



General Certificate of Education

Geography 6036

Specification B

GGB4 Global Change

Mark Scheme

2006 examination - January series

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.

GENERAL GUIDANCE FOR GCE GEOGRAPHY ASSISTANT EXAMINERS

General Instructions to Examiners on Marking

It is important that every Examiner marks the scripts to the same standard as the rest of the panel. All Examiners must operate the Marking Scheme in a similar and consistent manner, and hence, they must all participate in the application of that scheme at the Standardisation Meeting. In particular they should take careful note of all decisions taken or changes made at the meeting. Examiners are allocated to a Team Leader for the period of examining, and any difficulties that arise should be discussed with that person.

The Marking Scheme

The Marking Scheme consists of two sections for each question or sub-question – the Notes for Answers and the Mark Scheme itself.

Notes for Answers (NFA)

These indicate the possible content for the various sections of the question paper. In some cases (for example short answer questions) the NFA may indicate the only response that is acceptable, but in many cases they indicate either a range of suitable responses, or an exemplar of the type of response required. Therefore, in most cases the NFA do **not** provide model answers, and should not be regarded as such. More NFA may be added at the standardisation meeting if it is felt by the Principal Examiner that details of appropriate ways of answering the question have been omitted.

The Mark Scheme

This is provided in italics and provides the instructions to Examiners as to how they are to assess the work of candidates. The number of marks allocated within the mark scheme to a question should correspond to the number of marks for that question on the question paper.

There are two ways in which the Mark Scheme operates:

- (a) it indicates how the marks to short answer questions are to be allocated – usually to a maximum of 4 marks.
- (b) it indicates how Examiners should move through the Levels in a level response mark scheme – usually to all questions of 5 marks or more. Each Level has a levels descriptor, with clear statements of the “triggers” to move candidates from one level to another. Each Level contains a range of marks as shown on the Mark Scheme.

A number of features have been used to distinguish between Levels, for example:

- a number of characteristics, reasons, attitudes etc.
- the degree of specification, for example the use of specific case studies, or accurate detail
- responses to more than one command word, for example, describe and suggest reasons
- the degree of linkage between two aspects of the question
- the depth of understanding of a concept.

The Marking Process

A sample of an Examiner's marked scripts will be marked again by a Senior Examiner according to the procedures set out by the Board. Also the scripts may be re-examined at the Awards Meeting and the subsequent Grade Review. Therefore, it is most important that Examiners mark clearly according to the procedures set out below.

- All marking should be done in red.
- The right-hand margin should be used for marks only.
- The overall mark for a question must be ringed at the end of the answer.
- The total mark for the question must be transferred to the front of the script.
- The left-hand margin is where an indication of the level achieved is written.
Comments and codes (see below) may also be written on the left.
- Indications of the levels achieved may also occur in the body of the answer if this is easier for the Examiner to apply (e.g. in the marking of diagrams).
- Ticks should be used for short answer responses and Level I responses only, with one tick representing one mark (to the maximum allowed in a Levels scheme).
- Levels II, III and IV should be indicated with a Roman II, III or IV on the script, and this symbol should be used each time this Level is achieved. Examiners may wish to bracket an area of text where this level of response has been achieved.
- Once a candidate has reached Level II, additional Level I credit should be indicated using a + symbol. If these points are of sufficient quality **one additional mark** can be awarded (assuming no further Level II points are made).
- Examiners may indicate strong Level II or III material by writing "Level II (or III) – "good" in the left hand margin of the script. The Examiner should ensure that this is reflected in the **awarding of an appropriate number of marks** at the end of the answer.
- Level III is to be used only for questions of 9 marks or more, and Level IV is to be used only for questions of 25 marks in total.

Other Mechanics of Marking

- Underline all errors and contradictions.
- Cross out irrelevant sections using a line from top-left to bottom right. (However, be careful to check that there is no valid material, however brief, in the mass of irrelevance).
- Indicate repeated material with "rep".
- Other useful marking codes can be used, for example, "va" for vague, "NQ" or "Not Qu." for failure to answer the question, "Irrel" for irrelevant material, and "SIF" for self-penalising material.
- Put a wavy line in the left-hand margin to indicate weak dubious material.
- If the rubric is contravened, mark all answers but count only the best mark towards the candidate's total mark for the script. Put the mark for the question on the front of the script in the usual way, but also write "RAM Rubric" on the front of the script.
- Large areas of text must not be left blank – use the wavy line or write "seen" alongside the text. All pages must have an indication that they have been read, especially supplementary sheets.
- Unless indicated otherwise always mark text before marking maps and diagrams – do not give double credit for the same point made in the text and a diagram.

Quality of Language Descriptors

The following descriptors concerning the quality of language must be applied to **all** questions in which candidates are required to produce extended writing. To attain full marks available at a level of response, the appropriate Quality of Language descriptor must be achieved. Use the same quality of language levels as are used in the geographical element of the mark scheme under consideration.

Three-level descriptors

LEVEL I

- Style of writing is suitable for only simple subject matter.
- Expression of only simple ideas, using a limited range of specialist terms.
- Reasonable accuracy in the use of English.

LEVEL II

- Manner of dealing with subject matter is acceptable, but could be improved.
- Reasonable clarity and fluency of expression of ideas, using a good range of specialist terms, when appropriate.
- Considerable accuracy in the use of English.

LEVEL III

- Style of writing is appropriate to subject matter.
- Organises relevant information and ideas clearly and coherently, using a wide range of specialist vocabulary, when appropriate.
- Accurate in the use of English.

Two-level descriptors

LEVEL I

- Manner of dealing with subject matter is acceptable, but could be improved.
- Reasonable clarity and fluency of expression of ideas, using a good range of specialist terms, when appropriate.
- Considerable accuracy in the use of English.

LEVEL II

- Style of writing is appropriate to subject matter.
- Organises relevant information and ideas clearly and coherently, using a wide range of specialist vocabulary, when appropriate.
- Accurate in the use of English.

Question 1**(a) Notes for answers**

The climate of the tropical regions of Africa with wet and dry seasons is transitional between the Equatorial rain forests and the hot deserts. Therefore, variations occur with increasing latitude. However, all areas are characterised by having a dry season (limited rain) and a wet season (when up to 90% of the annual rainfall falls).

At the rain forest margins:

- precipitation is over 1000mm per year with one or two dry months;
- the temperature ranges from 22C in the wet season to 28C in the dry season.

At the desert or semi-arid margins:

- precipitation is under 500mm per year with 9/10 dry months, and the reliability of the rainfall decreases with increasing latitude;
- the temperature ranges from 18C in the wet season to 34C in the dry season

During the Dry Season, the Subtropical anticyclone moves over the desert margins of the area. The ITCZ is on the equatorial side. Hence, these areas are affected by trade winds blowing from the land towards the coasts (offshore).

During the Wet Season, there is the migration polewards of the ITCZ. This reverses the wind direction such that it blows from the sea to the land (onshore).

Level I – simple statements of climatic characteristics, with no detail in terms of direction, rainfall amounts or temperature readings. (0-3 marks)

Level II – detail of climatic variations, for example, accurate statements / figures of wind, rainfall and temperature, clearly within area. (4-7 marks)
(7 marks)

(b) Notes for answers

A typical soil moisture budget graph for a location that experiences a climate with wet and dry seasons (N. Hemisphere):

Precipitation is greater than potential evapotranspiration between July and September, whereas potential evapotranspiration is greater than precipitation between October and June.

- When precipitation is greater than potential evapotranspiration, at first there is some refilling of water into the pores within the dry soil. This is soil moisture recharge. When the soil is saturated, excess water will have difficulty infiltrating into the ground, and may flow over the surface. This is soil moisture surplus.
- When potential evapotranspiration is greater than precipitation, water is at first evaporated from the ground surface and transpired from plants. Water may also be brought up to the surface through capillary action and then evaporated. This is soil moisture utilisation. However, eventually the soil will dry out completely, creating a soil moisture deficit.

It therefore has:

- A lengthy period of moisture deficit, and a short period of moisture surplus
- A total annual potential evapotranspiration greater than total annual precipitation.

Reserve two marks for the construction of the diagram – a line for ppt and a line for evt. (0-2 marks)

1 mark for correct identification and explanation of each of SM re-charge, surplus, utilisation and deficit. (0-4 marks)
(6 marks)

(c) Notes for answers

There is a very pronounced peak in the discharge of rivers during the late summer months. This corresponds not only to the heavy rainfall at this time, but more specifically to the period of water surplus in the soil moisture budget. The spell of maximum precipitation, the soil moisture recharge, does not immediately lead to an increase in the discharge. Discharge reduces rapidly during the onset of the dry season, and then remains low during the water deficit period. The minimum discharge occurs soon after the period of highest temperatures, the time of peak evapotranspiration.

Level I – Simple statements connecting river discharge to rainfall amounts. No references to the role of the soil moisture budget.
(0-2 marks)

Level II – appropriate use of the soil moisture budget, for example, recognition that highest discharge occurs at time of soil moisture surplus and not highest discharge. Statements relating to the role of evapotranspiration will access this level.
(3-5 marks)
(5 marks)

(d) Notes for answers

Most trees are deciduous, losing their leaves in the dry season, although some evergreens are also found. Their hard leathery leaves reduce transpiration losses, and some plants may be microphyllous (small leafed) to reduce transpiration.

In the tree savanna: a parkland exists with isolated acacia trees with low umbrella shaped crowns, shading root areas and thus reducing soil moisture evaporation. The trees show xerophytic characteristics, with dense cell fluids, hard waxy leaves, thorns, and protected stomata which all reduce water loss. The trees lose leaves in the dry season. The baobab, with its very thick fleshy spongy trunk, insulative bark, and long tap roots bears leaves for only a few weeks. All of these reduce water losses.

In the grassland savanna: the grasses between the trees become shorter and sparser. The grass is perennial, it dies back during the dry season and then regrows from root nodules in the wet season. The grasses are tussocky enabling some retention of moisture. The naturally created straw dies down and protects roots.

In the shrub or scrub savanna: there are mainly acacia trees, thorn bushes or short tufted grasses. Many generate short stems from a single stock, with deep branched roots and dormant seeds which compete for water. In some plants even the stems may be capable of photosynthesis. Some grasses are feathery and wiry, and turn their blades away from the strong sun, all of which reduces water loss. In the same way, thorns reduce transpiration by having a small surface.

Level I – simple statements of adaptations with no link to species, or depth of understanding; or good description of one adaptation only. (0-3 marks)

Level II – more than one adaptation explained well. (4-7 marks)
(7 marks)

Total for Question 1 = 25 marks

Question 2

(a) Notes for answers

Major forms of international migration in last 30 years:

- MEDCs to MEDCs – decreasing in amount – examples within the EU (expanded) or from E. Europe to EU – employment related, seeking increases in living standards
- LEDCs to MEDCs – decreasing in amount due to restrictions of entry, but increases in illegal movements – e.g.s Mexico to USA, North and West Africa to France – again economic
- LEDCs to LEDCs – increasing in some parts of world – Egyptians, Pakistanis and Indians to Middle East for economic reasons, Ethiopia to Sudan to escape famine, Rwanda to Zaire due to civil unrest
- Others – e.g. from one part of the former Yugoslavia to another due to forced movement and ethnic cleansing; family reunification within Germany (Korea?).

Level I – simplistic statements of population movement with general areas of origin and host being stated. No accurate case study material, other than simple form of exemplification. Reasoning tends to be offered in general terms, and not linked to migrations named.

(0-3 marks)

Level II – case study material accesses this level, with accurate use of named migration patterns, clearly located. Reasoning is specific to migrations identified.

(4-7 marks)

(7 marks)

(b) Notes for answers

Evidence of attitudes to international migration:

For – provision of incentives to encourage migration, positive strokes by politicians (cultural benefits, NHS dependency)

Against – extremism, border controls, quotas, political comments re asylum seekers.

Level I - simple statements of evidence with no definite link to theme of difference; or good development of one piece of evidence only.

(0-3 marks)

Level II – more than one piece of evidence is identified, described and attributed as being different to the first.

(4-6 marks)

(6 marks)

(c) Notes for answers

A multicultural society is a social grouping which contains members from a wide variety of national, linguistic, religious and cultural backgrounds. Racial differences feature strongly in any multicultural society, although religion and language are possibly more problematical in terms of different groups coexisting.

Examples chosen by candidates can be at a variety of scales:

- National – the ethnic mix of South Africa
- Regional – the religious and language diversification that exists within the area of the former Yugoslavia
- Local – Notting Hill (London) and Chapeltown (Leeds)

Up to 2 marks for example. 1 mark for each valid statement re multicultural societies 3 = 5

(5 marks)

(d) Notes for answers

Issues included:

- Housing – general issue of dispersion v assimilation
- Second generation migrants feel trapped in low cost housing and resent the racism they experience when they move.
- Refugees/asylum seekers put pressure on host countries to provide temporary housing
- Employment – general issue of opportunities v discrimination
- low pay/poor working conditions of many ethnic migrants
- religion – rights to practice own religions, and tolerance of those religions
- educational opportunities – still may be problems of language differences, and the need to have specialist literature (e.g. health leaflets). Opportunities to have own schools and systems may be an issue in some places (often linked to religion).

Level I – simple statements of issues at a generalised level. Issues tend to be applicable to any area, rather than any particular location or area.

(0-3 marks)

Level II – case study material accesses this level. This may be in terms of actual locations, or in terms of specific issues being examined in depth. For example, a discussion of the problems faced by asylum seekers in the UK would access this level.

(4 – 7 marks)

(7 marks)

Total for Question 2 = 25 marks

Question 3

Notes for answers

A wide range of **characteristics** of the Earth's surface could be provided by candidates, and all or some of the following would be acceptable:

Shield areas (cratons) – old parts of continents, most stable sections. Rocks are at least 2.5 million years old, typically found well away from plate boundaries. E.g. Baltic, Canadian, African Shields.

Sedimentary basins – areas of the major land masses which are filling with sediment. E.g. Amazon, Mississippi basins.

Fold mountains – areas of tectonic convergence with intervening sediments of geosyncline being pushed upwards to form mountains. Some vulcanicity present. Eg. Himalayas, Alps.

Rift Valleys – product of crustal tension (pulling apart). May be oceanic as in Atlantic, or continental as in East Africa. Again, associated with vulcanicity.

Ocean plains (abyssal plains) – areas of ocean floor at 3/6000 m deep. Occasionally interrupted by sea mounts, volcanic submarine cones rising steeply from the sea bed. These are linked to hot spot volcanic activity, and some are planed off to form guyots.

Mid Oceanic ridges – lines of underwater mountains up to 60000 km in length and 1000 km wide. Central part consists of rift valley. Fracture zones at right angles to ridges spread out east and west. E.g. Mid Atlantic Ridge, Mid Pacific Ridge.

Ocean trenches/island arcs – around edge of Pacific – 100 km wide and over 6000 m deep. Trenches are located close to continental edge – e.g. Peru, Japan, Aleutian – with landward side marked by arc of narrow islands eg. Japan, Kuril Islands. Volcanic activity also frequent.

The global pattern of tectonic processes:

Constructive plate boundaries: occur when two plates are moving away from each other, magma flows upwards and spreads creating new areas of crustal material. This has produced mid oceanic ridges such as the Mid Atlantic ridge, and rifts in continental areas such as the East African Rift valley. Volcanoes are features here.

Destructive plate boundaries: occur when two plates converge or collide. Crustal material is either destroyed or uplifted depending on the relative speed of convergence and relative densities of converging materials. Subduction occurs when an oceanic plate gives way beneath a continental plate producing an island arc and ocean trench. Fold mountains may also be created at the edge of the overriding continental plate. Where two plates converge and close an ocean between them, complex folding and faulting results creating mountain ranges. Volcanoes are also features of these areas, but the volcanoes tend to be more explosive.

The strength of the relations between physical characteristics and tectonic processes.

This comes down to two broad scenarios. Detail to be provided by the candidate.

Constructive plate margins – divergence, sea floor spreading, mid oceanic ridges, volcanoes, rift valleys, transform faulting.

Destructive plate margins – collision, subduction, trenches, island arcs, volcanoes, earthquakes, fold mountains.

NB There are some landforms that bear no relationship e.g. cratons, sedimentary basins.

Mark scheme.

G	Level I 0 - 6	Level II 7 - 12	Level III 13 - 17	Level IV 18 - 20
	Simple statements of description, for example names of landforms.	More detailed description, with correct identification of characteristics. Detail of landforms would access this level.	Well developed description, including process of characteristics/landforms. Good use made of located exemplars.	
	Simple statements of processes, located very generally.	Detailed description of global pattern of tectonic processes. Some accuracy of location.	Well developed description of global pattern of processes. Wide range given.	
		Simple statements of the relationship between process and structure.	Detailed statements of the relationship between processes and structures or recognition of anomalies, with some reference to identified features on the earth's surface.	Clear evaluation of the strength of relations, which provides both sides of the argument. Evidence must be given for each side of the argument.
S	Level I 0 - 1	Level II 2 - 3	Level III 4 - 5	
	Information is adequately organised, and presented with a reasonably accurate use of English.	Well-organised and presented with an accurate use of English. Limited examples.	Well-organised and presented in a clear and logical manner with a very accurate use of English. Range of examples.	

Total for Question 3 = 25 marks

Question 4

Notes for answers

A lithosere:

- a bare exposed rock site – colonised by bacteria then lichens
- decay of lichens – growth of mosses – both assist in weathering, and formation of thin soil
- development of grasses and small herbs in protected water retaining sites, and fed by humus from decay of lichens/mosses
- small shrubs established such as gorse and broom
- pioneer trees such as hawthorn, rowan and alder
- larger trees begin to dominate such as pine, birch, as
- slower growing deciduous trees outgrow and shade these out
- climatic climax of temperate deciduous forest.

Plagioclimaxes in the British Isles. Human activities include:

- deforestation – to produce arable land, building land – destruction of natural species
- afforestation – the planting of conifers in upland areas to meet the demand for paper/pulp
- improvement of natural grasslands (originally created by deforestation) to produce high quality of grazing land for cattle/sheep
- the development and management of heather moorland for grouse (use of fire)
- planting of hedgerows in medieval times to produce field boundaries.

Natural processes v Human activities:

Across the British Isles, primary succession will have taken place at some point in the past – this occurs on ground which has had no previous vegetation, such as bare rock and sand dunes. Eventually a period of relative stability is achieved and the climax vegetation develops, with dominants excluding rivals that are less suited to the conditions. This is the climatic climax community, the natural vegetation having reached a stable balance with the climate and soils of the area. Some bio-geographers believe that within one climate, local factors such as drainage, geology, relief and even microclimates can create variations in the climatic climax community. Consequently, in the British Isles all vegetation owes its origin to natural processes, but there has been extensive modification due to human activities, particularly over the last 2000 years.

Mark scheme.

G	Level I 0 - 6	Level II 7 - 12	Level III 13 - 17	Level IV 18 - 20
	Simple statements of description, for example names of species.	More detailed description, with correct identification of sequence of species. Details of species would access this level.	Well developed description of the sequence of succession. May make good use of case studies.	
	Simple statements of activities, located very generally.	Detailed description of one human activity. Some accuracy of location.	Well developed description of a range of human activities.	
		Simple statements of the relative extent to which nature and/or humans have impacted vegetation.	Detailed evaluative statements of the relative impact of nature v. humans. Evidenced statements that support one side of the argument.	Clear evaluation of the relative importance over time, which provides both sides of the argument. Evidence must be given for each side of the argument.
S	Level I 0 - 1	Level II 2 - 3	Level III 4 - 5	
	Information is adequately organised, and presented with a reasonably accurate use of English.	Well organised and presented with an accurate use of English. Limited examples.	Well organised and presented in a clear and logical manner with a very accurate use of English. Range of examples.	

Total for Question 4 = 25 marks