall amounts intensity, humidity, seasonal variation etc. ideally with figures and then relate these characteristics to the hydrology, i.e. water as it flows on, through, under the surface, outputs and storage should be included. Episodic rainfall, flash floods and stream and sheet floods are mentioned in the syllabus

Higher level answers will cover all the aspects of the desert climate and appreciate the three dimensional, dynamic nature of the hydrological system and the fact that it is a system consisting of inputs outputs and flows. There may be reference to examples and appreciation of drainage patterns,(these are mentioned in the syllabus) e.g. ephemeral, perennial and intermittent stream flow.

Lower level answers will have a more limited appreciation concentrating on overland flows rather than subsurface water movement and storage. Limited if any appreciation of the drainage patterns and seasonal variation of stream flow. Flash floods may dominate these answers.

2 To what extent do you consider that arid landscapes have a greater variety of landforms compared with semi-arid landscapes?

Indicative Content

Arid Landscapes – landforms are wind and water formed and there is a wide range (range of desert landscapes mountain, sand, shield, stony, desert lake basins)) whereas semi-arid landscapes are limited to relict hills, hoodoos, piping, caves and arches, wadis and debris fans. Alternatively they may interpret the question as arid landforms this is acceptable and include deflation hollows, pedestals, yardangs and zeugen, wadis, canyons, mesas, buttes etc.

In support of the argument not all arid landforms need to be considered but ideally both water and wind are seen as agents of formation.

Higher level answers will organise and structure an answer around processes, agents or scale and nature. The coverage will be comprehensive enough to provide a convincing argument whichever side is taken. Diagrams will be integral to the answer.

Lower level answers will be an unstructured and limited assemblage of landforms which are probably described and illustrated but the argument is largely missing or vague and or inconclusive/unconvincing.

Glacial and Periglacial Environments

3 Compare and contrast the nature and scale of depositional landforms created by glacial processes with landforms created by fluvioglacial processes.

Indicative Content

The question requires the characteristics of the landform and some mention of dimensions ideally using specific measurements. Glacially deposited landforms include: till/boulder clay deposits (should include detail of sorting size and stratification erratics, moraines and drumlins. Fluvio-glacial deposits: sorted, variably sized particles which are stratified such as outwash plains (which may be extensive if low lying), varves, kames, kame terraces, eskers which might be likened in the landscape to moraines, kettles and braided streams.

Higher level answers not only will be characterised by well-labelled and well-integrated diagrams but also there is likely to be a comparison of individual landforms and detailed knowledge. The distinguishing characteristic of a higher level answer will be the extent to which the answer is structured around comparison and contrast.

Lower level answers may have knowledge but responses may not be crafted or comparative answer. Diagrams may appear but not be especially well-integrated, labelled or illuminating.

4 Discuss the extent to which periglacial environments provide opportunities for, and constraints on, human activities.

Indicative content

The umbrella human activities specified include: tourism, water supply, energy, agriculture, mining and quarrying, settlement and infrastructural developments. Some of these lend themselves to periglacial environments in particular. Oil shale extraction, pipelines and building may dominate the answers but ideally there should be a wide range or some detailed analysis of a narrower range of activities. Responses may use up to date developments and should be credited. The key will be to consider both the negative and the positive sides of an argument.

Higher level answers will display either depth or breadth, examples and a clearly stated conclusion in relation to the examples quoted and the question. Diagrams may well enhance these answers. Recent developments will demonstrate a higher level response.

Lower level answers may cover several aspects of human activities but will not be so well located and there may a good deal of generic material. However, the upper end will contain knowledge but may well lean towards one or other aspect either constraints or opportunities.

Coastal Environments

5 Consider the importance of waves, tides and currents in influencing coastal environments.

Indicative Content

Wave generation and type, the tidal periodicity and height, rip and offshore currents should form the core of the answer in relation to coastal environments. The latter should be defined and good candidates may well appreciate that human features may be part of the picture. However, good candidates will appreciate from the outset that these agents are only part of the answer and also that they operate both temporally and spatially. The coastal morphology may also be the result of other factors which should be discussed i.e. geology, aspect, past history (may be mentioned if relevant) and human activities.

Higher level answers will see the coastline as a system and interpret the term environment clearly. They may or may not use the sediment cell as an underpinning structure for their answer but this could be an appropriate model especially if they select a stretch of coastline from which to extract an answer. These answers will cover all three agents of waves tides and currents even if they are not treated equally.

Lower level answers will have less if any theoretical knowledge and these answers may not be linked clearly to examples but be largely generic. There may be insufficient knowledge to cover all aspects of the question terms so that the focus is turned on geology, human activities and this more familiar territory to the candidate. An evaluative element may be missing from responses.

6 'Human influences are now paramount in determining coastal processes'. To what extent is this statement valid?

Indicative Content

Most candidates will be inclined to agree with the statement and choose appropriately in order to be able to discuss the management of examples. The better answers may consider a sediment cell, the natural processes of erosion, transportation and deposition first of all, and then include a range of human activities dependent upon the example selected. Even if examples used are not familiar to the examiner, there should be enough detail to appreciate the evidence provided to support the argument.

Higher level answers will in all likelihood use specific examples, they may draw a map of the coastline and show the movement of material and the processes operating on the local morphology and geology. There will be named places and any human activities and coastal management strategies will be included. This could be the effective springboard for a focussed detailed, evaluative answer.

Lower level answers will be less secure in producing the detailed evidence to support their argument. The example will be less geographically secure and the focus on coastal processes less clear/evident.

Tropical Environments

7 'The richness and diversity of plant and animal life in a tropical rain forest are the result of the interconnections between them'. Examine the validity of this statement.

Indicative content

The underlying theoretical concept here is that of the ecosystem and therefore this should underpin the answer. The interconnections occur through trophic levels, food webs and chains, pollination and dispersal. Modes of coexistence should also form the backbone of the answer. Most answers will agree with the statement and be positively in favour throughout.

Higher level answers will be underpinned by a theoretical framework providing the structure enabling the candidate to discuss exactly how the relationships between plants and animals work and the fact that it may be a two-way or multi-faceted process. Knowledge of indigenous named plants and animals will characterise these unmistakably tropical rain forest answers.

Lower level answers are less likely to have extensive theoretical underpinning although basic ideas like the ecosystem and some of its operations such as food webs will appear. There will be relatively little reference to named plants and animals and less security in invoking the structure of the forest for instance.

8 To what extent does the unsustainable use of the tropical rain forest lead to negative physical environmental impacts?

Indicative content

The unsustainable use is the result of extensive deforestation for a variety of reasons which are specified at the outset. The consequences for the physical environment are: on soils, i.e. soil erosion and leaching, on hydrology, i.e. the water cycle, desertification, i.e. loss of biological productivity, biodiversity and species loss and extinction, climate change both local and global. The implication for the human environment may be local on indigenous tribes and national and global extending to political and economic considerations. There needs to be discussion along these lines and then some conclusion drawn as to the negative versus positive.

Higher level answers will appreciate the physical environmental system and be able to discuss the processes with knowledge and understanding and then proceed to the consequences for a range (not necessarily comprehensive) of aspects of the human environment at a variety of scales. Even if only one scale is done well that can constitute a higher level answer. Higher level answers either demonstrate wide ranging and or detailed knowledge contain a well-structured argument. There will be a balance between the impacts and the consequences.

Lower level answers are less sure about the impacts on the physical environment and feel more comfortable covering the consequences for the human environment. Without detailed knowledge of the physical processes the candidate cannot achieve a higher level mark on a physical geography paper.

Temperate Grassland and Forest Environments

9 To what extent can the environmental degradation of temperate grasslands or temperate forests be managed?

Indicative content

Candidates are likely to account briefly for the environmental degradation. Implicit or explicit should be the meaning of environmental degradation which will involve the loss of productivity and species due to the loss of soil fertility and/or erosion. The context for management is a prerequisite for an effective answer. Management strategies such schemes at a variety of scales should be included although one detailed case study could effectively answer this question. For instance, the UK with named located schemes in relation to the temperate ecosystem selected.

Higher level answers cover the context and management, locate examples appreciate scale and can write evaluatively about the effectiveness of stewardship schemes, national policies, global agreements which percolate down to the local level e.g. Agenda 21.

Lower level answers may deal with the environmental degradation from the point of view of loss of soil or trees but not be able to develop the idea of the loss of biodiversity/productivity. The management schemes may not be geographically explicit and or limited to a national scale. The wider implications may be missing.

10 'Temperate grasslands are plagioclimax communities' To what extent do you agree with this statement?

Indicative content

Given the location of temperate grasslands and their long history of colonisation and settlement these areas are likely to be plagioclimaxes in equilibrium with the prevailing physical and human environment. The concept of plant succession and climax vegetation will form the underpinning philosophy in this answer and may be illustrated. Appropriate named examples should be used.

Higher level answers will include the above points and any argument is underpinned by theory of plant succession and well exemplified and illustrated. The examples are located and developed in some detail and a historical context is likely.

Lower level answers are less secure in expanding the plagioclimax concept there will be little about plant succession rather they will describe the environment and not see it as an evolving system which is now in dynamic equilibrium with the prevailing conditions. Specific examples may be present but sketchy and the evaluation may fail to demonstrate clearly an awareness of the human factors which may influence plant succession.

Atmospheric Environments

11 Discuss the extent to which the weather provides opportunities for, and constrain, human activities.

Indicative content

The human activities specified in the syllabus are agriculture, commercial spending patterns tourism, construction industry, sporting events, water supply issues, flooding and insurance. A range of these is necessary to illustrate both sides of the argument i.e. opportunities and constraints. It is likely that many candidates will take a deterministic approach but modern technology now enables people to overcome some of the constraints. Awareness of this should appear. Examples ideally from different climates will enhance answers.

Higher level answers will see the advantages of modern technology in overcoming the constraints, e.g. under pitch heating enabling football matches to occur in adverse conditions, moveable roofs over tennis courts, raised pipelines in Alaska etc. There so many examples the skill will lie in marshalling a clear argument providing apposite evidence for whichever side of the argument the candidate chooses. These answers may contain only a narrow range of activities but the argument will be clear and sustained with examples to provide geographically located spatial detail. These candidates will write an evaluative conclusion probably suggesting that both constraints and opportunities are offered by the weather depending upon location and the nature of the activity.

Lower level answers will be less sure of their argument. They will tend to describe the human activities rather than consider the ways in which the weather constrains and provide opportunities for human activities. Their conclusion less clear and sustained because they have not provided sufficient evidence on both opportunities and constraints. They are less likely to appreciate that the constraints may be overcome by technological advances.

12 To what extent do you consider the enhanced greenhouse effect to be the result of human activities?

Indicative content

There is a twist to this question because technically it can be argued that the greenhouse effect per se is the result of the physical environment of solar radiation and the natural greenhouse gases found in the troposphere. Whereas urbanisation economic growth, industrialisation and the resulting carbon emissions have exacerbated the greenhouse effect to produce a phenomenon known as the enhanced greenhouse effect. The best candidates may argue this sophisticated point. Knowledge of the processes which produce both along with a diagram is the ideal approach.

Higher level answers. The best candidates may argue that human activities and the increase in greenhouse gases exacerbate rather than cause the greenhouse effect and without natural incidence of these absorbent gases the planet would be minus 33°C. There is clear understanding of processes and appreciation of some if not all of the nuances of this question. The range of human activities and the gases produced will underpin an knowledgeable answer.

Lower level answers write more obviously but with some knowledge of the greenhouse and enhanced greenhouse effect but the argument is much less secure because the nuances are not spotted. Limited detail about the ways in which humans produce quantities of greenhouse gases and they may confine their comments to carbon dioxide.