ASSESSMENT and QUALIFICATIONS ALLIANCE

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GCE

Geography A

Unit GGA4

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Unit 4: Challenge and Change in the Natural Environment

General guidance

As required by QCA, the marking scheme for this unit includes an overall assessment of quality of written communication. There are no discrete marks for the assessment of written communications but where questions are "Levels" marked, written communication will be assessed as one of the criteria within each level.

Level 1: Generally accurate use of language; descriptions and explanations can be easily followed, but are not clearly expressed throughout.

Level 2: Accurate and appropriate use of language; descriptions and explanations are expressed with clarity throughout.

Level 3: Accurate and appropriate use of language; descriptions and explanations are expressed with clarity throughout.

Levels marking – General Criteria

The following general criteria relate to knowledge, understanding and their critical application and the quality of written communication as outlined in the AQA Geography A subject specification. They are designed to assist examiners in determining into which band the quality of response should be placed, and should be used when assessing the level of response an answer has achieved. It is anticipated that candidates' performances under the various dimensions will be broadly inter-related and the general guidelines for each level are as follows:

Three-level descriptor

Level 1: An answer at this level is likely to:

- display a basic understanding of the topic;
- make one of two points without support of appropriate exemplification or application of principle;
- demonstrate a simplistic style of writing perhaps lacking close relation to the term of the question and unlikely to communicate complexity of subject matter;
- lack of organisation, relevance and specialist vocabulary;
- demonstrate deficiencies in legibility, spelling, grammar and punctuation, which detract from the clarity of meaning.

Level 2: An answer at this level is likely to:

- display a clear understanding of the topic;
- make one or two points with support of appropriate exemplification and/or application of principle;
- demonstrate a clear style of writing which clearly addresses the terms of the question;
- demonstrate a degree of organization and use of specialist vocabulary;
- demonstrate sufficient legibility, and quality of spelling, grammar and punctuation to communicate meaning clearly.

Level 3: An answer at this level is likely to:

- display a detailed understanding of the topic;
- make several points with support of appropriate exemplification and/or application of principle;
- demonstrate a sophisticated style of writing incorporating measured and qualified explanation and comment as required by the question and reflecting awareness of the complexity of subject matter and incompleteness/tentativeness of explanation;
- demonstrate a clear sense of purpose so that the responses are seen to closely relate to the requirements of the question with confident use of specialist vocabulary;
- demonstrate legibility of text, and qualities of spelling, grammar and punctuation, which contribute to complete clarity of meaning.

NB A perfect answer is not usually required for full marks. Clearly it will be possible for an individual candidate to demonstrate variable performance between the levels. In such cases the principle of best-fit should be applied. Experience suggests that the use of exemplars within this mark scheme and the discussion which takes place during the Standardisation Meeting normally provides sufficient guidance on the use of levels in marking.

Annotation of scripts

- Where an answer is marked using a levels of response scheme the examiner should annotate the script with a 'L1', 'L2'or 'L3' at the point where that level is thought to have been reached. The consequent mark should appear in the right-hand column. Where an answer fails to achieve Level 1, zero marks should be given.

- Where answers do not require levels of response marking, each script should be annotated to show that one tick equals one mark. It is helpful if the tick can be positioned in the part of the answer which is thought to be credit-worthy.

General

It is important to recognise that many of the answers shown within this marking scheme are only exemplars. Where possible, the range of accepted responses is indicated, but because many questions are open-ended in their nature, alternative answers may be equally credit-worthy. The degree of acceptability is clarified through the Standardisation Meeting and subsequently by telephone with the Team Leader as necessary.

Section A

Question 1: Coast Processes and Problems

(a) Response should show knowledge and understanding of the process of longshore drift -inputs of energy entraining, transporting and depositing beach material, oblique angle of swash, perpendicular backwash leading to progressive transfer of material along beach (1-2). References to contextual aspects such as availability, nature of beach material (1-2) explicit reference to spit formation (1). Reference to periodic changes in dominant wave direction leading to recurved spits evident on Figure 1(1-2).

(4 marks)

(b) Response should show knowledge and understanding of field evidence for longshore drift - (although not necessary to be convinced that candidate has engaged in relevant fieldwork). Smooth linear coasts comprising unconsolidated matter. Wave eroded pebbles rounded to varying degrees (1) presence of adventitious material (1-2) sorting of material by size along beach /indicating direction (1) allow reference to groynes with typical distribution of beach material between groynes, signifying human need to interfere in processes (1) and suggesting direction (1) observed waves arriving at oblique angles (1-2) – suggesting both existence and direction. Allow reference to evidence from systematic study e.g. tracking painted pebbles (1-2).

(4 marks)

(c) Response should show detailed knowledge and understanding of strategies for managing long shore drift and their effectiveness in particular settings. The overall quality of the answer may well relate to the appropriateness of the area selected. The main strategy will be the construction of offshore groynes, clear understanding of the nature and impact of such features should be shown and their impacts with judicious comment on success problems likely to include extent to which they are effective in place, costs, life length, deterioration and maintenance, impacts on elsewhere, view of coasts as cells. Other strategies might include careful research and monitoring of beach volumes and dimensions, beach replenishment, possible offshore structures.

Level 1 Generic Descriptor (0-3)
Simple understanding of groynes, their effects and brief reference to success, perhaps some locational reference.

Level 2 Generic Descriptor (4-5)
More refined understanding of groynes, clear comment on success and firmer locational reference. Possibly some reference to other strategies.

Level 3 Generic Descriptor (6-7)
Convincing understanding of groynes and at least one other strategy, measured and evaluative comment firmly located in particular setting.
(7 marks)

Total for this question: 15 marks

Question 2: Geomorphological Processes and Hazards

(a) Response should show knowledge and understanding of weathering. This is a simple and straightforward task. Full marks should be reserved for those who attempt some detail in their distinction.

-awareness of mechanical disintegrative nature of physical weathering (1)
- awareness of chemical decompositional nature of chemical weathering (1)
- sound exemplification of one or both e.g. by reference to process and/or types of rocks susceptible to each (1)
-answer which clearly makes distinction as opposed to separate statements about each weathering type (1)

OR

that the distinction between the two may be blurred and not very meaningful in some real world contexts. (1). Could be amplified by, for example, noting that chemical weathering produces new compounds more susceptible to mechanical weathering (1).
One or other of these attributes necessary for full marks.

(4 marks)

(b) Response should show an ability to read the graph and show knowledge and understanding of the type of weathering selected. The response must clearly be implicitly or quite explicitly related to the graph and make a contrast between for example, strong and weak or strong and moderate.

Mechanical weathering can be related to presence of water (1) and most probably temperature fluctuations around freezing, and its effects - frost shattering (1-2) Allow other forms of mechanical weathering. Explanation by illustration, or detail on processes should attract additional mark (1-2).

Chemical weathering can be related to the presence of water (1) and significance of chemical reactivity in higher temperatures (1), explanation by illustration or detail on processes should attract additional credit (1-2). (4 marks)

(c) Response should show knowledge and understanding of the role of weathering in landscape development. Weathering as *in situ* change, as leading to products more stable in their environment, tending towards local equilibrium conditions, weathering outputs into slope system being less cohesive, more erodible etc, transportation and therefore facilitating the processes of mass movement and erosion. Responses which refer to specific type of landscape associated with particular types of weathering such as limestone pavements, granite tors are very creditable and such examples may well be used to illustrate more general responses.

Level 1 Generic Descriptor (0-3)
Simple understanding of weathering for what it is and as producer of less cohesive weathered material.

Level 2 Generic Descriptor (4-5)
More refined understanding of weathering with reference to slope processes such as mass movement, erosion etc making general points perhaps with examples.

Level 3 Generic Descriptor (6-7)
Sophisticated understanding with reference to slope systems and exemplification well integrated into the explanation. Reference to role of weathering in context of other processes enabling evaluative comment. (7 marks)

Total for this question: 15 marks

Question 3: Cold Environments and Human Activities

a) Responses should show knowledge and understanding of the terms relating biological productivity in the table by appropriate reference to control factors such as low solar energy input e.g. in terms of high latitude and solar angle of incidence, length of growing season, (1-3 marks depending on detail). Water availability as a factor - physiological drought – lack of water because of prolonged frost and frozen soil and high evaporation rates during growing season because of exposed conditions and high windspeeds. (1-2 marks depending on detail). Allow reference to either Tundra or Alpine environments or both.

4 marks

b) Responses should show knowledge and understanding of the consequences of low energy availability - short simple food chains which are vulnerable to disruption by human intervention e.g. by removal of one key element through hunting or harvesting (1-2) ; most bio-mass being in woody/stalky plant matter prone to intervention (1-2); low levels of energy such that metabolic recovery processes are slow to take effect (1-2). Ideas of fragility being especially in terms of human intervention (1). Allow some credit for reference to permanence of surface damage to abiotic environment (1). Allow reference to either Tundra or Alpine environments or both.

4 marks

c) Responses should show knowledge and understanding of Tundra and/or Alpine environments and their relationship to economic development. Reference to climatic characteristics such as temperature regimes, precipitation regimes backed up by sound data, to energy availability and to ecological characteristics, for example as evidenced in the data and responses to a) and b). Reference to geomorphological aspects such as the effect of permafrost and/or seasonal melting and processes such as solifluction in the active layer and impact on building and construction. Possible references to location might be creditable; References to topography in Alpine environments will certainly be relevant. The various impacts of these characteristics on human activity such as severely limiting agriculture and consequent dependence on hunting, gathering and fishing can be expected to figure largely. Candidates might well argue that in the modern world:

1) some of the characteristics of the tundra (isolation, mineral especially oil/gas resources) have been as stimulus to development (tourism and extraction activities). Some might well be sceptical about their value, especially to locals.
2) some of the characteristics of Alpine environments, especially in the MEDW (scenic amenity, topography and HEP potential have been as stimulus to development (tourism and electricity generation and related metallurgical activities).

Any attempt to justify the viewpoint taken by reference to relevant exemplification drawn from either Tundra or Alpine environments should be credited.

Level 1 Generic Descriptor (0-3)
One or few relevant characteristics identified with beginnings of comment on impact on development potential

Level 2 Generic Descriptor (4-5)
More than one characteristic outlined with clear comment on impact on development potential

Level 3 Generic Descriptor (6-7)
Various characteristics are accurately outlined with a balanced view taken upon their impacts and a clear summary of "to what extent……..".

(7 marks)

Total for this question: 15 marks

Mark scheme for synoptic essays

Preamble

Examiners should bear in mind that these questions are synoptic in nature and offer candidates the opportunity to demonstrate knowledge and understanding:
1. across a range of geographical subject matter;
2. of connections between the different aspects of geography in the specification;
3. of the importance, where relevant, of human perspectives on themes and issues.

Candidates are advised of this both in the Assessment Unit Rubric and in the Note to Candidate which precedes the essay questions in Section B. Synoptic elements might therefore feature in answers matching all the criteria bands but can be expected to feature more prominently in higher mark bands. It will be seen that explicit synoptic content is a necessary feature of the two band ranges 19-24 and 25-30.

Additionally essay writing is an important vehicle for the demonstration of communication skills – at level 3 these refer to writing in a manner appropriate to purpose and complex subject matter; organising relevant information clearly and coherently using specialist vocabulary as appropriate and ensuring clarity of meaning through legible text, accurate spelling, punctuation and grammar. (Key Skills – Communication Level 3 C3.3 [QCA]; Para. 13 AS/A Level Geography Specification Outlines [QCA].

Synoptic content and communication aspects should be kept in mind when assessing the unit and are incorporated into the criteria bands set out below which refer to knowledge, understanding and skills. . Indicate synoptic content using the letter 's' in the margin as appropriate.

Criteria bands

Examiners will use the criteria below to evaluate the work, placing the candidate's performance in the appropriate band and attributing the mark from the left-hand column appropriate to the question concerned. They should seek the best fit from the band descriptor – work adjudged to be in a particular band might not contain all the features attributed to that band.

25 – 30
A very good answer. Consistently relevant to the theme and to the demands of the question. Evaluates explicitly where required. Displays a very confident range of knowledge and understanding by using the appropriate terminology, critically referring to concepts and theory where necessary and establishing relationships between different physical and/or human factors and processes. Synoptic elements are a prominent feature and are fully integrated into the answer and used to purposeful effect in respect of the question's requirements. Demonstrates, where relevant, either implicitly or explicitly awareness of human perspectives upon geographical themes and issues. Argues coherently and in an organized, logical and balanced fashion. Support is consistent, accurate and detailed. A well developed essay style. Detailed and sophisticated communication skills with fluent and cogent writing style.

19 – 24
A good answer which remains relevant to the theme and demands of the question. Evaluation may now only be implicit. Displays a confident range of knowledge and understanding, but with a few omissions at the lower end, e.g. some terminology missing or some pertinent relationships left unexplored. Synoptic elements should be a feature of the answer and seen to be meeting the question's requirements. Some possibly rather uncritical reference to theory; some reference to awareness of human perspectives and decisions taking on geographical issues and problems. Argues well, but organisation may be suspect in places. Support is invariably there, but may not always be detailed. A competent essay style. Effective communication skills with accurate spelling, punctuation and grammar.

13 – 18
A satisfactory answer ranging down to the mediocre, which always attempts, but not always succeeds to be relevant. Lacking in evaluation. Displays a reasonable grasp of knowledge, but understanding is suspect in places. Relevant theory and concepts might be mentioned but with basic uncritical application. The interconnections and relationships between different physical and/or human processes are briefly mentioned but understanding of their significance is limited. There is some synoptic content which is relevant to the question. Argument and analysis are partial and become less significant in relation to mere description. Increasingly unbalanced as an answer, and the logic and organisation are clearly deficient. Support is not detailed here, occasionally inaccurate and barely consistent. The bare bones of an essay format. Appropriate communication skills so that meaning is almost invariably clear with adequate language skills. Possibly some spelling/punctuation/grammar errors.

7 – 12
A very mediocre answer which is only occasionally relevant to both the theme and the demands of the question. Decidedly deficient in knowledge and understanding with only simplistic notion of relevant theory and concepts. Little if any relevance to inter-relationships between physical and/or human processes and factors or subject matter from other elements in the specification. Increasing irrelevance in a predominantly descriptive context. Clearly lacks an ability to organise material and may drift into another answer. Support is scanty and usually suspect. A weak, barely perceptible, essay format. Basic communication skills – many spelling errors and/or oddities of grammar and punctuation.

1 – 6
A very weak answer which shows little attempt to follow the theme and the demands of the question. A very low level of knowledge and understanding, with even the simplest of concepts avoided. Very inaccurate and may completely miss the point. No idea of how to organise material with haphazard format, evidence of guesswork and little or no support. No attempt at an essay format. Little or no language and communication skills. Many errors in spelling, punctuation and grammar.

Section B

Question 4

Most models of climatic change predict a gradual and sustained increase in sea level over the next century. Examine how the geographical impacts of such a rise might vary from place to place.

This question is intended to enable candidates to engage in broad human and physical geographical themes represented elsewhere in the specification (and quite possibly and creditably from outside the specification as well) from a *coast processes and problems* specialisation. It should enable the introduction and elaboration of such human and physical geographical themes and allow for the human environment relationship to be explored. The response can be exemplified and illustrated at a variety of scales and contexts and the assigned task enables a discussion of values and policy aspects to be incorporated.

See generic scheme for criteria band - examiners are reminded that clear synoptic content is required for credit of 19 and over. However it is difficult to imagine an answer of reasonable quality without some synoptic content.

Appropriate content might include:

- A brief review of global warming and sea level outcomes to provide context but this should not exceed more than a few lines.
- A division between physical and human impacts might be a useful and common way of organising the response.

PHYSICAL Outlines of relevant processes of erosion and deposition and how these might be affected by rising sea levels; possibly useful distinctions between different types of coastal environment, high energy, low energy coastlines of erosion, deposition or in terms of lithology, structure and so on.

HUMAN Increased risk of coastal flooding especially in extreme event, associated risks from (predicted) increase in storms creditable in this context. Salinification of coastal regions. Consequence on coastal settlements economic activities such as agriculture, inshore navigation and port operations, greater need for coastal protection schemes, other human adaptations, increasing erosion and vulnerability of some human environments/activities.

Synopticity will be indicated by the diversity of the response in terms of the predominantly coastal themes outlined above and/or by extending the response into considering impacts in different settings such as impacts on:

- different types of ecological systems – salt marshes, deltas, coral reefs;
- different types of physical systems such as river systems/drainage basins, changes in base level, impacts on valley processes.

Impacts on different places – low-lying deltaic regions such as Netherlands, Bangladesh compared with other areas – this could be developed into or blend with impacts on different types of economy/society and varying technical capacity to manage sea level change MEDW/LEDW contrasts – again Netherlands and Bangladesh.

Case study material/exemplars might come from anywhere. In offering valid comparisons and contrasts they inform a response and give it substance and credibility and the potential of making broad and specific comparisons between LEDCs and MEDCs. Contrasting examples are extremely likely to produce synopticity etc.

In summary, synopticity will probably be evidenced by wider and detailed reference to a variety of physical processes and factors beyond those identified in the coastal unit, to different environments and regions with contrasts and comparisons between different places and LEDW/MEDW settings.

The question clearly requires a close scrutiny of relevant impacts and the response should come to a summary conclusion which perhaps identifies major issues, tries to put the problems in perspective – any conclusion is creditable as long as it is reasonable and related to the preceding content and analysis.

Question 5

The extent to which geomorphological processes represent hazards or not depends on when and where they are experienced. How far do you agree with this statement?

This question is intended to enable candidates to engage in broad human and physical geographical themes represented elsewhere in the specification (and quite possibly and creditably from outside the specification as well) from a *geomorphological processes and hazards* specialisation. It should enable the introduction and elaboration of such human and physical geographical themes and allow for the human environment relationship to be explored. The response can be exemplified and illustrated at a variety of scale and contexts and the assigned task enables a discussion of values and policy aspects to be incorporated.

See generic scheme for criteria band - examiners are reminded that clear synoptic content is required for credit of 19 and over. However it is difficult to imagine an answer of reasonable quality without some synoptic content.

Appropriate content might include:

- Outlines of geomorphological processes to include plate tectonics, vulcanicity, seismicity, weathering and mass movement but may well extend into fluvial and glacial processes. Allow for some expansion and detail on some of these processes. Fluvial and glacial references are 'automatically' synoptic in potential.
- The nature of such processes and the hazards they present may well be outlined, valid comparisons and contrast may be made between them.
- Potential adaptations and adjustments to hazards could be aptly reviewed as might an alternative view of how the processes represent opportunities.

The question begins to be fully addressed and synoptic elements emerge with content such as attempts to put geomorphological hazards in different contexts and the varying time scales (frequency, intermittency, periodicity). Thus for example the threat represented by earthquakes is closely related to location, local character of populations, types of economic activity, population density, differences in levels of economic development MEDW/LEDW contrasts and the capacity to manage them.

Contrasts between urban/rural environments, agricultural/industrial/commercial environments.

Time factor aspects might relate to connection between impacts and daily and annual rhythms of life e.g. people in buildings, transport systems or not etc.

Attempts to amplify certain processes as recreation/tourist opportunities for income generation are certainly synoptic.

Case study material/ exemplars might come from anywhere. In offering valid comparisons and contrasts they inform a response and give it substance and credibility. The potential of making broad and specific contrasts and comparisons between LEDW and MEDW in the context of this question are extremely likely to produce synopticity etc.

The question clearly requires a discussion approach and the response candidate should come to a view on "how far the candidate agrees" - any conclusion is creditable as long as it is reasonable and related to the preceding contents and discussion.

Question 6

With reference to one or more specific cold environment you have studied discuss whether or not human activity has harmful and/or beneficial effects.

This question is intended to enable candidates to engage in broad human and physical geographical themes represented elsewhere in the specification (and quite possibly and creditably from outside the specification as well) from a *cold environments and human activity* specialisation. It should enable the introduction and elaboration of such human and physical geographical themes and allow for the human environment relationship to be explored. The response can be exemplified and illustrated at a variety of scale and contexts and the assigned task enables a discussion of values and policy aspects to be incorporated.

See generic scheme for criteria band - examiners are reminded that clear synoptic content is required for credit of 19 and over. However it is difficult to imagine an answer of reasonable quality without some synoptic content.

Appropriate content might include:
Human activities can be expected to be broadly defined as set out in spec (p31) to include traditional and more modern activities. Alternatively, a review of generic human activities, such as agriculture, industry, commerce etc in cold environment context might be followed by more specific activities typically found in cold environments.

More recent modern activities such as mining, tourism, military activity can be expected to attract more critical comment in relation to:

1 natural environment - Harmful effect will be characterised by ecological impacts on species numbers, species diversity, species life patterns e.g. migration patterns etc Idea that traditional activities might be more in balance and sustainable can be expected and credited if supported.

Additionally some candidates might argue that humans also deliberately or accidentally intervene in geomorphological processes and this should be credited where it is connected with the notion of some ideal, idyllic environment in measured language. Where such arguments are made in relation to their impact on local eco-systems then this is even more plausible ,

2 on indigenous people and communities: Although a more critical assessment of impacts on indigenous people might be expected and be perfectly creditable and should be tolerated, the terms of the question allow some review of beneficial effect of more recent activities and modernity in terms of improving indigenous people's standards of living and perhaps also securing resources and advantages for the benefit of communities elsewhere e.g., Alaskan oil for the other 49 states.

* Arguments for more traditional activities supporting human life in a sustainable manner are perfectly creditable.

* Case study material/ exemplars might come from anywhere appropriate and is an essential feature. In offering valid comparisons and contrasts they inform a response and give it substance and credibility. Comparisons and contrasts between different areas/settings are extremely likely to produce synopticity etc.

Synopticity will thus be indicated by wider reference to different types of human activity particularly in relation to patterns of economic development, migration and settlement patterns, recent patterns of population growth and vital rates, to prospects/potential for sustainability, ideas of harmful/beneficial effects for whom?

The question clearly requires a discussion approach and in the response candidate should come to a view on whether or not activity is harmful or beneficial depending on the approach taken - any conclusion is creditable as long as it is reasonable and related to the preceding contents and discussion.