



Rewarding Learning

**ADVANCED
General Certificate of Education
2019**

Geography

Assessment Unit A2 1

assessing

Physical Processes, Landforms and Management

[AGG11]

THURSDAY 30 MAY, AFTERNOON

**MARK
SCHEME**

General Marking Instructions

Introduction

The main purpose of the mark scheme is to ensure that examinations are marked accurately, consistently and fairly. The mark scheme provides examiners with an indication of the nature and range of candidates' responses likely to be worthy of credit. It also sets out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for GCE Geography. Candidates should be able to:

- A01:** Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change at a variety of scales.
- A02:** Apply knowledge and understanding in different contexts to analyse, interpret and evaluate key concepts, information and issues.
- A03:** Use a variety of relevant methods, and techniques to:
- investigate geographical questions and issues;
 - analyse, interpret and evaluate data and resources; and
 - construct arguments and draw conclusions.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 17- or 18-year-old which is the age at which the majority of candidates sit their GCE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 17- or 18-year-old GCE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking calculations

In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error. To avoid a candidate being penalised, marks can be awarded where correct conclusions or inferences are made from their incorrect calculations.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

In deciding which level of response to award, examiners should look for the 'best fit' bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement.

The following guidance is provided to assist examiners.

- **Threshold performance:** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.
- **Intermediate performance:** Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.
- **High performance:** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response as follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is good.

Level 3: Quality of written communication is excellent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

Level 1 (Basic): The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 (Good): The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Level 3 (Excellent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

Option A: Plate Tectonics: Theory and Outcomes

AVAILABLE
MARKS

- 1 (a) The focus of this question is how plate tectonic processes create each of the two identified landforms. General reference to places is required. Again while no diagrams are required these can be credited if they clarify the description and explanation of the formation processes.
- Ocean ridges:** These are the product of constructive plate margins where new crust is formed by sea-floor spreading. In this specification there is room for speculation on the role of a number of mechanisms such as ridge-push and slab-pull but the key is the rising upwards of magmatic material as part of convection currents in the asthenosphere zone of the upper mantle and the creation of new oceanic plate. The various processes cause tensional forces at this margin.
- Island arcs:** These are products of a destructive plate margin between two oceanic plates. The key processes are convection flows in the asthenosphere moving from a constructive margin that drag plates under compressional forces. Slab-pull may well be described, but subduction by the denser plate is essential in the formation.
- For each: award [1] for appropriate reference to place for each landform; award [3] for detailed explanation of processes at the appropriate plate margin with accurate and relevant terminology.
- (2 × [4]) [8]

- (b) This is an example of volcanicity remote to a plate boundary and the explanation is expected to be linked to the hot spot concept of a fixed rising plume of magmatic mantle material beneath a moving plate. In this case the Yellowstone caldera currently lies over the hot spot that has been active over at least 16 million years. In explaining the processes it is expected that direction, distance, timing and names will be drawn from the resources both map and textual. The plate is moving in a south-westerly direction and has moved around 600–700 km in that 16 million year period at a rate of a little over 5 cm a year.

Level 3 ([7]–[9])

An accurate description of the pattern of volcanic activity is provided with reference to the resource material. A clear explanation of the processes of plate tectonics and hot spots is given with good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([4]–[6])

While both a relevant description and explanation are provided one or other is lacking in its depth or the detail provided. Quality of written communication is good.

Level 1 ([1]–[3])

Answers that lack a relevant description or an explanation based on hot spot activity would be restricted to this level. Alternatively both are significantly limited in detail or accuracy. Terminology and quality of written communication may be basic. [9]

- (c) The question requires a description of the preparation for seismic activity from both the resource provided and from a relevant case study.

Level 3 ([13]–[18])

The candidate draws relevant material from the resource on how Greece prepares for earthquake activity and identifies an appropriate case study describing the same core focus. Good depth and detail is provided in both cases. Quality of written communication is excellent.

Level 2 ([7]–[12])

The response may be unbalanced with either the resource material poorly developed or the description of a relevant case study lacking sufficient depth and detail. Alternatively, a response may be balanced but limited. Quality of written communication is good.

Level 1 ([1]–[6])

A response that lacks either of the required elements, use of resource or a case study, would be confined to this level. Alternatively the same restriction would apply if the description of both aspects is significantly limited in its development. Quality of written communication may be basic. [18]

AVAILABLE
MARKS

35

- 2 (a) A description of each of the three seismic waves is required. There is no requirement to identify impacts with each individual wave type. P and S waves are 'body waves' moving from the interior. P waves are compressional in nature with a forward motion of compression and expansion. Readily transferred by rocks, gas and liquid material they are the first to arrive. S waves involve a side-to-side motion at right angles to the direction of movement. They can only be transferred by rock and not by gas or liquid material and move more slowly. On reaching the Earth's surface both P and S body waves transfer energy as surface or L waves. These are slower moving waves and include the side-to-side movement of Love waves and the up and down (rolling) motion of Rayleigh waves. There are many potential impacts that might be mentioned in terms of seismic shaking. Relevant comments would concern the structural collapse of buildings and infrastructure though secondary impacts such as liquefaction, fires and floods may also be noted.

Level 3 ([6]–[8])

An accurate description is given of the three forms of seismic wave and valid potential impact for seismic shaking is explained. Quality of written communication is excellent.

Level 2 ([3]–[5])

While both description and explanation are present, one or other of the two elements lacks accuracy or development. If only two waves are accurately described, maximum Level 2. Quality of written communication is good.

Level 1 ([1]–[2])

One or other of the two required elements is absent or the description and explanation are inadequately developed. Poor terminology may be used. If only one wave is described, Level 1. Quality of written communication may be basic. [8]

- (b) A diagram is required along with an explanation of the sequence of processes involved in the pattern shown. Some may use a simple outline diagram with a detailed written explanation or a more detailed annotated diagram may be presented. Both are acceptable approaches to the question. The resource shows a destructive plate margin and its explanation would be expected to involve convection currents in the asthenosphere creating compression forces driving a dense ocean plate from the southwest to the point where it is subducted at the Sunda Trench. At this point friction forces produce a series of earthquakes with foci getting deeper from the trench, along the Wadati-Benioff zone down into the mantle. At depth (around 150 km) coincident with the intermediate/deep earthquake boundary volcanoes are found along the west coast of Sumatra. These are the consequence of melting oceanic plate materials that rises into/through and onto the surface of the plate. The relevant landforms (deep-sea trench and volcanoes) and the tectonic activity (seismic and volcanic) are required in a full response.

Level 3 ([7]–[9])

A relevant diagram, description and explanation of the processes involved in a logical sequence is presented. A high level of appropriate terminology is used. Quality of written communication is excellent.

Level 2 ([4]–[6])

A relevant diagram, description and explanation of the processes is provided but the explanation lacks sufficient depth or detail. Quality of written communication is good.

Level 1 ([1]–[3])

A response in which a diagram, description or valid explanation is lacking would be confined to this level. Alternatively, a full answer may have significant limitations. Quality of written communication may be poor. [9]

- (c) For a valid country case study both a description of its preparation for and response to volcanic activity is required. Additionally, an evaluation has to be made of these plans and responses, Candidates may use a variety of structured answers to address this question: for example evaluations may run through the answer or be summative. The key is that all the required elements are addressed.

Level 3 ([13]–[18])

The response provides detail of a relevant case study’s preparation and response for volcanic activity while also commenting on its effectiveness in practice. Good study detail and terminology is given throughout. Quality of written communication is excellent.

Level 2 ([7]–[12])

An unbalanced answer with respect to either preparation/response or description/evaluation elements would be restricted to this level. Alternatively the answer may lack depth and detail across each of these elements. Quality of written communication is good.

Level 1 ([1]–[6])

If any one of the two key elements (preparation and response) or requirements (description and evaluation) is entirely absent the response would be confined to this level. Alternatively, all elements are presented but are inadequately developed. Quality of written communication may be poor. [18]

**AVAILABLE
MARKS**

35

- 3 (a) The candidate is asked to make reference to the resources to describe and explain possible solutions to the problems of using irrigation.

Level 3 ([6]–[8])

Candidates at this level address each element of the question explicitly – resource use, description, explanation, solutions – with validity and clarity. A high level of appropriate detail is given. There is good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([3]–[5])

Although answers at this level address each element of the question – resource use, description, explanation, solutions – the response is imbalanced or lacks clarity, validity or depth. There may be restricted use of relevant terminology. Quality of written communication is good.

Level 1 ([1]–[2])

One or more elements of the question – resource use, description, explanation, solutions – is neglected. Alternatively, a full answer may have significant limitations. There may be poor use of terminology. Quality of written communication may be basic.

[8]

- (b) The candidate is asked to explain how the ITCZ and the Hadley Cell influence the location and climate characteristics of tropical desert ecosystems with the aid of a diagram.

Although most candidates may choose to draw the global tropical circulation system involving the Hadley Cell and ITCZ, a variety of diagrams would be acceptable, providing relevance to the question is clear and appropriate. Fundamental is the requirement to provide details on the influence of the ITCZ and Hadley Cell on tropical desert location (20°–30° north and south of the equator, air descends from the tropopause towards the ground surface creating high pressure conditions where the air is compressed and warmed, condensation of water vapour does not occur and rain rarely falls) and climate characteristics (high diurnal temperature range – daytime temperatures up to 45°C but rapid night time cooling under cloudless skies, long daylight hours, low precipitation figures below 250 mm/yr). Better responses will demonstrate understanding of the consistent influence of the subsidising limb of the Hadley Cell upon tropical deserts, in spite of its seasonal migration.

Level 3 ([7]–[9])

The text and the diagram demonstrate clear understanding of the role of the ITCZ and the Hadley Cell with respect to the tropical desert ecosystems. The location of the tropical deserts and their climate characteristics are accurately described. There is good use of appropriate terminology. The quality of written communication is excellent.

Level 2 ([4]–[6])

The text and the diagram demonstrate some understanding of the role of the ITCZ and the Hadley Cell with respect to tropical desert ecosystems. The location of the tropical deserts and their climate characteristics are described, but depth/detail may be restricted. There may be restricted use of relevant terminology. The quality of written communication is good.

Level 1 ([1]–[3])

Limited understanding of the role of the ITCZ and the Hadley Cell with respect to tropical desert ecosystems is shown. Absence of a relevant diagram or a relevant explanation would confine an answer to this level.

There may be poor use of terminology. Quality of written communication may be basic. [9]

- (c) The candidate is asked to describe and evaluate the attempts made to achieve environmental and socio-economic sustainable development with reference to a small scale case study of the tropical rainforest environment.

Level 3 ([13]–[18])

The answer refers in detail to an appropriate and relevant case study. Candidates at this level address each element of the question explicitly – case study detail, description of attempts to achieve environmental sustainability, description of attempts to achieve socio-economic sustainability, evaluation – with validity and clarity. A high level of appropriate detail is given. There is good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([7]–[12])

The answer refers to an appropriate and relevant case study. Although answers at this level address each element of the question – case study detail, description of attempts to achieve environmental sustainability, description of attempts to achieve socio-economic sustainability, evaluation – the response is imbalanced or lacks clarity, validity or depth. Detail may be restricted. There may be restricted use of relevant terminology. Quality of written communication is good.

Level 1 ([1]–[6])

The answer may make limited reference to a case study. Alternatively the case study may be at an inappropriate scale or nature. One or more elements of the question – case study detail, description of attempts to achieve environmental sustainability, description of attempts to achieve socio-economic sustainability, evaluation - may be neglected. Detail may be very restricted. There may be poor use of terminology. Quality of written communication may be basic. [18]

AVAILABLE
MARKS

35

- 4 (a) The candidate is asked to use the resource to discuss the attempts to achieve socio-economic and environmental sustainability in the given context.

Level 3 ([6]–[8])

Candidates at this level address each aspect of the question explicitly – reference to the resource, discussion of socio-economic sustainability, discussion of environmental sustainability, context – with validity and clarity. A high level of appropriate detail is given. There is good use of appropriate terminology. The quality of written communication is excellent.

Level 2 ([3]–[5])

Although candidates at this level address each aspect of the question – reference to the resource, discussion of socio-economic sustainability, discussion of environmental sustainability, context – the response is imbalanced or lacks clarity or validity. Detail may be restricted. There may be restricted use of relevant terminology. The quality of written communication is good.

Level 1 ([1]–[2])

If any one of the key elements – reference to the resource, discussion of socio-economic sustainability, discussion of environmental sustainability, context – is overlooked, the answer would be confined to this level. The response may be invalid or lack clarity. Detail may be very restricted. There may be poor use of appropriate terminology. The quality of written communication may be basic.

[8]

- (b) The candidate is asked to describe and explain the trophic structure of a tropical forest ecosystem with the aid of a diagram.

The tropical forest ecosystem captures insolation via photosynthesis, which is subsequently transferred or lost through a series of trophic levels. The process may be shown diagrammatically as a trophic pyramid. The tropical forest ecosystem typically has five trophic levels: primary producers, e.g. mahogany and ebony; primary consumers (herbivores), e.g. spider monkey and sloth; secondary consumers (carnivores), e.g. piranha and giant otter; tertiary consumers (carnivores), e.g. jaguar and cayman. The fifth trophic level consists of decomposers, such as termites, fungi and leafcutter ants.

Level 3 ([7]–[9])

The text and the diagram provide excellent description along with explanation of the trophic structure in the context of a tropical forest ecosystem. There is good use of appropriate terminology. Depth and detail are excellent. The quality of written communication is excellent.

Level 2 ([4]–[6])

The text and the diagram provide some description along with some explanation of the trophic structure of a tropical forest ecosystem. There may be restricted use of relevant terminology or lack of context. Depth and detail may be restricted. The quality of written communication is good.

Level 1 ([1]–[3])

Limited description of the trophic structure of a tropical forest ecosystem is given. Absence of a relevant diagram would confine an answer to this level. Depth and detail are poor. There may be poor use of terminology. Quality of written communication may be basic.

[9]

- (c) The candidate is asked to describe and evaluate the environmental and socio-economic benefits and problems associated with the use of irrigation with reference to a regional scale case study of an arid/semi-arid tropical ecosystem.

Level 3 ([13]–[18])

The answer refers in detail to an appropriate and relevant case study. Candidates at this level address each element of the question explicitly – case study detail, environmental benefits and problems of irrigation, socio-economic benefits and problems of irrigation, evaluation – with validity and clarity. A high level of appropriate detail is given. There is good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([7]–[12])

The answer refers to an appropriate and relevant case study. Although answers in this level address each element of the question – case study detail, environmental benefits and problems of irrigation, socio-economic benefits and problems of irrigation, evaluation – the response is imbalanced or lacks clarity, validity or depth. Detail may be restricted. There may be restricted use of relevant terminology. Quality of written communication is good.

Level 1 ([1]–[6])

The answer may make limited reference to a case study. Alternatively the case study may be at an inappropriate scale or nature. One or more elements of the question – case study detail, environmental benefits and problems of irrigation, socio-economic benefits and problems of irrigation, evaluation – may be neglected. Detail may be very restricted. There may be poor use of terminology. Quality of written communication may be basic. [18]

AVAILABLE
MARKS

35

Option C: Dynamic Coastal Environments

AVAILABLE
MARKS

- 5 (a) The candidate is asked to distinguish between swash and drift-aligned coastal environments with the aid of a diagram/s. Both diagrammatic material and written explanation are required. Drift-aligned coasts develop where waves approach the shore at an angle with a net movement of sediment along the coastline. Swash-aligned coastal environments are those in which waves break parallel to the shoreline transferring material up and down, rather than along the shoreline.

Level 3 ([6]–[8])

An accurate and well-presented diagram/s is presented. The distinction between swash and drift-aligned coastal environments is precise and clear. There is a high level of detail. There is good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([3]–[5])

Either the diagram/s or the distinction drawn between swash and drift-aligned coastal environments is incomplete in a significant way (lacking precision or clarity). Details may be restricted. There may be restricted use of relevant terminology. Quality of written communication is good.

Level 1 ([1]–[2])

The response may lack any relevant diagram and/or the distinction drawn between swash and drift-aligned coastal environments may be very restricted in precision, clarity, details, or use of relevant terminology. Quality of written communication may be basic. [8]

- (b) The candidate should use Resource 5 along with their own knowledge to evaluate the impact and sustainability of beach nourishment as a coastal management strategy.

Level 3 ([7]–[9])

All elements of the question (resource use, own knowledge, evaluation of the impact of beach nourishment as a coastal management strategy, evaluation of the sustainability of beach nourishment as a coastal management strategy) are addressed with accuracy and relevant detail. There is good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([4]–[6])

Although all elements of the question (resource use, own knowledge, evaluation of the impact of beach nourishment as a coastal management strategy, evaluation of the sustainability of beach nourishment as a coastal management strategy) are addressed, there may be a lack of accuracy, depth or relevant detail. There may be restricted use of relevant terminology. Quality of written communication is good.

Level 1 ([1]–[3])

One or more of the required elements (resource use, own knowledge, evaluation of the impact of beach nourishment as a coastal management strategy, evaluation of the sustainability of beach nourishment as a coastal management strategy) may be neglected. Alternatively, the answer may address the elements in a cursory or irrelevant fashion. There may be poor use of relevant terminology. Quality of written communication may be basic. [9]

- (c) The candidate is asked to make reference to a LEDC regional or national scale study in order to explain why that coastline is threatened by rising sea levels and evaluate the severity of this threat.

Level 3 ([13]–[18])

The answer refers in detail to an appropriate and relevant case study. Candidates at this level address each element of the question explicitly – case study, reason for threat, evaluation of threat – with validity and clarity. A high level of appropriate detail is given. Quality of written communication is excellent.

Level 2 ([7]–[12])

The answer refers to an appropriate and relevant case study. Although answers at this level address each element of the question – case study, reason for threat, evaluation of threat – the response is imbalanced or lacks clarity, validity or depth. Case study detail may be restricted. Quality of written communication is good.

Level 1 ([1]–[6])

The answer may make limited reference to a case study; alternatively the case study may be at an inappropriate scale or nature. One or more elements of the question – case study detail, reason for threat, evaluation of threat – may be neglected. Case study detail may be very restricted. Quality of written communication may be basic. [18]

AVAILABLE
MARKS

35

- 6 (a) The candidate is asked to describe and explain the formation of coastal spits with place reference for illustration. Whilst a diagram is not a requirement, this would be an acceptable approach, provided that all elements of the question are addressed. Spits form when the coastline turns away from the direction of the longshore drift by 30 degrees or more (such as at an estuary or river mouth) and when the tidal range is not too extreme.

Level 3 ([6]–[8])

An accurate description and explanation is given for the formation of spits. Valid reference to place is made. There is good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([3]–[5])

Although description and explanation for the formation of spits is given, it may lack depth or clarity. Valid reference to place is made. There may be restricted use of relevant terminology. Quality of written communication is good.

Level 1 ([1]–[2])

The description and explanation may be very restricted in depth, quality or relevance. Reference to place may be omitted or invalid. There may be poor use of terminology. Quality of written communication may be basic. [8]

- (b) The candidate is asked to use the Resources to describe the strategies implemented to provide coastal protection for the town of Seaham and explain why coastal protection is important for this town.

Level 3 ([7]–[9])

All elements of the question (description of relevant strategies, explanation of importance of coastal protection to town of Seaham; text and/or photograph usage) are addressed with accuracy and relevant detail. There is good use of appropriate terminology. Quality of written communication is excellent.

Level 2 ([4]–[6])

Although all elements of the question (description of relevant strategies, explanation of importance of coastal protection to town of Seaham; text and/or photograph usage) are addressed, there may be a lack of accuracy, depth or relevant detail. There may be restricted use of relevant terminology. Quality of written communication is good.

Level 1 ([1]–[3])

One or more of the required elements (description of relevant strategies, explanation of importance of coastal protection to town of Seaham; text and/or photograph usage) may be neglected. Alternatively, the answer may address the elements in a cursory or irrelevant fashion. There may be poor use of relevant terminology. Quality of written communication may be basic. [9]

- (c) The candidate is asked to explain why Shoreline Management Plans are important to sustainable coastal management with reference to a regional scale case study.

Level 3 ([13]–[18])

The answer refers in detail to an appropriate and relevant case study. Candidates at this level address each element of the question explicitly – case study, SMP, sustainable coastal management – with validity and clarity. A high level of appropriate detail is given. Quality of written communication is excellent.

Level 2 ([7]–[12])

The answer refers to an appropriate and relevant case study. Although answers in this level address each element of the question – case study, SMP, sustainable coastal management – the response is imbalanced or lacks clarity, validity or depth. Case study detail may be restricted. Quality of written communication is good.

Level 1 ([1]–[6])

The answer may make limited reference to a case study; alternatively the case study may be at an inappropriate scale or nature. One or more elements of the question – case study, SMP, sustainable coastal management – may be neglected. Case study detail may be very restricted. Quality of written communication may be basic. [18]

AVAILABLE
MARKS

35

- 7 (a) Glacial processes are those associated with ice. Fluvioglacial processes are those associated with meltwater from glaciers.

Level 3 ([6]–[8])

The response clearly differentiates between the two sets of processes and for both describes at least one associated landform. The use of terminology is of a high standard. Quality of written communication is excellent.

Level 2 ([3]–[5])

While the difference between the two sets of processes is provided the detail is not developed. Responses that describe only one appropriate landform would be confined to this level maximum. Quality of written communication is good.

Level 1 ([1]–[2])

The response lacks either clarity in the difference between the two sets of processes or fails to provide at least one relevant landform. Terminology may be poor. Quality of written communication may be basic. [8]

- (b) Both socio-economic problems and benefits are required in the response and these must be drawn from both the resource and from appropriate additional material provided by the candidate.

Level 3 ([7]–[9])

The candidate uses both the resource and their own material to identify relevant socio-economic benefits and problems in post-glacial lowlands. Resource material is clearly identified and not merely copied and the additional material broadens the range and depth of the coverage. Quality of written communication is excellent.

Level 2 ([4]–[6])

The response uses both the resource and additional material but in an unbalanced way and/or without sufficient depth and detail provided. Quality of written communication is good.

Level 1 ([1]–[3])

An answer that only uses the resource or fails to use it in a relevant way would be confined to this level. As would a response that lacks any additional material beyond the resource provided, or does not address both benefits and problems. Quality of written communication may be basic. [9]

- (c) The key focus of the question is the evidence for climate change (medium- and long-term). For these places to illustrate both need to be provided.

Level 3 ([13]–[18])

A sound discussion of the evidence for both long- and medium-term climate change is provided. Appropriate illustrative places are mentioned. Quality of written communication is excellent.

Level 2 ([7]–[12])

Although all the elements of the question are addressed (places, evidence for long-term climate change, evidence for medium-term climate change), there may be a lack of accuracy, depth or relevant detail. Quality of written communication is good.

Level 1 ([1]–[6])

Responses would be confined to this level if they lacked evidence of long- and medium-term climate change, or places to illustrate climate change. Quality of written communication may be basic. [18]

- 8 (a) The response should demonstrate clear understanding of the nature of and difference between adaptation and mitigation approaches to climate change. For each approach reference must be made to at least one appropriate example.

Level 3 ([6]–[8])

Both approaches are clearly described in context and accurate reference is made to a relevant example for each. Quality of written communication is excellent.

Level 2 ([3]–[5])

The absence of any one of the four aspects (two approaches and two examples) would confine an answer to this level maximum. Alternatively, the answer may lack the overall depth and detail required. Quality of written communication is good.

Level 1 ([1]–[2])

The lack of a clear or valid distinction between the two approaches or the absence of relevant examples would confine a response to this level. Quality of written communication may be basic. [8]

- (b) The two key requirements of this question are a diagram and an explanation of the glacial processes involved. The diagram may be a vertical view similar to the map or a cross section of the region at and beyond the end of an ice sheet. The important thing is the presence and use of the diagram for explanation. The landforms are linked to the advance and retreat of an ice sheet and mostly concern deposition. Advancing ice transports morainic debris, this is shaped under the ice forming drumlins and at the leading edge terminal moraines are found (in the south). Meltwater carries sediment across the outwash plain washing away finer debris leaving coarser sands and gravels. During deglaciation pro-glacial lakes were formed along the edge of the ice, at the front and edge against the mountains where lake bed deposits are found today.

Level 3 ([7]–[9])

A valid diagram is used to aid the explanation of the various landforms and deposits on the map. An accurate understanding of the processes involved is demonstrated. Quality of written communication is excellent.

Level 2 ([4]–[6])

While a relevant diagram is provided it or the explanation of the deposits and processes is lacking in depth and detail. Quality of written communication is good.

Level 1 ([1]–[3])

The lack of a diagram or of valid explanation would confine a response to this level. Alternatively, a full answer may have significant limitations. Quality of written communication may be basic. [9]

- (c) The question requires place reference for both LEDCs and MEDCs. The focus of the question is on the impacts of climate change both current and potential. These impacts may be positive or negative but there is no direct requirement to discuss both.

Level 3 ([13]–[18])

The response gives a clear and reasoned description of impacts, present and potential, of climate change that are illustrated by reference to both MEDC and LEDC contexts. The terminology used is of a high standard. Quality of written communication is excellent.

Level 2 ([7]–[12])

There are references to MEDC and LEDC contexts but perhaps these lack detail or depth. Description of impacts is provided but without clear explanation of these impacts present or potential. Quality of written communication is good.

Level 1 ([1]–[6])

A lack of reference to either MEDC or LEDCs would confine a response to this level. Alternatively, the depth and detail of the description and explanation may be weak overall. Quality of written communication may be basic.

[18]

Total

**AVAILABLE
MARKS**

35

70