

## **General Certificate of Education**

## **Geography 6031** Specification A

GGA4 Challenge and Change in the Natural Environment

# Post-standardisation Mark Scheme

2008 examination – June series

www.theallpapers.com

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2008 AQA and its licensors. All rights reserved.

#### COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334). Registered address: AQA, Devas Street, Manchester M15 6EX Dr Michael Cresswell Director General

#### www.theallpapers.com

### **GGA4** General Guidance for A Level Geography Assistant Examiners

#### **Quality of Written Language**

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:** Language is basic; descriptions and explanations are over simplified and lack clarity.
- **Level 2:** Generally accurate use of language; descriptions and explanations can be easily followed, but are not clearly expressed 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:

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

display a basic understanding of the topic; make one or 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 organisation and use of specialist vocabulary; demonstrate sufficient logibility, and quality 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/or 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.

**N.B.** 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.

1 (a) Only two processes are required along with some explanation. If more than two are offered, take the marks for the best two of those offered. Examples are not creditworthy here. There is no credit for merely naming the process.

Process	Description (1-3 marks)	
Wave pounding/	The sheer mass of water as the wave breaks is very	
quarrying	powerful and can generate shock waves up to 30	
	tonnes m <sup>2</sup> .	
Hydraulic	Air is trapped between the wave and the cliff, often in	
pressure	a crevice and the ensuing pressure weakens the cliff.	
Abrasion/	The load (from sand to boulders in size) is thrown	
corrasion	against the cliff by the waves.	
Attrition	The load is rounded and reduced in size by contact	
	with other particles and/or the cliff.	
Tidal scour	The movement/removal of (large) amounts of	
	localised sediment by tidal currents.	
Corrosion	Sea water is slight acidic and will dissolve limestone.	(4 marks)

(b) Since this is an often well-learned idea, it is important that the answer is in the correct sequence as well as with the correct information. A well-annotated diagram or series of diagrams can gain credit here. Since processes of erosion are required in part (a) there is no credit for them here.

A headland is attacked by erosion, usually at points of weakness, faults, etc (1-2). This leads to the formation of caves, possibly blow holes and eventually an arch (1-2). The erosive processes continue and eventually the roof of the arch collapses, leaving a stack (which will be worn to a stump and eventually disappear) (1-2). Credit appropriate use of photo (bedding planes, wave cut platform, etc (1-2).

- (4 marks)
- (c) There is a need for a debate here and any conclusion is valid, providing that it has justification and support, this comment can appear anywhere in the answer. A statement of coastal problems (such as cliff retreat, flooding, etc) would be helpful, as would exemplars. Erosional processes on their own do not gain credit, this only occurs when these processes are linked to coastal problems.

Also creditworthy are ideas relating to coastal problems that are not the result of erosional processes. These could include flooding (such as the North Sea Storm Surge, Hurricane Katrina and/or Bangladesh); pollution (such as the Exxon Valdes); downdrift impact of management strategies, etc.

#### Level 1 – Generic Descriptor (1–3)

**Either** only refers to one kind of erosional process **or** coastal problems.

#### Level 2 – Generic Descriptor (4-6)

Refers to both erosional processes **and** coastal problems possibly with theory and/or exemplars.

#### Level 3 – Generic Descriptor (7)

Has a clear view with appropriate examples of both erosional processes **and** coastal problems.

(7 marks)

- (a) This is the description question so there is no credit for explanation (which is in part (b)). Many volcances are found in lines, some of which are arcs (1-2) and which seem to follow coastlines or lines of islands (1-2). Many volcances (especially Rockies and Himalayas) are located in mountain ranges (1-2). Others appear to be more isolated, such as Iceland or Hawaii (1). Naming locations is not creditworthy in itself; it should be used to identify areas/lines which the answer describes.
  - (b) This part requires an explanation. There are clear lines on the map which correspond to destructive margins with subduction taking place (e.g. west coast of S America) and/or island arcs (e.g. Japan) (1-3). More isolated clusters correspond to either constructive margins (e.g. Mid Atlantic Ridge) or Hot Spots (Hawaii) (1-3). Must identify lines and isolated clusters for full marks. Naming locations is not creditworthy in itself; it should be used to identify areas/lines which the answer explains.
  - (c) The answer requires a debate. The view can be stated anywhere in the answer, even at the beginning.

On the one-hand, volcanoes are among the most destructive natural forces on the earth. Since the 1400s, they have killed almost 200 000 people. Although many volcanoes are not dangerous, there is always a threat. Some people have little choice about where they live. Others adopt a fatalistic approach.

On the other hand volcanoes also produce benefits. For example, many volcanic materials have important industrial and chemical uses. Rock formed from lava is commonly used in building roads. Pumice is widely used for grinding and polishing. Sulphur deposits from volcanoes are used in making chemicals. Weathered volcanic ash greatly improves soil fertility which encourages agriculture. Geothermal energy is used to produce electricity. The materials they erupt help scientists learn about conditions within the earth. Many volcanoes are tourist attractions. Support can be in the form of located exemplars or detail.

#### Level 1 – Generic Descriptor (1-3)

A fairly simplistic comparison of good and bad with little or no support. An answer that only deals with positive or negative points will stay in this band.

#### Level 2 – Generic Descriptor (4-6)

A comparison of positive or negative points with some support, probably unbalanced.

#### Level 3 – Generic Descriptor (7)

A clearly stated and justified view with support for both sides of the argument.

(7 marks)

(4 marks)

(4 marks)

(a) The question requires a description not an explanation (which occurs in part (b). A pingo is a mound that can reach up to 70 metres in height (typical slope angles are 34° to 38°, but rarely more than 45°). They are generally circular or oval, but elongate ones exist as well. Average basal diameter is about 200 m, but it can be as large as 600 m (1-3). They consist of a central core of segregation ice which is lens shaped (1-2). They are sometimes ruptured, as in Figure 3. They grow very slowly (a few cm per annum) and can exist for several hundred years (1-3). They are periglacial features and can be either hydrostatic (closed system) or hydraulic (open system) (1-3).

(4 marks)

(b) Hydrostatic (closed system) pingos are often preceded by thermokarst lakes, which survive during the winter under an insulating cap of ice, underlain by a lens of *talik*, which remains unfrozen due to the thermal insulation of the lake. In summer these lakes expand and overflow. Once drained, a layer of permafrost develops on top of the unfrozen talik, so that it is now closed and surrounded by permafrost on all sides. As permafrost advances, the remaining water in the talik is pressurised due to freezing and expansion of the newly formed ice lens and separates (segregates) from the surrounding sediment. It domes up the relatively thin permafrost layer on top of the talik, where it slowly freezes to form the solid ice core of a pingo (1-4). Hydraulic (open system) pingos are associated with fluvial systems, such

as river channel migration, faults in the bedrock or high geothermal heat flows leading to increased groundwater upwelling. They may also sustain taliks beneath them (1-3).

Eventually the dome surface can split and the pingo melts and collapses. Not all pingos can be understood in terms of hydraulic or hydrostatic genesis. Therefore it is possible that other mechanisms are also able to create these landforms (1-3).

It is not necessary to categorise pingos for full marks. (4 marks)

(c) The main thrust should be ideas relating to temperature fluctuations around the freezing point of water. The various processes often involve water, albeit in frozen form. At this level the temperature fluctuations are often diurnal.

However, it is possible to view the question on a broader scale of annual temperature fluctuations related to insolation, etc. Thus, the general changes in permafrost, freezing and thawing are also relevant. Frost action in its various forms involves temperature fluctuations with ice expanding, thawing and contracting, such as freeze-thaw, heaves, wedges, etc.

Mass movement, on the other hand, does not always include water; soil creep is enhanced by expansion and contraction of the active layer with freezing and thawing, including water; solification (gelifluction) does include water in the active layer; however rockfall and rock avalanches, earthflow and debris flow in unconsolidated materials do not necessarily require temperature fluctuations.

Nivation processes are snow based, as are summer thaw fluvial processes.

However, periglacial environments are also prone to aeolian and fluvial processes, which are not usually directly related to temperature fluctuations.

Examiners should note that a view as to the role of temperature fluctuations can be expressed anywhere in the response, including the introduction.

#### Level 1 – Generic Descriptor (1-3)

A basic response with one or two processes and limited knowledge about the role of temperature fluctuations. One process only, no matter how well done, remains in this level.

#### Level 2 – Generic Descriptor (4-6)

Two or three processes explained with some idea as to the role of temperature fluctuations in them.

#### Level 3 – Generic Descriptor (7)

Several processes showing clear understanding and a measured statement concerning the role of temperature fluctuations in periglacial areas, possibly referring to other factors.

(7 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 21-27 and 28-30.

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.

#### 28 - 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 organised, 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.

#### 21 – 27

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 questions 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.

#### 14 – 20

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 – 13

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.

#### 4 Assess the likely impact of global warming on coastal environments.

The question invites a wide ranging discussion of the impacts of global warming on coasts and is derived directly from the "Coastal Problems" part of the Specification. It is to be expected that some candidates will adopt the populist "doomsday" scenarios but it is to be hoped that many will take a more measured view that this is a slow process and is a normal feature of coastal changes. Essays that refer solely to negative impacts will probably be most common but this should not detract from the opportunity to achieve higher marks. However, responses that do attempt to find positive aspects should accrue appropriate reward. The question refers to "environments" in the plural so a response that refers to only one cannot reach the top two bands.

Synoptic elements may include MEDC/LEDC differences, impacts on climate, economic and possibly political aspects, as well as breadth of answer. Implicit in the question is the possibility that other factors may also have an impact and this really opens up the synoptic field into physical factors such as hurricanes, tsunamis and isostatic changes and into human issues such as pollution and urban development. Examiners are reminded that to achieve marks in the Good Band and above, answers must be clearly synoptic.

Since this is largely a theoretical look into the future there may be fewer opportunities for case studies in this question. However, answers that have relevant time scales and a balanced approach should accrue credit.

Actual impacts on the oceans may include:

- Sea level rise caused mainly by thermal expansion but also by the melting of land ice. Credit reasonable estimates of actual rise over specific time.
- Increasingly severe changes in the weather, particularly in terms of cyclones and hurricanes as well as increasing severity of storm episodes.
- Possible changes in the ocean currents, with El Nino/El Nina occurring more often and the possible changes in the North Atlantic currents with the impact of increasing amounts of cold melt-water from the Arctic and consequent reduction of the North Atlantic Drift.
- Changes in salinity will the increasing amount of fresh water from ice melt be balanced by increasing evaporation due to increased temperatures?
- Increasing amounts of eroded material reaching the sea from increasing run-off and fluvio-glacial action.

Impacts on the Physical environment of coasts:

- The actual interface between the sea and the land will rise. Credit a measured view here, giving evidence for this being a usual coastal occurrence both in isostatic and eustatic terms. Candidates who state that there will therefore be an increase in erosion are applying a fairly simplistic notion here.
- Increase in the rates of erosion and deposition due to increasing storm conditions.
- Drowning of low level depositional features such as spits, salt marshes and dunes.
- Increase in size over time of "drowned" features such as rias and fjords.

Impacts on the Human environment of coasts:

- Sea level rise will have an impact on low lying areas, where a large proportion of the world's population live. The available area of land will decrease as against an increasing world population.
- Particular impacts on Netherlands, Bangladesh and Holderness coastlines.
- Coastal barrages, such as the Thames Barrier and the Cardiff Bay barrage may be unable to cope with rising tides.
- The opportunities for sustainable energy from waves, tides and offshore wind turbines may be affected, although the available energy may be increased in certain areas and this may change the emphasis towards sea floor use of tidal turbines.
- Impacts on coastal resorts as well as marine transport, ferries, docks and harbours.
- Impacts on marine fishing, where changes in currents and temperatures may affect the location of fishing areas and some countries may benefit at the expense of others.
- Agriculture near coasts may benefit from slightly higher temperatures but suffer from increased storm damage to crops.

A descriptive case study or series of examples of with no explicit relationship to the question but from which an answer may be inferred is unlikely to achieve more than 16 marks. Such a response with concluding comment which refers clearly and explicitly to the terms of the question and which offers some reason(s) as to what impact global warming may have could achieve 20 marks.

Any view is acceptable providing it is supported, argued and synoptic.

Total for this question: 30 marks

#### 5 Managing the secondary impacts of geomorphological hazards is difficult, managing the primary ones is impossible. To what extent do you agree with this statement?

This question is designed to relate to the 'Impact and Response to Geomorphological Processes and Hazards' section of the specification. There are three main strands to the question. Firstly, an awareness of what geomorphological hazards are; this can go beyond the usual tectonic and mass movement hazards into the synoptic areas of river floods, coastal erosion, etc.

Secondly, there is a need to distinguish between primary and secondary impacts. Where is the line drawn? Where do tsunamis and mudslides fit? Engaging with this debate can provide a relevant part of any response.

Thirdly, there is the demand to assess the statement, hopefully with a more measured view that this is a very broad issue and not answered by such a simplistic statement.

See generic scheme for criteria bands - examiners are reminded that clear synoptic content is required for credit of 21 and over. Synoptic elements could include river and coastal flooding, LEDW v MEDW, broader resource management, impacts of tourism, underlying theory, etc.

Possible content - primary impacts:

- Earthquakes, whilst difficult to predict, can have various adaptations to reduce the impact and this can vary between LEDW and MEDW.
- Volcanoes can be predicted a little better but are also quite difficult to manage directly (despite the use of explosives, water sprays and trenches, the best prevention is probably evacuation).
- Tsunamis can be predicted and there can be some kind of protective wall but this science is still relatively new.
- Mass movements, such as avalanches and mudslides can be prevented but much depends on economics and technological ability.
- River and sea floods have been successfully limited and are a relatively rare occurrence.

Possible content - secondary impacts:

- The better candidate will attempt to distinguish between the secondary impacts of the various hazards.
- However, most candidates will probably lump the secondary impacts all together and use the LEDW/MEDW differences to explain them.

Since the question states "hazards" in the plural, an answer that only refers to one type of hazard, no matter how well written and argued, cannot move above the "satisfactory" band.

A descriptive case study or series of examples of hazard management with no explicit relationship to the question but from which an answer may be inferred is unlikely to achieve more than 16 marks. Such a response with concluding comment which refers clearly and explicitly to the terms of the question may achieve 20 marks.

"To what extent" clearly requires a view. Any view is acceptable, providing the answer supports such a view.

#### Total for this question: 30 marks

## 6 Glaciated areas have little practical use. To what extent do you agree with this statement?

This question is designed to engage with both the landforms/landscape associated with upland and lowland glaciation and the issues and the problems of human development in such areas. As such it could include sustainability, environmental issues and possibly periglacial areas. It is, however, difficult to see how the Southern Ocean, etc., can fit within the remit of the task.

Synoptic elements could include tourism, industry, communications and urbanisation as well as a breadth of approach. Examiners are reminded that to achieve marks in the Good Band and above, answers must be clearly synoptic.

A definition of terms would be of some help in organising an answer. "Glaciated areas" is actually a very broad term and could include formerly glaciated areas such as the Lake District or Snowdonia; areas which have some glaciation taking place such as the Alps; areas where glaciation is still an active feature of the landscape such as Alaska, the Canadian Northlands and Antarctica. However, examiners are urged to view with some scepticism a response which blandly includes **all** cold environments. "Practical use" can have a variety of interpretations; economic, agricultural, etc.

Possible content for the statement could include:

- hostile climates resulting from high latitude and/or altitude;
- poor soils, often thin and acidic;
- isolated areas often far from human habitation;
- often steep relief, impacting on settlement, agriculture and communications;
- a response that notes that not all glaciated areas are hostile could be the mark of a better essay, noting, for instance, that the last glaciation reached as far south as the present River Thames and some of those areas of lowland Britain could hardly be termed any of the above;
- support for this side of the argument may be in more general terms than that for the opposite view.

Possible content against the statement could include:

- tourism and tourist related activities, from the "awe and wonder" sight seeing to the active approach, ranging from walking to climbing, from skiing to snowboarding; comments should be related to exemplars to carry conviction;
- hydro electricity; from large scale dams to small scale "On tap" for peak demand systems, often in glacial troughs meaning that they are easy to dam;
- water supply the advantages of higher precipitation rates due to altitude as well as snowmelt, providing relatively unpolluted water with gravity feed – again from natural valleys (e.g. Thirlmere to Manchester) and corrie lakes;
- adaptation of agriculture such as transhumance in the Alps (and its regeneration recently as a viable form of sustainable agriculture);
- the ability to adapt to hostile environment, from indigenous peoples to the modern approach to coping with permafrost;
- these areas often provide mineral resources (e.g. slate from Snowdonia) and because the erosion by ice often exposes rarer minerals associated with metamorphosis.

A descriptive case study or series of examples about glaciated environments and/or their uses with no explicit relationship to the question but from which an answer may be inferred is unlikely to achieve more than 16 marks. Such a response with concluding comment which refers clearly and explicitly to the terms of the question and which offers some reason(s) as to why glaciated areas have little use (or otherwise) may achieve 20 marks.

Any reasonable conclusion can be credited providing it is measured, realistic and related to essay content. However, a response that only agrees or disagrees with the statement is unlikely to achieve the top two criteria bands.

#### Total for this question: 30 marks