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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Geography 6036

Specification B

GGB4 Unit 4

Mark Scheme

2007 examination - June 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.

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Dr Michael Cresswell Director General

GGB4

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 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.

Question 1

(a) **Notes for answers**

Succession: a series of changes that take place in a plant community through time. There are **two** fundamental types:

- **primary succession** where development begins on ground on which there has been no previous vegetation. this will include areas such as lava flows, bare rock and sand dunes. There are several types of primary succession based upon those formed on the land (**xeroseres**), and those formed in water (**hydroseres**). **Lithoseres** are formed on bare rock; **psammoseres** on sand dunes; **haloseres** in saline water environment; **hydroseres** in a fresh water environment. Eventually, a period of relative stability is achieved and the **climax vegetation** develops

- **secondary succession**, which is initiated by the destruction or modification of existing vegetation, either naturally or by human activity.

Plagioclimax: where successions can be stopped from reaching the climatic climax, or deflected towards a different climax, by human interference. This can be brought about by some of the following:

- deforestation / afforestation
- animal grazing / trampling
- fire clearance.

Mark scheme

2 marks per term to a maximum of 4 marks *(0-4 marks)*

(b) **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 forest.

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 are given. *(0-3 marks)*

Level 2 more than two stages accurately provided and explained. Plant types are clearly identified as being distinct at each of the stages. *(4-6 marks)*

(c) **Notes for answers**

Human activities may include:

- deforestation - to produce arable land, building land - destruction of natural species
- afforestation - the planting of conifers in uplands 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

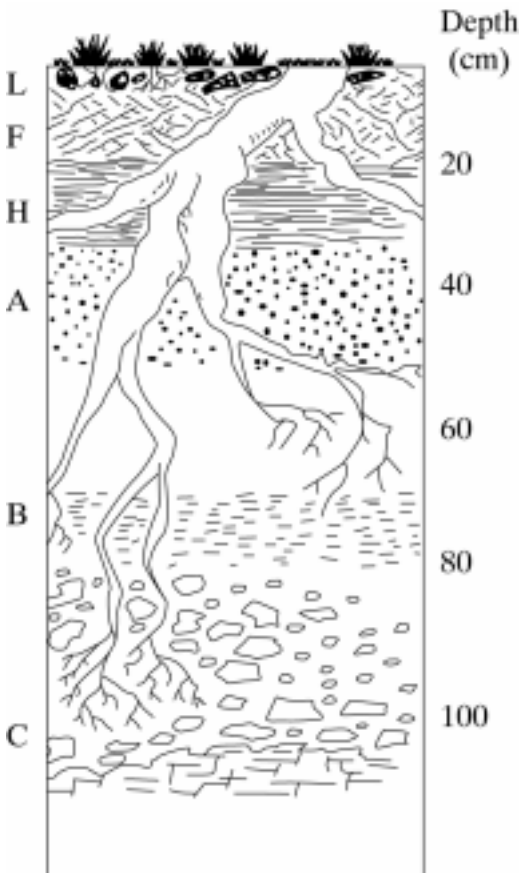
Level 1 generalised statements of human activities, with no real development or depth of either; or good development of one only. *(0-3 marks)*

Level 2 good discussion of more than one human activity. *(4-7 marks)*

(d) **Notes for answers**

(See diagrams below - brown earth and podzol)

Brown Earth



Litter may be several cms thick under deciduous woodland. Merges with dark brown mild mull humus Ph 5.7. This returns bases to the soil and allows soil fauna to thrive. Bacterial breakdown is rapid, worms incorporate organic material. Boundaries between horizons blurred.

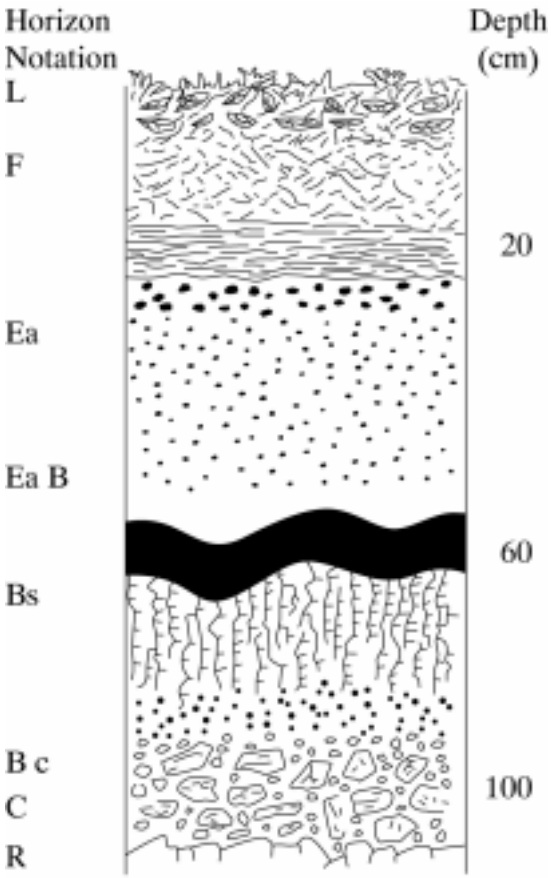
Brown colour; presence of humus which has been moved down; paler at depth. With precipitation>evaporation and mildly acidic conditions Ca, Mg, Na and K are leached downwards along with clay particles; may be an Eb layer. Lighter brown; pH 6.75 to 6.5.

Although leaching is slight the products from the eluvial A horizon may be moved down and the sesquioxides of Al and Fe redeposited in the B horizon to give a darker layer than in A.
Lessivage; the movement of clay particles in suspension, may produce 'clay skins' around roots. May produce a Bt layer.

Roots abstract bases which are recycled through decomposition of leaf litter.

Usually loamy texture throughout the profile; crumb structure in A horizon, more blocky lower down.

Podzol



Surface vegetation; conifers, heathland, moorland grasses.

Litter of leaves, pine needs: slowly decomposing under colder upland climate.

Dark, acidic mor humus.

Light grey ash colour, clean sand grains, gritty texture. pH 4.5-5.5. Bleached layer. Eluviated zone, leached of nutrients: Fe/Al compounds washed down.

Clear horizon boundaries: acidity restricts fauna; less mixing. Deposition of humus to form Bh layer. Darker red/brown colour; redespotion of sesquioxides of Fe and Al. pH 4.5-6.0.

Clay content increases: possible iron pan Bfe. Transitional B zone.

Weather parent material.

Parent rock.

Mark scheme

Reserve 2 marks for the diagram. The criteria for awarding marks will be decided at the standardisation meeting. *(0-2 marks)*
N.B. Maximum marks may be awarded for a well annotated diagram only.

Level 1 descriptive points regarding the characteristics of the soil; or description and explanation of one characteristic only. *(0-3 marks)*

Level 2 explanation of more than one characteristic that has been identified. *(4-6 marks)*

Question 2

(a) **Notes for answers**

A destructive plate margin occurs where two tectonic plates move towards each other. There are three such possibilities: oceanic plate moves towards continental plate; oceanic plate moves towards oceanic plate; continental plate moves towards continental plate. Subduction and mountain building are processes which operate here. Examples: South American coast; Eastern Pacific; Northern India.

A constructive plate margin occurs where two tectonic plates move away from each other. In such cases, mid-oceanic ridges and rift valleys are produced. Examples: mid Atlantic; East Africa.

Mark scheme

2 marks per term to a maximum of 4 marks. *(0-4 marks)*

(b) **Notes for answers**

In general terms - details to be provided by the candidate:

Destructive plate margins - trenches, island arcs, volcanoes, earthquakes, fold mountains.
Constructive plate margins - mid oceanic ridges, volcanoes, rift valleys, transform faults.

Mark scheme

Reserve 2 marks for the diagram. The criteria for awarding marks will be decided at the standardisation meeting. *(0-2 marks)*
N.B. Maximum marks may be awarded for a well annotated diagram only.

Level 1 simple statements of the relationship between process and effect. *(0-3 marks)*

Level 2 detailed statements of the relationship between processes and effects, with reference to identified features on the earth's surface. *(4-6 marks)*

(c) **Notes for answers**

Vulcanicity is associated with plate margins in the centre of the Pacific Ocean; the volcanic Hawaiian Islands occur which are not connected with any boundary. It is believed that this volcanic area is caused by a localised hot spot within the Pacific plate. Inside the mantle it is possible that a concentration of radioactive elements causes a hot spot to develop. From this, a plume of magma rises to eat into the plate above, and finally allow lava to be poured onto the surface and active volcanoes to occur above the hot spot. The hot spot is a stationary feature, so as the Pacific plate moves across it, a line of volcanoes is created, the one over the hot spot being active at the present time. The rest form a chain of islands of extinct volcanoes. The oldest volcanoes have put so much pressure on the crust that subsidence has occurred. This, together with marine erosion, has reduced these oldest volcanoes to seamounts below the level of the ocean. From this evidence, it is clear that the Pacific plate is moving towards the north west and is further proof that the Earth's crust is moving.

Mark scheme

Level 1 simple statements of process, such as location and the creation of volcanoes. *(0-3 marks)*

Level 2 more sophisticated statements of processes, such as their causes, and the existence of a chain of seamounts/volcanoes. *(4-6 marks)*

(d) Notes for answers

Geological evidence:

- the jigsaw fit of continents (S America and Africa) although some areas of overlap
- the similarity of rock types/structures on opposite sides of Atlantic, e.g. the orogenic belts of NW Europe and N America
- the formation of coal, oil, sandstone in areas with inconsistent climates
- past glaciations in India and southern continents
- paleomagnetism - polar wandering as identified in basaltic lavas, and magnetic striping
- sea floor spreading - dating of ages of rocks on either side of Mid Atlantic Ridge.

Biological evidence:

- the fossil of meosaurus (Permian reptile) only found in S Africa and Brazil
- uniqueness of Australian animals (marsupials) - indicating early break away
- simian creatures in Africa and South America, yet latter evolved prehensile tail.

Level 1 simple statements of evidence; or detailed discussion of one piece of evidence only. *(0-3 marks)*

Level 2 detailed discussion of two pieces of evidence. *(4-7 marks)*

Question 3

Notes for answers

Mexico City: has four main hazards affecting it: earthquakes, smog, lack of water, crime.

Earthquakes: caused by the Cocos Plate subducting beneath the North American plate. The effects of this are made worse by the fact that the city lies on a former lake bed (Lago de Texcoco). These deposits amplify the energy of an earthquake by 5 to 20 times, they lose strength and liquefy and cause serious damage on the surface.

September 1985: magnitude 8.1 on the Richter Scale. The epicentre was in the Pacific yet the energy travelled inland and caused extensive damage. This was followed by another quake 36 hours later. The combined effects were: 7000 deaths, 40,000 injured, 30,000 homeless, extensive damage to outlying housing areas and some large buildings in the centre.

Smog: some of the worst air quality in the world; only acceptable on 30 days in the year. High levels of carbon monoxide, sulphur dioxide, lead and ozone. Health hazards: lung problems; nasal problems; 3000 deaths caused by poor air quality. Causes: 4 million vehicles on the road; 40,000 industrial premises; the surrounding mountains trapping the pollution within the area; frequent temperature inversions; the sheer size of the city; low income levels meaning that residents drive old, inefficient cars; leakages of unburned LPG from cooking and heating applicants.

Lack of water: rate of extraction is greater than the rate of replenishment naturally; loss of groundwater in former lake bed is causing shrinkage (central parts by 7m); there are also serious sewage disposal problems caused by the shrinkage and loss of water.

Crime: estimates are that only one third are reported, and only 5/10% solved. Corruption amongst the police is thought to be endemic. Crimes include burglary, car-jacking, armed robbery; tourists face pickpockets and robberies when in taxis.

Inter-relationships: many result from unrestrained growth, and a lack of basic infrastructure and services. The large numbers of poor informal settlements are symptomatic of poor building codes, anti-social activities and poor maintenance of basic services.

Responses: there are three main ways in which the people of Mexico City tend to respond to living in this environment.

- Some people accept the fact that the hazards exist but are not prepared to do much about it - “it won’t happen to me” syndrome.

- Some people recognise the severity of the hazards and are prepared to do something to protect themselves. At an individual level they can use private security firms, establish vigilante groups, attend earthquake drills, install gas cut-offs, collect a comprehensive earthquake kit, move house to be above the smog. Such people tend to be the more affluent of the area as they can afford the precautions. They also expect the authorities to act by insisting on smog control, earthquake-proof buildings, emergency services, etc., all of which are costly, but are possible.

- Authorities have attempted to reduce air pollution: driving restrictions (Hoy no circula); replacing vehicles (all taxis after 10 years); catalytic converters; enlargement of the Metro. Other schemes are limited in scope due to the debt owed by Mexico. In 2002, the city council hired a US security consultancy to examine crime prevention.

Mark scheme

G	Level 1 (0-6 marks)	Level 2 (7-12 marks)	Level 3 (13-17 marks)	Level 4 (18-20 marks)
	Simple statements of hazards affecting the chosen area	More detailed description of one hazard affecting the chosen area. Case study material of one of origin, frequency and scale	Well developed detail of more than one hazard affecting the chosen area. Most of o, f and s examined	
	Simple statements of the effects of the hazard(s)	More detailed description of the effects of the hazards, including one inter-relationship. Case study material accesses this level	Well developed detail of a variety of effects of the hazards, with additional credit for well developed inter-relationships	
		Simple statements of response, or detailed response to one hazard	Detailed statements of response to at least two hazards. Good use made of case study material in terms of response	Overall link back to quotation, either in favour or against, but based on strength of the argument
S	**Level 1** **(0-1 marks)**	**Level 2** **(2-3 marks)**	**Level 3** **(4-5 marks)**	
	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

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

E.g. the growth of the EU

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 southeast 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 - 10 more countries, mainly from eastern Europe (plus Cyprus and Malta).

2007 - Bulgaria, Romania.

Reasons for growth

Economic include:
- free trade (possible attraction for inward investment)
- agricultural support (CAP)
- access to structural and other funding
- free movement of workers
- adoption of a common currency - the Euro.

Political include:
- security
- increased power on 'world scene'.

Causes of separatism (feelings of alienation) due to:
Historical allegiances - Quebec allegiances to France
Peripheral location - Scots and Welsh nationalists
Religious differences - the former Yugoslavia, Kurds in Turkey and Iraq
Economic depression - Breton nationalism in France
Cultural differences - Chechens in Russia
Language differences - most of above (and Basques and Catalans of Spain) - often differences are manifested in terms of language and religion.

Mark scheme

G	Level 1 (0-6 marks)	Level 2 (7-12 marks)	Level 3 (13-17 marks)	Level 4 (18-20 marks)
	Simple statements of growth of groupings of nations, names of organisations formed	More detailed description of growth of groupings with names of countries and possible timings	Well developed detail of the growth of groupings with some understanding of spatial dimension	
	Simple statements of explanation	More detailed explanation with some depth to economic, social or political factors	Well developed detail discussion of a number of reasons for growth, with references to more than just one group of factors (economic, social and political)	
		Simple statements of the causes of separatism	Detailed statements of the causes of separatism clearly attributed to the areas stated	Discussion of a variety of causes for separatism, again clearly attributed, but being distinct. Overall link back to quotation, based on strength of argument.
S	**Level 1** **(0-1 marks)**	**Level 2** **(2-3 marks)**	**Level 3** **(4-5 marks)**	
	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	