

GCE AS

Geography

Summer 2008

Mark Schemes

Issued: October 2008

**NORTHERN IRELAND GENERAL CERTIFICATE OF SECONDARY EDUCATION (GCSE)
AND NORTHERN IRELAND GENERAL CERTIFICATE OF EDUCATION (GCE)**

MARK SCHEMES (2008)

Foreword

Introduction

Mark Schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16- and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

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Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2008**

Geography

Assessment Unit AS 1

assessing

Module 1: Themes in Physical Geography

[ASG11]

FRIDAY 6 JUNE, MORNING

**MARK
SCHEME**

Introductory Remarks

Note that the assessment objectives (AOs) for this specification are more extensive than those for the previous syllabus. There are now four AOs, and the style of questions and the requirements of the mark scheme have had to be modified somewhat to take account of them, particularly AO2 and AO3 with their need for “critical understanding”. It is worth reproducing the AOs here:

- AO1 Show knowledge of the specified content;
- AO2 Show critical understanding of the specified content;
- AO3 Apply knowledge and critical understanding to unfamiliar contexts;
- AO4 Select and use a variety of skills and techniques, including communicative skills, appropriate to geographical studies.

General Instructions for Markers

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements so far as this is possible. Markers must apply the mark scheme in a consistent manner and to the standard agreed at the standardising meeting.

It is important to recognise that in some cases there may be other correct responses that are equally acceptable to those included in this mark scheme. There may be instances where certain judgements have to be left to the experience of the examiner, for example, where there is no absolute, correct answer.

Markers are advised that there is no correlation between length and quality of response. Candidates may provide a very concise answer that fully addresses the requirements of the question and is therefore worthy of full or almost full marks. Alternatively, a candidate may provide a very long answer which also addresses the requirements of the question and is equally worthy of full or almost full marks. It is important, therefore, not to be influenced by the length of the candidate’s response but rather by the extent to which the requirements of the mark scheme have been met.

Some candidates may present answers in writing that are difficult to read. Markers should take the time to establish what points are being expressed before deciding on a mark allocation. However, candidates should present answers which are legible and markers should not spend a disproportionate amount of time trying to decipher writing that is illegible.

Levels of Response

For questions with an allocation of six or more marks three levels of response will be provided to help guide the marking process. General descriptions of the criteria governing levels of response mark schemes are set out on the next page. When deciding about the level of a response, a “best fit” approach should be taken. It will not be necessary for a response to meet the requirements of all the criteria within any given level for that level to be awarded. For example, a Level 3 response does not require all of the possible knowledge and understanding which might be realistically expected from an AS or AL candidate to be present in the answer.

Having decided what the level is, it is then important that a mark from within the range for that level, which accurately reflects the value of the candidate’s answer, is awarded.

Knowledge and Understanding	Skills	Quality of Written Communication	Level
<p>The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.</p>	<p>The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.</p>	<p>The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, grammar and punctuation.</p>	3
<p>The candidate will display an adequate to good knowledge and understanding of many of the relevant concepts/ ideas. Much of the body of knowledge that can be reasonably expected is given.</p>	<p>The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors and/or misapprehensions may be in evidence.</p>	<p>The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, grammar and punctuation. Legibility is satisfactory.</p>	2
<p>The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.</p>	<p>The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors and/or misapprehensions will be clearly evidenced.</p>	<p>The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, grammar and punctuation. Writing may be illegible in places.</p>	1

Section A

AVAILABLE
MARKS

- 1 (a) (i) The transfers are
1. percolation
2. groundwater flow/base flow. Do not accept ground water run-off. [2]
- (ii) This is the movement of water into the soil system.
NB: Not into the rocks as this is percolation. [2]
- (iii) A wide range of answers is possible but there must be some attempt at explanation for full marks. Answers might include the level to which the soil is already saturated, climatic conditions, porosity of the soil, amount of vegetation cover, land use, slope etc. Candidates should be awarded up to [2] for a clear explanation of their named factor. [2]
- (b) At the start of the storm, when vegetation is dry, it is able to hold 45% of the rainwater but it soon becomes saturated and water moves by throughfall or stemflow. In the middle of the storm the interception store holds 7% and by the end of the storm this has fallen to 4%. At the start of the storm, when the ground is dry, it can hold 40% of the rainwater but as it becomes saturated, or its infiltration capacity is reached, it is no longer able to hold the rainwater. In the middle of the storm 4% of the rainwater is held in surface storage and by the end only 2%.
At the start of the storm, because of interception and surface storage, 0% of the rainwater is moving by surface run-off. In the middle of the storm this has risen to 5% but, as the stores become saturated, towards the end of the storm, surface run-off becomes the main transfer, as it holds 60% of the rainwater.
- Candidates should deal with each of the store/transfers and each stage of the storm. They must quote figures from the resource and give valid explanations to gain full marks.
[3] for description and [3] for explanation [6] 12
- 2 (a) (i) Inputs could include energy from the sun, rainfall, weathered rock etc. Stores could include biomass, litter, soil etc. Accept plants, animals and dead matter. [2]
- (ii) An autotroph is a self-feeder, such as a plant, so its role is to fix the sun's energy by **photosynthesis** for use by later stages of the food chain. [2]
- (b) A range of answers is possible but they must be linked to the climate of the area. These might include:
1. Spring snowmelt and early summer rainfall cause some leaching.
2. In late summer the higher temperatures (20°C+), create capillary movement of water bringing bases nearer the surface.

3. Alternating wet and dry seasons immobilise iron, aluminium oxides and clay in the upper soil and limits the formation of a B soil horizon. Candidates should describe one soil process which is linked to the climate of the area.
Overt use of the resource required for full marks.
Description and explanation must be linked to soil process.
Maximum [2] if process is soil erosion.
([2] + [2]) [4]
- (c) (i) Monoculture is the practice of growing the same crop in the same field year after year. [1]
- (ii) Monoculture causes the deterioration of soil structure. The crumb structure of the soil, with well-formed beds, breaks down and the soil becomes very powdery. This leaves the soil more prone to erosion by both wind and water.
Monoculture removes the same nutrients from the soil year after year so that fertility gradually decreases and crop yields are also reduced.
Maximum [1] for soil erosion only.
Candidates must describe and explain the effects of monoculture on both **soil structure** [1] and soil fertility [2]. The question does not require candidates to suggest solutions to the problems of monoculture. [3]
- 3 (a) (i) Since the earth is neither warming up or cooling down, there must be a balance between incoming insolation and outgoing terrestrial radiation. Candidates may mention areas with a surplus or deficit and the heat transfer mechanisms but this is not required to obtain full marks. [2]
- (ii) Dew point temperature is the temperature to which a body of unsaturated air must be cooled to become saturated, i.e. achieve a relative humidity of 100%. [2]
- An airmass is a body of air which has similar properties of temperature and humidity. Do not accept “weather characteristics”. [2]
- (b) (i) 1. The warm sector should be clearly labelled on the resource.
2. The value of the isobar is 1004 mb. [2]
- (ii) Temperature. As this is the warm front, as it passes there will be a sudden rise in temperature. Average change would be 4 °C. For full marks candidates should either state the sharp nature of the change or give an approximate value.
Precipitation. Before the front passes there will be a period of continuous rainfall, steady and quite heavy. For full marks candidates will note that this rain will stop in the warm sector.
([2] + [2]) [4]

Section A

AVAILABLE
MARKS

12

12

36

Section B

AVAILABLE
MARKS

Answer any **two** question from this section.

- 4** Candidates should clearly explain the river processes of erosion and deposition. The processes of river erosion are abrasion/corrasion, attrition, hydraulic action and solution (corrosion). Deposition takes place when the velocity of a river begins to fall, it has less energy and so no longer has the competence or capacity to carry all its load. So, starting with the largest particles, material begins to be deposited. Good candidates will mention a range of conditions where deposition is likely to take place.

For their chosen river feature, which will most likely be from those listed in the specification (rapids, waterfalls, meanders, oxbow lakes, floodplains, levees and braided channel), they should explain how some of the river processes already described have contributed to the formation of the feature.

Full credit may be given to well annotated diagrams.

Level 3 ([9]–[12])

The candidate clearly describes the processes of river erosion and deposition and explains how some of these processes lead to the formation of their chosen river feature.

Level 2 ([5]–[8])

A less detailed answer or one which fails to describe both river processes adequately. The processes which lead to the formation of the river feature may not be clearly explained.

Level 1 ([1]–[4])

An answer which is lacking in depth or has a poor understanding of river processes and their contribution to the formation of their chosen river feature.

The quality of communication may also be poor. [12]

- 5** The details of the answer will depend on the case study chosen but candidates should identify a specific ecosystem and discuss how its diversity and complexity are related to the climate and soils of the area. Good candidates will clearly explain the background conditions of climate and soil type and refer to the processes of soil formation, stabilisation etc. as the succession develops. They may also include references to theories such as the monoclimate or polyclimate theories. Reference may be made to local factors such as drainage, parent rock, relief or microclimate. The element of diversity should be addressed through reference to plant/animal species where appropriate. If no succession or spatial context is given, then maximum Level 2.

Level 3 ([9]–[12])

The candidate identifies a specific succession and clearly discusses its complexity and diversity. There is good reference to the specifics of climate and soils and clear examples of plant/animal species and processes of succession.

Level 2 ([5]–[8])

A succession is identified but the discussion of its complexity and diversity lacks sufficient depth or clarity. References to climate or soils are poorly linked to the processes of succession.

Level 1 ([1]–[4])

The answer is very generalised with little reference to specific case study information. Few species are named and processes are poorly explained. The quality of communication may also be poor. [12]

- 6 The question requires candidates to name a specific hurricane event, discuss how it had a devastating effect on people’s lives and describe the protective measures used to limit the devastation. Candidates must mention a specific hurricane event to be awarded Level 3 marks. Impacts could be primary or secondary. They might include deaths, famine, disease, evacuation, loss of contact with family, looting, crime etc. Impacts on property such as collapse of homes, damage to infrastructure including hospitals, communication networks etc. could also have a devastating effect on people’s lives. Protective measures could include better forecasting and research into atmospheric processes within a hurricane. Coastal protection measures, emergency/contingency measures, large-scale temporary evacuation of population and so on. Suitable examples could also include the use of monitoring and warning systems, such as those employed by the National Hurricane Centre in Florida. The use of information from geostationary satellites and from land and sea-based recording sites, weather aircraft and computer models. The strengthening of homes and commercial properties.

Level 3 ([9]–[12])

The candidate produces a detailed answer which makes good use of specific case study events to discuss how people’s lives were devastated by a hurricane event and includes a good range of protective measures.

Level 2 ([5]–[8])

A less detailed answer where reference to case study material is less effective or depth of knowledge is limited. Protective measures are few or less well described.

Level 1 ([1]–[4])

An answer which is generalised or inaccurate with little case study material. The quality of communication may also be poor. [12]

Section B

Total

AVAILABLE MARKS

24

24

60



Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2008**

Geography

Assessment Unit AS 2

assessing

Module 2: Themes in Human Geography

[ASG21]

THURSDAY 12 JUNE, AFTERNOON

**MARK
SCHEME**

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Levels of Response

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Section A

AVAILABLE
MARKS

- 1 (a) The National Census is a questionnaire sent out to everyone every ten years. Vital registration is an ongoing process that records births, deaths and marriages. The question asks for distinguish so some difference must be noted. If a description of each is offered maximum [1]. [2]
- (b) (i) There are a number of differences that are acceptable. However, most will write about:
- Northern Ireland has above the UK average of young dependants whereas Wales has about average. For example, Northern Ireland has 16% 10–14 and Wales has 13% in the same age group.
 - Wales has a higher than average number of elderly people and Northern Ireland has below average. Wales has 8% 75–79 year olds whereas Northern Ireland has 5.5% in the same age group.
 - Wales has a below average number of economically active whereas Northern Ireland has more.
- Figures must be quoted for full marks. If no figures are quoted candidates will only be awarded max [1] per difference. Candidates need to focus on the differences in the population structure.
2 × [2] [4]
- (ii) Candidates will discuss the need for local governments in Wales to invest money into care for the elderly. They will need investment in old people's homes, meals on wheels etc. They may also discuss the fact that the Welsh government may need to invest time and money attracting new industries or businesses into their area to try and attract more economically active. For Northern Ireland, they will discuss the need to invest more money into services catering for young dependants. They may also discuss the need to make sure that there will be enough employment opportunities for these young people as they reach the economically active age groups.
Maximum [2] if either Wales or Northern Ireland omitted. [4]
- (c) Optimum population exists when there are the right number of people for the resources. The standard of living will be higher in this situation. Underpopulation is when there are too few people to fully utilise the resources of a country. This means that the standard of living is lower than it could be. Over population occurs when there are too many people to be supported by the existing resources. Resources will be stretched and therefore the standard of living will be lower than could be achieved with optimum population. Standard of living should be mentioned for [2].
Only two out of three of over population, under population and optimum population need be mentioned.
If only one concept discussed, maximum [1]. [2]

12

2 (a) The map for Mexico City does follow the general model in a number of ways:

- There is a clearly defined CBD at the centre of the city
- There is a sector of high luxury residential housing in the south and southwest of the city
- The overcrowded, older tenements, shacks and spontaneous settlements tend to be on the outskirts of the city.
- The industrial area does follow a sector/wedge pattern to the north of the city, but candidates may note the dispersed pattern in other locations.
- Middle class dispersal is not as in the model.

Candidates must have at least two similarities. Some may highlight differences. As long as these are evident on the diagrams they are to be accepted. [6]

Level 3 ([5]–[6])

The candidate has made at least two valid comparisons and has used the resource fully.

Level 2 ([3]–[4])

Only one valid comparison has been made or use of the resource is less, e.g. place names.

Level 1 ([1]–[2])

No valid comparison made and there are inaccuracies in the answer, or only one resource used.

- (b) (i) Urbanisation is the movement of people into towns and cities, an increase in the proportion of the population of people living in urban areas. Whereas suburbanisation is the movement of people to the suburbs. [1] for each correct definition. [2]
- (ii) Most will discuss urban sprawl and the loss of agricultural land. [2]
- (c) Most will focus on the fact that it is outdated or that it assumes a flat surface. When more than one limitation is given sub optimal rules apply. [2]

12

- 3 (a) (i) Most of North America, Australia, Canada and Europe consume over 2800 calories per day. Whereas South America, Africa and South East Asia have the lowest consumption rates many consuming below 2000 calories per day. The pattern tends to follow the North–South divide. If no figures are given, maximum [1]. [2]
- (ii) Most students will offer GNP or GDP. They must be able to show a clear understanding of their measure [2]. Those candidates who simply name a measure maximum [1]. [2]
- (iii) Candidates must clearly demonstrate a limitation specific to their measure. When more than one is offered sub optimal marking applies. [2]
- (b) (i) LEDC = C or A
MEDC = B or D [2]
- (ii) The countries classified as LEDC tend to export primary products whereas those who are classified as MEDC export manufactured goods. Question asks for two reasons so candidates must discuss importing and exporting patterns. One reason only maximum [1]. [2]
- (iii) Country C is exporting a large percentage of primary goods and importing a large percentage of manufactured goods. Since primary goods are sold more cheaply than manufactured goods it is likely that country C will suffer from a trade deficit. Reliance on one product could be a problem. [2]

12

Section A

36

Section B

AVAILABLE
MARKS

- 4 Candidates can write about an MEDC or LEDC case study. There are two main strands to this question – the effect of human resources on population distribution and the effect of physical resources on population distribution. Both have to be addressed but there does not need to be a balance. Irrelevant answers, maximum Level 1. Wrong scale, mark out of [6].

Level 3 ([9]–[12])

A detailed and full answer describing effectively and accurately the population distribution of their case study in relation to the physical and human resources. They will be able to offer figures describing the population distribution within their case study. They will have detailed and specific information on the physical and human resources of their case study. Quality of language is of a high standard.

Level 2 ([5]–[8])

Candidates describe the population distribution of their case study, but with less factual detail. They tend to offer generalised comments in relation to the physical and human resources or they have completely omitted either physical or human. Quality of written response is satisfactory. Candidates who completely omit either human or physical resources will be restricted to this level.

Level 1 ([1]–[4])

Very limited geographical knowledge about population distribution in their case study. A lot of inaccurate information or case study completely omitted. [12]

- 5 This is a straight lift from the syllabus and deals with a national/regional case study – e.g. the Scottish Highlands. If they answer at the wrong scale, mark out of [6]. Candidates do not have to provide a completely balanced discussion of resources and employment, but if one is completely missing then Level 2 maximum. The focus must be on the effect of resources and employment on settlement distributions. Details will depend on the example chosen, but there will be a clear link between the three points in any example that scores top marks.

Level 3 ([9]–[12])

The discussion is balanced and clearly tied into settlement distribution. The candidate does not just demonstrate a theoretical knowledge of the links between the three things mentioned, but clearly identifies this with regard to his/her case study. This study is detailed and accurate and the quality of language is good.

Level 2 ([5]–[8])

Some of the unbalanced discussion will be here, together with those whose case study lacks the level of detail necessary for Level 3. There will be a useful focus on settlement distribution, but the contribution of and links between resources and employment may be somewhat wanting.

Level 1 ([1]–[4])

Answers that do not focus on the question properly or whose answer is sketchy. Quality of language may be inadequate, too. [12]

- 6 The candidate must clearly show an understanding of both the strengths and weaknesses. For strengths they may discuss increased employment opportunities in LEDCs, increased GNPs for many LEDCs, increased range of consumer products etc; for weakness they may discuss exploitation of workers in LEDCs, corrosion of individual cultures, increased unemployment in MEDCs as factories are forced to close due to increased competition. Both need to be clearly seen, but not balanced.

Level 3 ([9]–[12])

A good detailed answer that clearly sets out the strengths and weaknesses of globalisation with reference to place. They have good geographical terminology and the quality of written communication is good.

Level 2 ([5]–[8])

A less detailed answer than above. Those students who omit either strengths or weakness completely would be restricted to this level.

Level 1 ([1]–[4])

An answer at this level would lack an understanding of globalisation and have serious flaws. The quality of written communication may be poor.

[12]

Section B

24

Total

60



Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2008**

Geography

Assessment Unit AS 3

assessing

Module 3: Techniques in Geography

[ASG31]

FRIDAY 6 JUNE, MORNING

**MARK
SCHEME**

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The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.	The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.	The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, grammar and punctuation.	3
The candidate will display an adequate to good knowledge and understanding of many of the relevant concepts/ ideas. Much of the body of knowledge that can be reasonably expected is given.	The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors and/or misapprehensions may be in evidence.	The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, grammar and punctuation. Legibility is satisfactory.	2
The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.	The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors and/or misapprehensions will be clearly evidenced.	The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, grammar and punctuation. Writing may be illegible in places.	1

Part A

**AVAILABLE
MARKS**

Total marks available – [10]

1 Table of Data

Up to [3] for presenting a table which:

- has been computer-generated and contains data of a sufficient quality to meet the aim of the investigation;
- displays proper conventions such as a title, columns labelled with units of measurement specified, etc;
- includes data appropriate for graphing and for statistical analysis. [3]

3

2 Summary Report

Level 3 ([6]–[7])

A summary report with a precise aim and sections set out clearly for planning and data collection. There should be a well-structured description of pre-fieldwork planning and methods of data collection (these should relate to the stated aim as well as the tabulated data). Quality of written communication is of a high standard. Deduct up to [2] for reports which exceed the word limit.

Level 2 ([3]–[5])

The summary report may be rather brief and may fail to address both planning and data collection sections in sufficient depth. Alternatively the report may be adequate in length but may lack structure and may be less coherent. The candidate’s ability to communicate may be reasonable in standard. Deduct up to [2] for reports which exceed the word limit.

Level 1 ([1]–[2])

A summary report which may be brief and provides little relevant detail on planning and data collection methods. It may be partially completed or exhibit a lack of understanding. Alternatively the report may be of sufficient length but contain little relevant material. Quality of written communication is limited. Deduct [1] for abuse of word limit. [7]

7

Part A Total

10

Part B

AVAILABLE
MARKS

- 1 (a) (i) Primary data is recent/current.
It can relate closely to the devised hypothesis as it is planned by the researcher.
The researcher can ensure reliability as there is control over the sampling and data collection process.
Do not credit more accurate/more reliable unless developed.
Do not credit easier/quicker to obtain.
(2 × [1]) for each valid advantage [2]
- (ii) Answers will vary according to the field study and obviously the primary data collection techniques discussed in the report.
For [3] the candidate needs to select one primary method and explain thoroughly how an improvement could generate more accurate/reliable results.
Allow ‘sampling’ only if it refers to a clearly distinguishable primary data collection method.
Only credit modification if it relates to actual field study – not an extension/different study.
Award [1]–[2] for answers which lack explanatory depth. [3]
- (b) (i) The mark breakdown is as follows:
- Title** [1] – must be specific and accurate, should make reference to the two variables plotted
- Conventions** [2] – for labelled axes
– for provision of a key (if relevant)
– for graph construction using an appropriate scale (to encompass all variables)
– correct construction of scatter graph
– independent variable, e.g. distance, should be on x axis
- Accuracy** [3] – for the accurate and precise plotting of values from the table
- Method** [1] – for the selection of a graphical technique appropriate to
- The type of data extracted from the table (line graphs require continuous data)
 - The devised aim
- | |
|-------|
| T – 1 |
| C – 2 |
| A – 3 |
| M – 1 |
- [7]
- (ii) There are two distinct elements to this question – [2] for graphical analysis and [5] for explanation.
- Description**
- Award [2] for thorough graph description which includes the accurate quotation of values.
 - Award [1] for a more general description with the quotation of values omitted. [2]

Explanation

- Award [4]–[5] for detailed well written answers with sound geographical reasoning. For [5] the explanation should incorporate relevant geographical concepts and terminology.
- Award [2]–[3] for less detailed geographical reasoning. Answers may include more limited use of specialist terminology. Level of written communication may be reasonable.
- Award [1] for reasoning which is very simplistic. Answer may exhibit a low level of written communication. [5]

(c) Processes

- **Hypotheses** – may be formulated as part of field work planning. A broad general aim may require hypotheses which act as specific strands for scientific or empirical testing. Reference should be made to the actual hypothesis devised. They direct the course of the investigation and allow for manageable data collection.
- **Sampling** – is a process employed when it is “impossible”, “impractical” or “unnecessary” to study the total population. It involves the selection of a subset or portion of the population which is representative of the total population. Reference needs to be made to sampling method and sample size selected for study.
- **Evaluation** – this is an essential stage in the investigation process which generally involves the critical reflection of field work methods, results and conclusions. Expect candidates to be aware that evaluation can involve an awareness of the strengths and weaknesses of the different aspects of their investigation.
- **Secondary Sources** – this involves the integration of published data which may be written, statistical or mapped form. A wide range of sources can be accessed and used at any stage of the investigation process – planning, data collection, interpretation or even the geographical conclusion stage. Expect the specific source(s) to be outlined and the precise role explained.
- **Statistical Analysis** – this aids data interpretation as complex lengthy raw values can be simplified and summarised into concise mathematical form. Statistical analysis can provide an objective measure of significance which will provide a sound basis for reliable conclusions. Reference should be made to the type of statistical analysis employed and their value recognised within the investigation process.
- **Pilot Testing** – this is a vital part of the planning phase of the investigation and involves a trial run of various aspects of the study to enable candidates to identify necessary modifications which may be essential. The actual type of pilot testing needs to be detailed.

Award [3] if the candidate thoroughly explains the role of the selected process in the investigation with explicit links to the individual field work.

Award [1]–[2] if the process is more simplistically explained with limited or no linkage to the field study.

(2 × [3])

[6]

25

- 2 (a) (i) Award [2] for an accurate and well expressed definition. Stratified sampling involves the selection of a representative or proportional sample in relation to classified subsets within the total population. Award [1] for a less well expressed definition with some understanding evident. [2]

- (ii) The map represents a demographic sub-division of the population from which proportional representations should be selected for survey. Candidates are expected to make use of the resource in their answer. Calculations for examiner reference:

Region	Sample Size
Tasman Region	46
West Coast Region	33
Southland Region	100
Nelson Region	46
Marlborough Region	44
Canterbury Region	531
Otago Region	200

Award [3]–[4] for good resource use and an accurate and detailed understanding of how the process would be employed. For [4] at least two accurate calculations are expected. For [3] one accurate calculation is a requirement.

Award [1]–[2] for a less detailed answer showing a more limited understanding. Little/no resource reference may be evident and calculations omitted.

Maximum [1] for candidates who make use of resource for sampling in general but show no understanding of the stratified method. [4]

- (b) (i) 8, 21 [2]

- (ii) Significantly random or random [1]

- (iii) The map illustrates that the majority of settlements tend to be located on land of altitude less than 1750 m. Therefore there appears to be an underlying topographic factor determining settlement site and thus a random conclusion is not totally valid. Alternatively candidates may realise that the conclusion may be misleading when the sample number is only 28. Statisticians recommend a sample of over 30 for reliability. Award [2] for a valid reason with resource reference evident and fully explained. Award [1] for a valid reason but without resource reference or full explanation. [2]

- (c) (i) Mark breakdown
- Line graph (illustrating discharge) – [3] for accurate plotting of values
 - Bar chart (illustrating rainfall) – [2] for accurate plotting of values [5]
 - Annotation – [2] Creditable graph labels for this storm hydrograph include
 - High peak discharge
 - Steep rising limb
 - Steep recession limb
 - Short lag time etc. [2]
- (ii) Possible factors include
- Urbanisation** – in its lower course, Mill Burn flows through Inverness and this highly urbanised catchment will have influence on the hydrological characteristics of this drainage basin. Candidates need to explain how the high density of impermeable surfaces reduces infiltration and increases surface run-off. Urban drainage densities and the installation of sewers and storm drains accelerates run-off producing high peak discharges.
- Gradient of Drainage Basin** – the steeply sloping catchment in the upper course of the Mill Burn also provides evidence to explain high peak discharge. Steep gradients reduce infiltration and accelerate more rapid surface run-off which produces a sharp increase in discharge in the river channel.
- Other possible factors which could be credited (with full explanation and resource evident)
- lack of vegetation cover
 - input of tributaries
- Award [3] for a valid, well developed reason with relevant resource evidence. Key terminology should be employed.
- Award [1]–[2] for a valid reason but less well developed. There may be a lack of key terminology employed. [3]
- (iii) Waterfall, V shaped valley, meander [1]
- (iv) North West, magnetic North [1]
- (d) Relief (high land ridges) should be located from contours/spot heights and plotted. These points should be delimited to map the boundary of the catchment zone, the watershed of the drainage basin.
- Award [2] for a sound understanding of mapping procedure.
- Award [1] for an answer which demonstrates some understanding, but lacks depth required. [2]

Part B Total

25

50

Total

60

AVAILABLE
MARKS

