



General Certificate of Education

Geography GGB1

Specification B

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.

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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 that 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 might 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 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 the 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 “trigger” 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 specification 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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Question 1

- 1 (a) Graded profile is the term given to the long profile of a river in equilibrium, when inputs and outputs are balanced or erosion and deposition are balanced. A graded profile shows a gradient that decreases progressively down valley; graded to sea level. **(2 marks)**

Point mark. 2 marks for a well developed statement.

A 'well developed' statement **must** include some reference to 'equilibrium' or 'balance of inputs and outputs', the second mark could be awarded for some reference to the idea of a concave profile or decreasing gradient down valley or the concept of grading to a base level or sea level.

- 1 (b) Knickpoints may be; **(10 marks)**
- (i) lithological (caused by geological variation) or
 - (ii) erosional (caused by a fall in sea level / base level)

Usually represented by a convex section in the normally concave profile.

The long profile reveals sections that are convex in shape; associated with a change in gradient; features such as waterfalls, cascades and rapids.

Variations may be seen as modifications to the 'normal' concave profile. Lithological variations, where rocks of differing resistance or hardness are juxtaposed, produce differential erosion as an underlying more resistant band of rock restricts the rate of downward erosion. Rejuvenation occurs when base level falls as a result of a fall in sea level; the resulting increase in height above base level gives greater potential energy and the river's renewed cutting power adjusts the long profile; the knick point is produced by the headward retreat of a river adjusting its profile to the new base level. Credit local steepening of gradient below confluence of tributary and main stream.

Level 1 (0-4 marks)

A basic answer describing the general changes down-valley. This could take the form of description of long profile changes in gradient and relevant features such as waterfalls, rapids, cascades, but no reference to reasons for development.

*Do **not** credit comments on valley shape, i.e. cross profile of the valley.*

Level 2 (5-8 marks)

*One **well-developed** reason allows access to Level 2.*

*Answer develops a **reason** for change in gradient; this reason needs to be sufficiently developed to **explain** gradient change.*

- ***Lithological interruption** (i.e. juxtaposition of rocks of different **resistance/hardness**) along course development of differential rates of erosion, plunge pool / retreat.*
- *Change in sea level or local base level; fall in sea level initiates headward erosion; due to rejuvenation and increased energy due to fall of base level.*

The second reason, or further development of initial idea moves answer to higher Level 2.

Credit references to examples.

Level 3 (9-10 marks)

*A well developed answer covering **both** causes of knick-points; with good illustration from examples.*

*There must be good development of both reasons **and** reference to examples to award **top** Level 3.*

1 (c) Lag time could be **decreased** in a number of ways: the focus must be on human activity, for example **(4 marks)**

- Deforestation; reduction of interception, reduced infiltration, therefore greater role of overland flow which transfers water to the channel faster
- Increase in livestock density; could contribute to shorter grass cover (grazing density) and less interception as well as greater soil compaction as a result of trampling; these will both encourage faster run off via overland flow.
- Urban development/expansion, road building; an increase in impermeable surfaces such as concrete and tarmac and organised urban surface water drainage systems will produce a much faster transfer of water to the channel.
- Change in crop cover/type; harvesting crops will cause faster surface run off, ploughing up grass cover to sow crops will produce more run off.

We would expect to see comment on impact on interception, infiltration, throughflow/overland flow, speed of transfer and response.

Point mark. Credit general change; plus additional explanation of the process involved up to 2 marks.

Do not credit the simple naming or identification of a 'way' e.g. deforestation.

Look for some indication that the candidate appreciates the component of the hydrological cycle involved in that change; i.e. some reference to interception or reduction in infiltration 'Explanation' must show how that activity causes a shorter lag time; some development of the process/events leading to a shorter lag time.

Two 'ways' plus explanation required. 2+2 = 4

Question 2

- 2 (a) Chosen hypothesis (or null hypothesis) must be clearly stated: Hypothesis should state **two** variable and indicate direction of relationship, e.g. **(5 marks)**

- stream velocity increases with distance from the source
- percentage vegetation cover increases with distance from the sea
- pedestrian flows decrease with distance from the centre of the CBD

Do give credit to a hypothesis presented as a question e.g. “does velocity increase with distance from the source”. If there are two variables and a direction of change then we will accept as a hypothesis.

Also credit if in the form of a null hypothesis; “there is no correlation between stream velocity and distance from the source”

But do not give credit to

- (a) general questions such as "does velocity change downstream" or "does X have a traffic problem" **or**
- (b) simple statements of fact, e.g. "water flows faster on the outside of a bend" or "you find more people near the better shops".

Reserve **1 mark** for a well stated hypothesis.

Method must be clearly described in the context of the study; candidates should indicate **how** the data were collected.

Do not give credit a list of ‘things that were measured’ or a list of equipment.

The answer must illustrate **how the equipment was used** or **how the data were obtained; for example**, by questionnaire, i.e. how the respondents were selected and where the samples were taken.

Measures taken to ensure accuracy of collection; this could include reference to specific procedures that were adopted to ensure that the data were as accurate or as representative as possible.

Level 1 (0-2 marks)

*Method described in general terms; mostly what was collected rather than how; poorly formulated hypothesis. Give credit for setting up methods even if the answer does not indicate **how** the actual data were collected.*

Level 2 (3-5 marks)

Clear indication as to detailed method(s) used to gather data. Good reference to measures adopted to try and ensure that data were as accurate as possible.

*Remember to reserve **1 mark** for well stated hypothesis.*

*A full mark answer will display a **clear hypothesis** and a **data collection method** that you would be able to apply on the basis of the description given and some **reference to methods applied to ensure accuracy**.*

- 2 (b) This provides an opportunity for candidates to develop some ideas as to how their results link to their aims and understanding of the chosen topic or environment. **(5 marks)**

We should expect more than just the usual ‘benefits of fieldwork’, seeing things for yourself, although this is a valuable aspect of fieldwork.

Candidates should be able to **undertake some evaluation/ interpretation** of results; perhaps in relation to general theories, or some reference to trends supporting textbook theory or consideration of anomalies.

Answers often become very theoretical, candidates have ‘witnessed’ aspects of the physical world that could not be observed on a day visit, e.g. dynamic equilibrium. We are not looking for a ‘textbook answer’ that could have been written without any need to test a hypothesis.

Level 1 (0-2 marks)

Answer is at a basic level; general benefits of field work i.e. ‘seeing things for yourself’. Presentation of ‘textbook’ material with no direct reference to own results.

No sense of location/place; no real indication of field environment.

Level 2 (3-5 marks)

Answer attempts to make sense of own results in the context of the study: a clear attempt at interpretation or evaluation of findings.

At this level the answer is likely to make some reference to specific results or findings and also put them into context in relation to general theory.

NB. Do not promote an answer to Level 2 just on the basis of a stated result. e.g. if the candidate quotes an Rs result then expect to see some development and comment as to the relevance of the result.

Be wary of giving Level 2 for simply giving a percentage(s), a correlation value, or for a simple statement of findings.

The key focus for Level 2 is “how did this help to improve your understanding?”

Question 3

- 3 (a) Optimum population is the theoretical number of people which, when working with all available resources, will produce the highest standard of living and quality of life. **(2 marks)**
 “When there is an ideal balance between population and resources at a given level of technology”.

Point mark. 2 marks for a well expressed definition this should include reference to

- the ideal balance between population and resources and
- ‘at a given level of technology’ or ‘highest standard of living’

Award one mark only if there is no mention of ideal/perfect balance between population and resources.

- 3 (b) The problem with percentage data is that it does not give absolute numbers; a reduction in the percentage undernourished could still mean that a higher number are poorly fed now compared with the 1990 baseline; it will depend upon the absolute increase in population over the time period. We do not know the actual percentage decrease/increase. **(8 marks)**

Reduction in percentage undernourished;

Some large and highly populated countries have experienced a reduction in percentage.

These include;

- **Brazil, India, China, Nigeria and Indonesia**
- Other parts of **SE Asia** have also seen a reduction – e.g. Burma and Vietnam
- states along the **Pacific fringe of Andean America** plus Uruguay and Guyana
- parts of **West Africa**, e.g. Gabon, Ghana and **SW Africa**.

Although it is unlikely that candidates will know all of these countries, we are looking for some comment on the **general distribution**. There is a **large block** of countries that have experienced a reduction in E and SE Asia, Brazil and a **linear grouping** in western S America, and **more isolated areas** to the west in Africa. All of temperate S America has a reduction or continuously low percentage - a favourable situation.

Increase in percentage undernourished;

These are generally more scattered although there is **one large, almost continuous, belt** running through **North Africa – Central, East and Southern Africa**. The situation appears to have deteriorated in a number of areas which have experienced 'setbacks'; if the percentage undernourished has increased it is very likely that there are more people who are now undernourished compared with 1990, although many of these are areas with **relatively low population totals**; W and C Africa, Bolivia, Paraguay.

On the other hand, **Mexico** (with a population of 110m) and parts of **Central America** have suffered an increase in percentage.

Pakistan (population 160m) has also had an increase.

Former Russian satellite states such as **Kazakhstan and Uzbekistan** have also seen an increase in percentage.

General improvement in South America and E Asia; but situation has deteriorated in much of Africa and W Asia.

Large parts of the temperate north and south have a continuously low percentage of undernourished population.

It is difficult to assess overall progress on the basis of this data; even those that have made progress could still have very large numbers undernourished; it all depends on the situation at the baseline in 1990.

Level 1 (0-4 marks)

*Basic answer, names countries without any attempt to look at any pattern of distribution, or comments on **one** of the groups. No attempt to comment on and/or assess use of data.*

Level 2 (5-8 marks)

- *One group described well **together with** an awareness of the limitations of this type of data, **or***
- *Some recognition of **distribution of two** groups; some attempt to summarise the distribution /dominants in the groups.*

*An answer should not be awarded full marks unless there is some evaluation of the data and its usefulness **or** a recognition of the limitations of the data.*

- 3 (c) Acid deposition; dry deposition of SO₂ and NO₂ and nitric acid and the wet deposition of sulphuric acid and compounds of ammonium. The major cause is the burning of fossil fuels in power stations, smelting of metals and vehicle exhaust fumes. **(7 marks)**
This is a **non-carbon issue**; strategies need to deal with the **reduction of these compounds**.

Greenhouse gases; increased concentration of CO₂ in the atmosphere. One of the major reasons for the increase in CO₂ is the burning of fossil fuels containing hydrocarbons - coal, oil, gas – Burning trees (to open up areas for exploitation of fuel resources or as wood fuel) releases CO₂.

This is a carbon issue; strategies need to **reduce the emission of carbon**.

Other greenhouse gases such as CFCs are not specifically related to 'harnessing energy'; although methane is produced when using biogas boilers this would be regarded as a 'negative' aspect on an alternative fuel source.

Treat this approach with caution; if the candidate can make a relevant link, then accept.

Question is about strategies / **solutions**: but these must be seen in context. As the candidate is required to select **either** acid deposition **or** greenhouse gases make sure that the strategy offered is relevant to the issue chosen.

- use of catalytic converters – NB make sure that the candidate does show how this impacts upon the issue; do not simply credit the term
- burning fuels with a lower sulphur content – only relates to acid deposition
- gas desulphurisation schemes – only relates to acid deposition
- reduction in overall use of fossil fuels, esp. hydrocarbon based; reduce overall demand for electricity, move towards renewables (cleaner)
- car travel, transport schemes; congestion charges, improved public transport, Metrolink
- Agreements, Kyoto summit, carbon credits etc.

The question is about 'strategies that have been, or could be, adopted, so allow comments about methods that are being developed, e.g. hybrid fuels, electric cars, but again, strategies must relate to the issue chosen.

The question does **not** extend to solution to the **effects** of acid deposition or greenhouse gases. This is not about liming to neutralise acidified lakes or the problems of climate change and global warming; it is about harnessing energy and the issues of **emissions** and how to reduce these at **source**.

Do not credit material that looks at what happens once the pollutants are in the atmosphere.

Level 1 (0-4 marks)

Answer identifies some strategies in a general way with no reference to cause being addressed, or

One strategy developed – link to **one cause**.

Level 2 (5-7 marks)

Two strategies, (with clear link), needed for Level 2.

*These must relate to **two sources**, for example, 'reducing the amount of **sulphur** released from power stations' is one issue/strategy. 'Car exhaust control' is a second.*

*For **carbon**; 'reducing use of hydrocarbons in energy production' is one strategy; 'developing systems to reduce dependence/use of private cars' is a second theme.*

Allow any strategy relevant to the issue selected; but look for a range of solutions/causes/sources or themes.

Three strategies addressing different 'sources' is sufficient for full credit.

One strategy – up to 4 marks

Level 2 – 2 strategies – 5 marks

3 strategies – 7 marks

Use intervening mark points for less-developed points.

Question 4**4 (a) (i)** (4 marks)

		A		B
Part-time employment	1985 (m)	2007 (m)	Change (m)	% change
Male	0.3	1.65 to 1.75	1.35 to 1.45	450.0 – 483.3
Female	3.9	5.65 to 5.75	1.75 to 1.85	44.87-47.44
Total	4.2	7.4	3.2	

Point mark. 1 mark for each correct value in **columns A and B** within tolerances.

Check **column A** as mark for **accuracy of reading data** from bar graph.

Award mark for **percentage change value in column B**.

If candidate's answers are incorrect (not within tolerance) for column A, then check calculation for column B based on values given.

Do not credit answers for 2007 values or calculations that are not in the range given. See tables below.

The value is not as low as 1.60 or as high as 1.80 for males; it is not as low as 5.60 or as high as 5.80 for females.

Answers beyond this range are not acceptable; do not credit percentage values based on values outside these ranges; this is an exercise in reading data with a reasonable degree of accuracy. There is already a generous tolerance on the reading of the bar graph.

NB. No mark for subtraction of 1985 values from 2007 value.

- 4 (a) (ii)** There has been a significant increase in part time work; particularly for males, although the total number in p/t for males is well below the level of female activity. **(7 marks)**
 The question asks for **reasons** for such changes.

Changes could be explained by reference to 'advantages' for workers and for employers.

For workers:

- the ability to mix work and leisure, greater freedom
- combining study with paid work to fund education
- work/life balance, raising a family
- cultural and social changes
- economic change with the move towards more service based jobs providing more opportunities for p/t work

For employers:

- greater flexibility in employees working hours provides potential to match workforce to peaks and troughs of labour demand
- ease of hiring and firing staff
- can employ workers with wider variety of skills

Accept any reasonable 'advantage'.

Level 1 (0-4 marks)

Basic answer which only considers advantages for employee or employer.

Level 2 (5-7 marks)

More balanced answer which considers both the desirability of p/t work from the employee's and employers point of view.

Workers are only able to work p/t if the employer appreciates the benefit.

*Access to Level 2 achieved when **both** sides developed.*

Three different 'advantages' needed for full marks; at least one from 'employer' and one from 'employee' point of view.

- 4 (b) Ethnic population has generally become **more dispersed** in urban areas in the last 30 years. Within any specific ethnic group population has generally **spread away from the central wards** of the inner city; although the **greatest concentration** of ethnic population may **remain within some of the wards that are closest to the CBD**. (6 marks)

However, within large urban areas, **sub groups** of ethnic population (N Africans, W Africans, Asians, Australians, Japanese etc) have become established in **discrete 'core areas'**; and there is still a great deal of segregation by ethnic group – this has intensified the concentration of some groups.

Candidates might have studied particular examples; give credit for good illustrations as long as some element of **pattern** is developed. It is very unlikely that any chosen example would have NO element of change to the distribution of ethnic population in the last 30 years. Even if the ethnic groups are still mainly in the central wards of the urban area the degree of concentration, or percentage of population, is likely to have changed.

The question is about **how** segregation has **changed** rather than reasons for the distribution, **but** accept discussion about the process/factors causing such changes, e.g. factors enabling dispersal within particular group.

Level 1 (0-4 marks)

*Answer at a basic level; tends to describe where ethnic groups are located without any reference to a **pattern**, or **change in pattern**.*

Level 2 (5-6 marks)

*Answer makes valid comments about pattern and **an aspect of change**; either within one **specified** ethnic group or between different ethnic groups.*

***1 developed point** regarding change gives access to Level 2.*

*Only promote the answer to Level 2 if there is a clear comment about **change to the pattern** of distribution. Good example can promote answer to top of L 2.*

***2 well developed points** is sufficient for full marks; 'well developed' would require specific reference to an ethnic group and developed example to show change.*