AQA

ASSESSMENT and QUALIFICATIONS ALLIANCE

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GCE

Geography B

Unit GGB2

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General Guidance for Examiners

Quality of Written Communication

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 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 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 style of writing which matches the requirements of the question and acknowledges the potential complexity of the subject matter;
- demonstrate relevance and coherence with appropriate use of specialist vocabulary;
- demonstrate legibility of text, and qualities of spelling, grammar and punctuation which do not detract from the clarity of meaning.

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 '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 Advice

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.

OPTION P: GLACIAL ENVIRONMENTS

Question 1

(a) (i) 1. Accumulation is the net gain in an ice mass. Inputs to the ice can include:
Precipitation, re-freezing of meltwater, avalanche, drifting.
It is dominant in upper parts of a glacier.

2. Ablation is the collective loss of water from a glacier or ice sheet. It could be from:
Melting (meltwater streams), calving, evaporation/sublimation.

1 mark for each valid point made for each term to a max of 3 for one. **(4 marks)**

(ii) Internal Deformation:
Ice deforms under its own weight because of gravity. The deformation actually is because of the sum of tiny movements on the faces of the ice crystals making up the glacier. The thicker the ice, the faster the flow because of internal deformation. The warmer the ice, the faster the movement. The higher the pressure, the faster the movement.

Movement of a glacier by internal deformation is very slow, and is on the order of tens of metres per year. Much of the movement of the interior of the Antarctic ice sheet is by internal deformation.

Basal Sliding:
True basal sliding means that the base of the ice sheet is near the pressure melting point and that some water is present. The pressure melting point is reached because high pressure actually reduces the temperature at which ice will melt. Ice at base of a 2200 meter (1.36 miles) thick ice sheet will melt at –1.6□C rather than at 0□C. The thicker the ice, the lower the temperature at which it will melt, and the higher the chance that some water will be available at the glacier base to enhance movement. Large parts of the West Antarctic Ice Sheet are at the basal melting point, so there may be large areas under the ice sheet where a thin water layer exists. Water reduces friction and allows the ice to move faster. A thin layer of water may be present at the glacier base because the ice is at the pressure melting point. Or, the water may come from rain water or surface meltwater that has worked through the cracks in the ice. Or, it may originate from melting upstream in the glacier. This water then flows toward the terminus (nose) of the glacier.

Movement by basal sliding is ten times faster than movement by internal deformation. Basal sliding is extremely important in how much a glacier erodes the landscape, and the features that are created by the ice.

Deforming Substrate Water is not the only material that can cause sliding; sediment, or the rock debris under the ice sheet, also can increase movement at the base of a glacier. If the glacier is sitting on a soft sediment bed that has some water in it, the sediment can move and carry the ice sheet with it just as if it were riding on a water layer.

Level 1	Simple description of how ice moves including unexplained terms.	**(0-3 marks)**
Level 2	Detailed description of the movement of ice (Q 2L2 max) with at least one L2 explanation of the process.	**(4-8 marks)**

(b) (i) This will depend upon the candidate's choice. Point mark each one. **(3 marks)**

(ii) A = medial moraine
B = lateral moraine
C = tributary glacier

Point mark each one. **(3 marks)**

(iii) Depends on the landform chosen.

Plucking: The process by which a glacier freezes around a rock on a valley side or floor, and subsequent ice movement causes the rock to be pulled away with it. This process can only be effective on well weathered rock, or that which has been weakened by pressure release. The weathering could be preglacial or frost action caused by melt water that seeps into the rock joints and refreezes.

Abrasion: Fragments of rock which have been weathered or eroded find their way to the base of a glacier. There, embedded in the base, they are dragged along the valley floor and scrape away at it.
N.B. Rotational ice movement is valid for the overdeepening of corries. Frost action only valid as the source of abrasive material.

Level 1	Simple explanation using unexplained terminology.	**(0-3 marks)**
Level 2	Detailed explanation of processes and linking process to product.	**(4-8 marks)**

(c) Depends on the feature chosen by the candidate.

This produces well sorted deposits. The stream usually becomes braided. The discharge of water is seasonal and so there are also graded deposits. Length 5km – 80km; depth 1m – 75m; gradient 0.5□ - 4□.

Kettle holes are formed when a glacier is melting and a piece of ice is isolated from the rest of the glacier. It is buried by outwash debris. It subsequently melts and the resulting subsidence causes a small hollow in the outwash plain. Diameter 5m – 100m; depth 1m – 5m.

Esker is a sinuous ridge that is found running parallel to the pre-existing glacier. Height 5m – 20m, width 10m – 50m. It is composed of sorted sands and gravels that are subrounded to rounded. It can be stratified though post-glacial slumping can disturb this. Formed from the deposits of subglacial streams. Can be beaded.
Kame: Mounds of sorted sands and gravels. Max width 50m, height 3m – 5m. Formed either along the front of a stationary glacier where a stream emerges from under the ice and rapidly loses energy, or by deposition in a

cavity in a glacier.

Varve: 1mm – 20cm. Alternating layers of sediment deposited in a proglacial lake Coarser sediment deposited in late spring and summer, finer sediment in winter when there is a low supply of meltwater.

Level 1	Simple description (i.e. word descriptors)	**(0-3 marks)**
Level 2	Detailed description (with 2 L2 Q max)	**(4-6 marks)**

(d) (i) The extensive PF extends through central England from the Wash / Lincolnshire to South Wales / Wiltshire / Hampshire. It can also be found throughout the Bristol Channel and into SW Wales. There are islands of PF in Dorset and Devon (Dartmoor). It can also be found in the SN. Sea and the straits of Dover. The extensive Permafrost with wind-blown features covers SE England (East Anglia/Kent to W.Sussex) and much of N Central England from the Welsh Marches, through the W. Midlands/Pennines to N Yorks.

Level 1	Simple description of the location of the PF with little accurate location.	**(0-3 marks)**
Level 2	Detailed description of the PF showing locational knowledge or use of scale.	**(3-7 marks)**

(ii) Frost Heave: Occurs in the active layer above permafrost. The ground under stones is colder than the surrounding sediments and ice lenses develop. They increase in size by migration of water to the lens. As the lens grows, it forces the stone above to move upwards. If the lens melts, the void is filled with sediment and stops the stone from falling back.

Level 1	Simple description of process using unexplained terminology.	**(0-3 marks)**
Level 2	Detailed explanation of the term.	**(4-6 marks)**

(iii) Stone polygon: 1 – 5m diameter; dome height 0.1 – 1m.
Elongated polygons 2 – 6 degrees, stripes 6 – 35 degrees etc.

Level 1	Simple description of the feature.	**(0-2 marks)**
Level 2	Detailed description with detail of the size and shape of the feature.	**(3-5 marks)**

OPTION Q: COASTAL ENVIRONMENTS

Question 2

(a) (i) Depends upon the candidate's choice. Features that are visible include:
Point mark each one.. **(0-3 marks)**

(ii) A - Stack
B -Cliff
C - Headland
Point mark each one **(0-3 marks)**

(iii) Depends upon the feature chosen, but the process of abrasion, hydraulic action, wave pounding are evident. Also, candidates may well make use of wave refraction as a process in creation of a stack etc. The subaerial processes that are relevant include: biotic weathering (plants), carbonation (of the limestone), rock fall.

Level 1	Simple explanation, including the use of unexplained terminology.	**(0-3 marks)**
Level 2	Links between a named process and the product. Explained terminology.	**(4-8 marks)**

(b) Constructive waves have: Longer wavelength, lower frequency, lower height, lower energy, more elliptical orbit than destructive waves. They are spilling rather than plunging. They have a stronger swash than backwash AOT the destructive waves which have a stronger backwash than swash.

The effects of the waves are valid. Thus the constructive waves tend to cause a beach to steepen, by moving material onshore, whereas a constructive wave takes material from the beach and moves it offshore, thus reducing gradient. Destructive waves are responsible for storm beaches.

Level 1	Simple differences, with little or no detail.	**(0-3 marks)**
Level 2	Details of the differences (2 L2 Q max) including the effects that they have on beaches.	**(4-8 marks)**

(c) (i) Sediment calls are of unequal size.

Level 1	Simple description of the distribution of the sediment cells.	**(0-3 marks)**
Level 2	Detail given of location and/or distribution of the sediment cells. Any pattern identified.	**(4-7 marks)**

(ii) This is the movement of sediment along a coast by wave action. Waves approaching the beach at an angle (under the influence of the wind), the swash pushes the beach material up the beach at the same angle. When the wave recedes, it does so at right angles to the beach and the backwash removes beach material seawards. Thus the sediment moves in a zig-zag fashion.

Level 1 Simple explanation using unexplained terms. **(0-3 marks)**
Level 2 Correct use of explained terminology that shows the net movement of the sediment. **(4-6 marks)**

(iii) Spits occur at river mouths and where the coastline changes direction. If the LSD brings material along the coast, as soon as the water deepens and the waves no longer break (resulting in inability to move material), then deposition occurs. There is a shallowing of the water and so waves can break and so LSD can occur. Eventually this is colonised by vegetation whose roots hold together the sediment, and allow it to become stabilised.

Level 1 Simple links made between the LSD and other factors and the development of a spit. **(0-2 marks)**
Level 2 Detailed links between the LSD and the development of a spit. **(3-5 marks)**

(d) (i) Isostatic: Localised SL change, could be caused by weight or lack of it, of the ice OR it could be tectonic movement.

Eustatic: Global SL change. Caused by the increase/decrease of the mass of water in the oceans. Decrease caused by glaciation on land interrupting the hydro cycle; increase cause by glacial melting.

One mark for each valid point made with a max of 3 for one term. **(0-4 marks)**

(ii) Coastal landforms created by sea level rise include:

Ria: coastal inlet caused by the flooding of a river mouth. Deepest at the mouth, becoming shallower inland. Some alluvial material along the bed of the original channel and in the creeks that act as tributaries.

Fjord: long, narrow steep-sided drowned former glacial trough. Sometimes a series of basins that become shallower seawards, where there is a threshold made up of a rock bar, possibly with moraine on it.

Dalmation Coast: formed by the drowning of coastline where the main relief runs parallel to the coast. There are a series of islands that are elongated parallel to the coast separated by drowned river valleys.

Level 1 Simple description of the chosen landform. **(0-3 marks)**
Level 2 Detailed description of chosen landform (2L2 Q max). **(4-6 marks)**

OPTION R: URBAN PHYSICAL ENVIRONMENTS

Question 3

(a) Photo C is a canal. Canals act as long ponds. They often have a variety of waterfowl (moorhens, coots, ducks) and water-loving insects (dragonflies, damselflies) and birds (kingfishers). There are aquatic plants (flag iris). The distinctive ecology is the lop-sided nature of the plants. On the right is the tow path which is mown grass, with low diversity, while on the other bank is an area that grows undisturbed, leading to herbaceous plants (rosebay, willowherb), close to the canal and scrub woodland behind. There may be some exotic species that have been carried along the canal in barges and then have found their way on to the banks.

Photo E shows a road system. Here there are large areas of mown grass, which is very low in diversity. As one moves away there are deliberately planted trees that enhance the look of the area, as well as acting as noise baffles.

Photo F is a railway line. Railway lines enable animals to move around the city with little or no interference from traffic. During the days of steam there were frequent fires which burnt off tall species of plant and allowed the light in encouraging light demanding species e.g. primroses and foxgloves to establish. Windborne seeds are sucked along by the trains e.g. Oxford Ragwort. Spiders are moved along the line in the same way. Also, lack of human disturbance created by the fencing enables urban foxes and badgers to exist. On the unburnt, bramble filled railway, land brambles have established and these provide nesting sites for a wide variety of birdlife.

Level 1 Simple description of vegetation shown in the photograph.
Level 2 Detailed description of the vegetation, linking the type of location to the distinctiveness of the vegetation.

(0-3 marks)

(4-8 marks)

(b) Depends on the nature of the area studied, but would expect some kind of lithosere succession. On e.g. an abandoned factory site, mosses and lichens can begin to develop on the bare concrete. They are able to exist in areas where there is little water. They extract nutrients from the sun and from the bare concrete below. When they die they provide a thin mat of organic matter and some weathered mineral material which mixes to provide a proto-soil that other plant species can use to root into. Cracks in the surface provide a sheltered place for seeds to germinate. They also retain moisture and dust etc. which again help plants to root. The most common invaders are plants with windblown seeds e.g. Oxford Ragwort. This has a long flowering season enabling it to produce millions of seeds. As these higher plants die off they produce thicker and more nutrient rich soil.

Taller plants that are more nutrient demanding then can establish. These could be e.g. Rosebay Willowherb. These shade out the smaller plants stopping them photosynthesising so easily. In turn, the taller herbaceous plants are replaced by shrubs and eventually trees, the most common being the sycamore. All the while the processes of soil enrichment and competition continue.

The establishment of the ecological conservation could have a variety of effects. These could include limited mowing (of footpaths or meadows after the flowering of the plants). It could involve the use of fertilisers or the creation of different conservation 'zones'.

Level 1 Simple description or a named example of an area of ecological conservation. **(0-3 marks)**

Level 2 The plant succession process explained, linking the local conditions to the stage in the succession. Detailed example given. **(4-8 marks)**

(c) (i) 1. Surface albedo: The reflectivity of urban surfaces
2. Net heat loss: The balance between the incoming radiation and advective heat and the outgoing heat. This is less in the urban areas than rural.

One mark for each correct statement to a max of 3 for each term. **(0-4 marks)**

(ii) Explanation of the UHI effect.
The UHI is the product of a variety of factors. These include: Anthropogenic sources of heat. These include heat given off by people, machines, space heating escaping from buildings, air-conditioners, industrial processes and cars. Multiple reflections of incoming solar radiation from tall buildings that enable absorption to take place on more than one surface. The lower albedo of the urban surfaces enable them to absorb more of the incoming solar radiation. The higher heat capacity of the urban surface materials allow them to absorb the heat and store it. This is released when the air begins to cool at night. The efficient drainage of the urban surface removes a lot of water. Thus there is less capacity for evaporation to take place with its concomitant cooling effect. This is coupled with the lower amounts of vegetation which cool the air by transpiration.

The dome of particulate and NO2 pollution allow the short wave radiation in from the sun but absorb and reflect the outgoing longer wave radiation, preventing its escape.

The increased cloud amount over the urban area also reflects outgoing radiation back to the surface.

The rough urban surfaces reduce the wind speed and its ability to flush out the warm air. (NB. This is not the same as wind-chill which is irrelevant.)

Level 1 Simple explanation of the UHI with unexplained use of terminology. **(0-3 marks)**

Level 2 Detailed explanation of UHI with at least one L2 explanation of

each of Albedo and net heat loss to gain the maximum. **(4-8 marks)**

(d) (i) Where buildings are far apart, they act as isolated structures. As they get closer, one will interfere with the other. Thus in (b) there is less smooth a flow over the lee building and there isn't such a clear frontal eddy. In (c) the buildings are so close that the wind skims over the upper surface of the buildings, barely affected, but there are eddies in-between the buildings caused by the low pressure present.

Level 1 Simple description of the patterns with no link to the different separation of the buildings. **(0-2 marks)**

Level 2 Detailed description of the flows linking the building separation to the nature of the flow. **(3-5 marks)**

(e) Ways in which wind speed is affected by buildings. Buildings act as barriers to wind and create a rough surface which slows the wind down by friction. Thus the overall velocity is reduced. Gusting does occur, because the wind has further to travel around buildings than it would if it were linear flow. This shows particularly at the corners of the buildings. The channelling of wind down urban "canyons" (The Venturi Effect) increases the speed, as does the forcing of wind through small gaps between buildings. The main force of the wind hits at approximately 60% of the height. Some of that air is diverted over the building, whereas some of it is diverted downwards, creating gusting at the base of the building. In the lee of the building there is a downwards eddy that blows against the general flow of air and reduces the velocity to zero.

Level 1 Simple links made between the nature of the urban surface and the speed of the wind. **(0-3 marks)**

Level 2 Detailed links made between the urban surface and wind speed. There must be at least one L2 for speeding-up/slowing down. 2 L2 Q max. **(4-6 marks)**

(f) (i) Particulate pollution acts as hygroscopic nuclei enabling condensation of water vapour to occur when the rH is below 100%. The rather large smoke and soot particles, especially when they are in large numbers can lead to the formation of smog (not photochemical smog). When there are large numbers of the hygroscopic nuclei, it can lead to rain, of which there is more, and what there is, is more intense over urban areas than their rural counterparts.

Level 1 Simple statements linking particulates to rain or fog. **(0-3 marks)**

Level 2 Details of the effect that particulates have on both rain and fog. There must be 1 L2 statement about each to gain maximum marks. **(4-6 marks)**

(ii) 'Policy' can be interpreted in its widest sense. Thus policies can include the 'clean air act'; pedestrianisation, public transport improvements, 'park and ride' schemes. MOV lanes, cycle lanes etc all attempt to reduce traffic

flow in urban areas; downwind placement of industrial complexes, planting of vegetation to capture particulates on leaves, etc. etc.

Level 1	Simple identification of a policy with no indication of how it operates or what the effect is supposed to be.	**(0-2 marks)**
Level 2	Identification of a policy, with either some indication of how the policy operates or what effect it has. There must be two policies at level 2 to gain the maximum mark.	**(3-5 marks)**