



## **General Certificate of Education**

# **Geography 6036**

## *Specification B*

### **GGB4      Global Change**

# **Mark Scheme**

*2009 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.

Further copies of this Mark Scheme are available to download from the AQA Website: [www.aqa.org.uk](http://www.aqa.org.uk)

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# GGB4

## 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:

- it indicates how the marks to short answer questions are to be allocated – usually to a maximum of 4 marks.
- 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.

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## 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 2, 3 and 4 should be indicated 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 2, 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 2 or 3 material by writing "Level 2 (or 3) – "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 3 is to be used only for questions of 9 marks or more, and Level 4 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.

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### 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 1**            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 2**            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 3**            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 1**            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 2**            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.

**SECTION A**  
**Question 1**

(a) (i) **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, ash
- slower growing deciduous trees outgrow and shade these out
- climatic climax of temperate deciduous woodland.

**Mark scheme**

**Level 1** *a brief account of the succession with start and end points clearly identified, but with little development or reasoning of the stages in between. Only two of the stages identified above given.* (0-3 marks)

**Level 2** *more than two stages provided and explained. Plant types are clearly identified as being distinct.* (4-7 marks)

(a) (ii) **Notes for answers**

Temperate deciduous woodland has the following characteristics:

- tall trees form the dominant species; oak is the tallest (can reach 30/40 metres) followed by elm, beech, sycamore, ash and chestnut
- trees develop large crowns and have broad, but thin leaves
- deciduous trees shed their leaves in winter which has the effect of reducing transpiration when colder weather reduces the effectiveness of photosynthesis and roots find it harder to take up water and nutrients
- relatively few species of dominants, some woodlands being dominated by only one tree species
- most woodlands show some stratification:
  - below the canopy is a lower shrub layer with smaller trees such as holly, hazel, rowan and hawthorn
  - just above the forest floor is a herb layer which is often dense if the shrub layer allows enough light through. This is made up of grasses, bracken ferns and some flowering plants such as the bluebell that blooms early in the year before the trees have developed their full canopy
- epiphytes grow on the trunks and branches of trees e.g. lichens and mosses
- mosses grow on the forest floor which is often covered by a thick leaf litter which is readily broken down by the numerous mixing agents living in the soil.

**Mark scheme**

**Level 1** *simple statements of description e.g. names of species, and explanation/description of terms such as deciduous.* (0-3 marks)

**Level 2** *detailed statements of description; references to stratification.* (4-5 marks)

(b) **Notes for answers**

Human activities may 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 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.

**Mark scheme**

**Level 1** *a simplistic list of human activities on vegetation successions; or a discussion of one human activity and its influence on succession.* (0-3 marks)

**Level 2** *a discussion of more than one way in which human activity has influenced/changed vegetation successions.* (4-5 marks)

(c) **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 leaved) 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 small surface.

**Mark scheme**

**Level 1** *simple statements of adaptations with no link to species, or depth of understanding; or good description of one adaptation only.* (0-3 marks)

**Level 2** *more than one adaptation explained well.* (4-8 marks)

**Question 2**

Clearly the assessment of this question will be influenced by the material offered by the candidates. What follows is some brief detail of the Los Angeles area, together with general instructions for marking.

(a) **Notes for answers**

Effects of hazards in LA:

- earthquake activity – destruction of buildings and roads, risk of fire, water shortages, insurance losses
- coastal flooding – damage to coastal properties, often of the very wealthy
- vegetation fires – burning of property, farmland
- land slips – destruction of property
- river flooding – damage to infrastructure
- human hazards – crime, race riots, traffic problems, sexually transmitted disease
- drought – water shortages
- heat – may trigger fires and health problems.

**Mark scheme**

**Level 1** *identification of hazards with simple description of effects of both; or a detailed description of only one.* (0-3 marks)

**Level 2** *the effects of two hazards are described in terms of their detailed impacts on the urban area. Depth and detail should receive additional credit.* (4-7 marks)

(b) **Notes for answers**

Possible interrelationship in LA:

- summer drought and hot dry Santa Ana wind combining to produce dry vegetation cover with a consequent high fire risk. Also linked to over-use of water in sprinkler systems (gardens and golf courses), and use of water for irrigation of intensive market garden areas
- high production of atmospheric particulates by motor vehicles, combine with summer heat and temperature inversions over the urban area which trap pollutants as photochemical smog
- reduction in vegetation cover reduces interception and soil protection which leads to increased instability of slopes, especially after heavy rain, causing risk of land slips
- earthquake activity may activate land slips, and encourage fire risks with rupturing of electric and gas systems
- some candidates may refer to a central factor such as urban sprawl contributing to smog, fire, flooding, mudslides, crime, etc.

**Mark scheme**

**Level 1** *one or more inter-relationship described simply.* (0-3 marks)

**Level 2** *at least one inter-relationship described fully, with clear sequence identified.* (4-5 marks)

- (c) This question has been given a (i) and (ii) format as this allows transfer of credit between sections.

**Possible responses:**

- Do nothing – limited preventative activity
- Do something – insurance, monitoring, emergency procedures, education, planning modifications, legislation (buildings, atmospheric pollution)
- Attempt prevention – solutions to the hazards, but natural hazards are almost impossible to control.

(c) (i) **Mark scheme**

**Level 1** *only one basic response identified and outlined, or a series of generalised responses.* (0-3 marks)

**Level 2** *more than one clear response identified with some specific detail, possibly with some outline of responses to more than one hazard.* (4-5 marks)

(c) (ii) **Mark scheme**

**Level 1** *simple statements of prediction and prevention, such as insurance, monitoring, fire-proofing, emergency procedures, education. Generalised statements which could apply to any location. Weak assessment.* (0-3 marks)

**Level 2** *specific statements which relate to the area identified by the candidate. To access the higher level of marks, candidates must refer to more than one hazard with some assessment of effectiveness.* (4-8 marks)

**N.B.** **No repetition of credit between (i) and (ii)**

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### Question 3

#### Notes for answers

#### The Core - Periphery relationship.

**Friedmann** produced a model of the economic development of a country, with particular reference to the changing economic relationships within that country.

From this model four types of areas can be designated:

- a) the **core region** - the focus of the national market, and seedbed of new industry and innovations. It has a concentration of economic development.
- b) **upward transitional areas** - regions with some form of natural endowment characterised by inward migration of people and investment
- c) the **periphery** or downward transitional areas - regions with unfavourable locations and resource bases, characterised by outward migration of people and investment. Unemployment is high, and there are low living standards.
- d) **resource-frontiers** - areas where new resources are discovered and exploited.

#### Portugal:

Manufacturing is concentrated in two major industrial regions:

The **core**, Lisbon-Setúbal in the south-central region and a **sub-core** Porto-Aveiro-Braga in the north. Together they account for about three-fourths of Portugal's net industrial output. The Lisbon area includes such major industries as iron and steel; ship building and repair; oil refining, machinery, chemicals, cement, and electronics; and food and beverages. Setúbal, about eighty kilometres to the southeast of Lisbon, also has a large shipyard and automobile assembly and machine industry plants, as well as cement, woodpulp, cork, and fish processing.

Sines, a **resource frontier**, located about 140 kilometres south of Lisbon, is the site of a major deepwater port and heavy industrial complex. It includes an oil refinery, petrochemical plants, and a 1,200-megawatt coal-fired power plant.

Porto is primarily a centre of light industry, including textiles, footwear, furniture, wine, and food processing. Porto is also the location of the nation's largest petroleum refinery; the other is located at Lisbon. Aveiro specialises in woodpulp and other wood products but also produces footwear and machinery. Braga specialises in textiles and clothing, cutlery, furniture, and electronics. Covilha is also an active textiles area.

The two premier industrial regions offer the greatest concentrations of population, thereby stimulating market-oriented manufacturing operations. Furthermore, because of the dependence of modern industry on imports of raw materials, machinery, and fuel, the location of processing plants near the two major ports minimises their operating costs.

The rest of the country can be regarded as the **periphery**. The north is mountainous, with a rainy, moderately cool climate. This zone contains about 2 million hectares of cultivated land and is dominated by small-scale, intensive agriculture. High population density, particularly in the northwest, has contributed to a pattern of tiny, fragmented farms that produce mainly for family consumption interspersed with larger and often mechanised farms that specialise in commercial production of a variety of crops. On the average, northern levels of technology and labour productivity are among the lowest in Western Europe. Extreme underemployment of agricultural workers accounts for the north being the principal source of Portuguese emigrant labour.

The centre is a diverse zone that includes rolling hills suitable primarily for tree crops, poor dry soils, and the fertile alluvial soils of the banks of the Rio Tagus. A variety of crops are grown on the productive areas under irrigation: grains, mainly wheat and corn, oil seeds (including sunflowers), and irrigated rice.

The south is dominated by the Alentejo, a vast, rolling plain with a hot, arid climate. The Alentejo occupies an area of approximately 2.6 million hectares, about 30 percent of the total area of mainland Portugal, and produces about 75 percent of the country's wheat. Although much of the area is classified as arable land, poor soils dominate most of the area, and consequently yields of crops and pasture are low by West European standards. The Alentejo is also known for its large stands of cork oak and its olive groves. The Algarve, less than a third the area of the Alentejo, occupies the extreme southern part of Portugal. This area is characterised by smallholdings where animal grazing, fishing and tourism are the principal occupations of the inhabitants.

Portugal's economic growth over the last decade has been accompanied by a heavy investment in infrastructure improvements, largely funded by the EU. Following accession to the EU, however, Portugal began dismantling its system of state ownership and the country has adopted an aggressive privatisation program. In 1988, the Portuguese public sector accounted for 19.7% of GDP and 5.5% of the country's total employment. By the end of 1997, these numbers had fallen to 8% and 2.6%, respectively.

From 1987 to 1999, Portugal received net financial flows from the EU of approximately \$27 billion. The greatest portion of these funds was disbursed through the European Regional Development Fund. As a result, the country has made a number of major infrastructure improvements, most notably the construction of 800 kilometres of main roads, modernisation of railroads and ports, improving environmental quality for 90 - 100% of the population (including the supply of water, solid waste and industrial waste disposal), aid to industry and agriculture, and plans for intensive promotion of regional integration. Additional infrastructure projects are expected over the next several years, including a new international airport (to be built at Ota, north of Lisbon), new metro systems in Porto and Lisbon, an upgrade of the country's rail system, a second phase of a natural gas pipeline system and additional highways, dams and port projects. Portugal is scheduled to receive approximately \$25 billion from the EU for the period 2000-2006. Approximately \$20 billion of this total is earmarked for basic infrastructure.

**Mark scheme**

<b>G</b>	<b>Level 1 (0-6 marks)</b>	<b>Level 2 (7-12 marks)</b>	<b>Level 3 (13-17 marks)</b>	<b>Level 4 (18-20 marks)</b>
	Simple statements of the core-periphery relationship in the identified country.	More detailed description of the core-periphery relationship. Some use of named examples.	Well developed detail of the core-periphery relationship. Good use of case study material.	
	Simple statements of description.	More detailed description, with correct identification of areas of development or underdevelopment.	Well developed description of areas of development, and/or underdevelopment. Recognition of changes in time e.g. resource frontiers.	
		Simple statements of the policies that have been put in place by government.	Detailed statements of the policies that have been put in place by government. Some evaluation of success. Recognition of changes through time as their effects have come into place.	Discussion of the overall effectiveness of the policies – areas of success, comments on success or otherwise. Problems/issues arisen.
<b>S</b>	<b>Level 1 (0-1 marks)</b>	<b>Level 2 (2-3 marks)</b>	<b>Level 3 (4-5 marks)</b>	
	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.	

## Question 4

### Notes for answers

A variety of grouping of nations can be described. Grouping can take place for economic reasons (e.g. the EU, NAFTA, World Trade group, G8), and for military purposes (NATO and the Global Alliance against terrorism).

### E.g. The Growth of the E.U.

- 1970 – consisted of Italy, France, Belgium, Netherlands, Luxembourg and West Germany, i.e. Central Western Europe.
- 1973 – UK, Eire and Denmark join, i.e. movement northwards incorporating one industrial and two agricultural nations.
- 1981 – Greece, i.e. movement SE and involving a poorer agricultural country.
- 1986 – Spain and Portugal, i.e. emphasising movement into southern European countries.
- 1995 – Austria (central Europe), Finland and Sweden (northern Europe), more affluent economies.
- 2004/07 – Cyprus, Czech Rep., Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, plus Romania, Bulgaria (07).

Some may want to refer to applicants – notably Turkey.

### Reasons for growth

Economic include:

- free trade (possible attraction for inward investment)
- agricultural support (CAP)
- access to structural and other funding (Objective 1 and 2)
- free movement of workers
- adoption of a common currency – the Euro

Social include:

- removal of passport control

Political include:

- security
- increased power on 'world scene'

### Separatist pressure

When people of a region feel alienated from central government, they often seek to gain more political control. In general, such groups may have a different language, culture or religion from the rest of the state and are often geographically peripheral within the area. Thus, they feel geographically remote from the centralised government and maintain that they do not receive adequate support, particularly with regard to economic development and growth.

### Causes of separatism:

Feelings of alienation due to:

Historical allegiances – Quebec allegiances with France

Peripheral location – Scots and Welsh nationalists

Religious differences – the former Yugoslavia, Kurds in Turkey and Iraq

Economic differences – Breton nationalism in France

Cultural differences – Chechens in Russia, Tamils of Sri Lanka

Language differences – most of the above – often differences are manifested in terms of language and religion.

**Mark scheme**

<b>G</b>	<b>Level 1 (0-6 marks)</b>	<b>Level 2 (7-12 marks)</b>	<b>Level 3 (13-17 marks)</b>	<b>Level 4 (18-20 marks)</b>
	Simple statements of definitions of terms; or named examples only.	More detailed definition of one term, with valid examples being offered.	Well developed definitions of both terms. Examples have high levels of detail/depth.	
	Simple statements of reasoning.	More detailed explanation with some depth to one of economic, social, political etc. factors. If just 'grouping' or 'separatism', remain in this level.	Well developed discussion of a number of reasons for both 'grouping' and 'separatism', with references to more than just one group of factors.	
		Simple statements of importance.	Detailed statements of importance, which may be relative, with some recognition of the importance of the role of one of the political trends.	A summative discussion. Recognition of complexity of the trends. Recognition of changing regional and national trends.
<b>S</b>	<b>Level 1 (0-1 marks)</b>	<b>Level 2 (2-3 marks)</b>	<b>Level 3 (4-5 marks)</b>	
	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.	